

RegPerfect®



**TELEDYNE
INSTRUMENTS**

Monitor Labs

A Teledyne Technologies Company

RegPerfect® Manual

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RegPerfect Summary

RegPerfect is a collection of software applications and components (libraries, executables, etc.) used to collect, display, and report emissions data. This section discusses aspects of the system that are prerequisite to understanding how RegPerfect works.

Teledyne Monitor Labs wrote most of the RegPerfect software, but some components were purchased from other vendors and incorporated into the product. The most critical 3rd party software is the database management system: Microsoft SQL Server. SQL Server itself consists of several applications and components, which are briefly described in section SQL Server Management Tools.

RegPerfect Design Philosophy

RegPerfect is extremely flexible and customizable. While many competing products do calculations at report time (many of which are "hard-coded" in the reporting software), RegPerfect has completely customizable calculations that are performed in real-time.

For example, all of the data reported in the EDR is calculated during real-time and stored in the RegPerfect database. Therefore, the program that actually creates EDRs does very little except read values from the database and output them in the EDR format. The same is true for Part 60 reports.

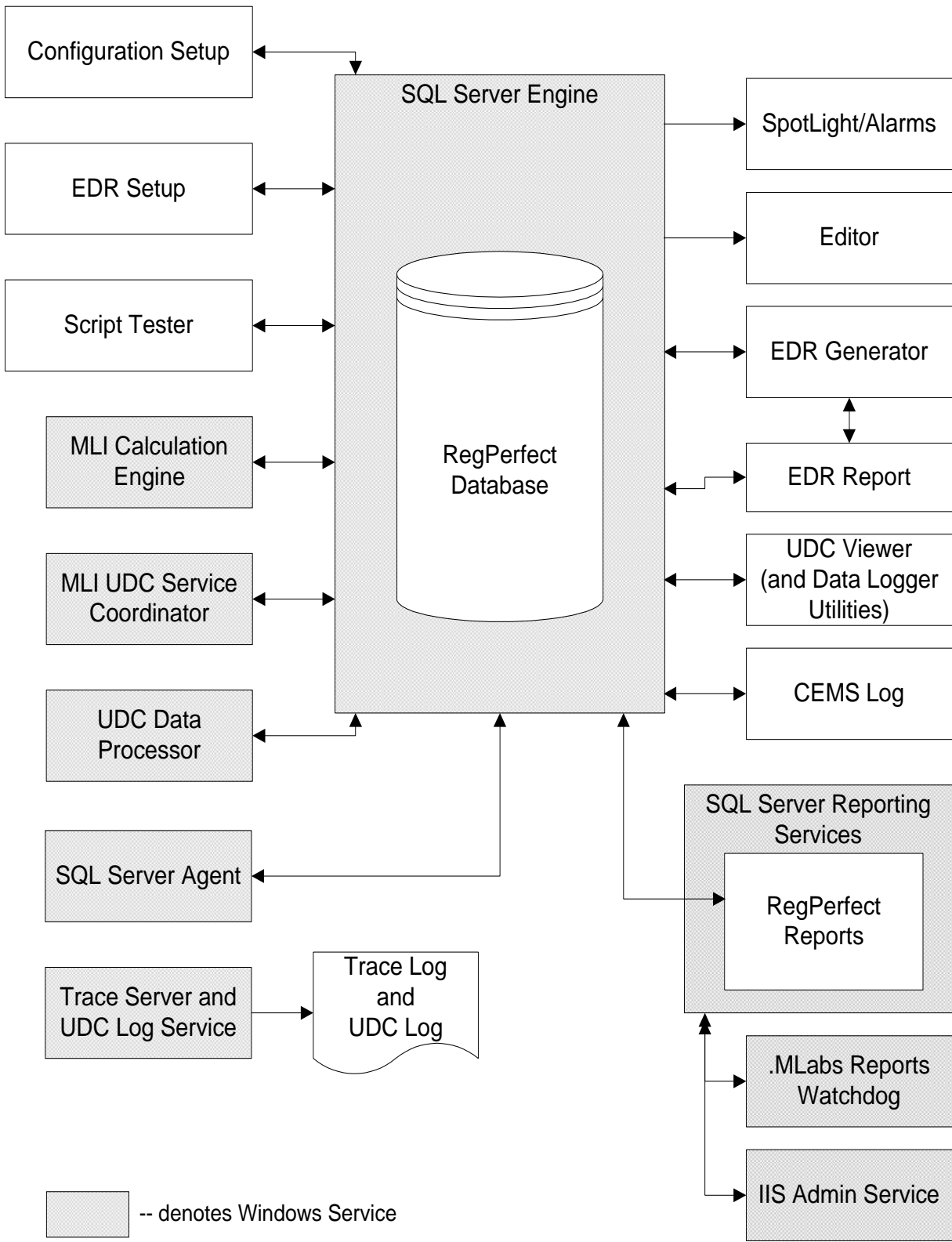
There are several advantages to this approach:

- Any parameter reported on the EDR can be trended or displayed in real time because it is being automatically calculated and stored in the database each hour – you don't have to run a report to see your quarterly sums, SO₂ availability, or substituted NO_x.
- Errors on EDRs can usually be corrected by recalculating after modifying a parameter's formula, precision or other configuration options – you don't have to convince your DAHS vendor that there's a bug and then wait for them to fix it and send you new software.
- Similarly, many of the changes and clarifications EPA constantly makes to EDR reporting can be adapted to by making formula and other configuration changes.
- With a sufficient understanding of RegPerfect and the EDR, you can reconfigure RegPerfect to adapt to physical changes to your CEMs such as adding or removing an analyzer or opting to use Appendix D SO₂ estimation.

For those sources that would like to rely less on their DAHS vendor, the inherent flexibility of RegPerfect offers a large degree of independence. And, for those that don't covet independence, Teledyne Monitor Labs can make configuration changes for you.

The flip side to flexibility is complexity. We find, however, that most of our users with CEMs and regulatory experience find the system intuitive and straightforward.

RegPerfect Architecture



RegPerfect Applications

The sections below briefly describe the main programs that constitute RegPerfect. The remainder of this section gives a brief description of each application shown on the architecture diagram.

Configuration Setup (Configuration.mde)

The Configuration application is used for entering data into core configuration tables of the RegPerfect database to tailor RegPerfect to a specific customer facility. This application, used mostly by Teledyne Monitor Labs DAS Services personnel prior to the delivery of RegPerfect to a customer, describes the monitoring sites, instrumentation, controllers, tags and other specifics of a source.

EDR Setup (EDR Setup.mde)

This application is used for entering data into the regulatory configuration tables of the RegPerfect database to tailor RegPerfect to the needs of a specific facility's EDR, such as monitoring plan information. This application, used mostly by Teledyne Monitor Labs DAS Services personnel prior to the delivery of RegPerfect to a customer, describes the EDR record types to be submitted and the contents of each of those record types.

Script Tester (ScriptTester.exe)

This application is used to test and debug tag calculation scripts which are used in RegPerfect to calculate values such as NO_x #/mmBtu, quarterly sums/averages, etc. Admin Tester is used mostly by Teledyne Monitor Labs DAS Services personnel to debug and configure the calculations in each customer's system.

SpotLight (SpotLight.exe)

SpotLight is a graphical display program that shows the values of data in the RegPerfect database or Controller as they update in real time. Spotlight is also the location to view and acknowledge alarms and setup and view data trends. Using the application in design mode allows for configuration of a display. Multiple displays can be designed, saved, and opened as needed. These displays can contain a large variety of graphical items that will update in real time based on data coming in to the RegPerfect system. With an Ethernet linked Data Logger or PLC, some PLC control features can also be initiated from a push button the Spotlight interface. Common control features include starting calibration or initiating a test sequence.

Alarms

RegPerfect applications display alarms and allow you to acknowledge them and assign reasons/actions for excess emissions and CEMs downtime for Part 60 reporting. You can specify filters and sort orders to customize how the alarms are presented, and you can also acknowledge alarms, apply reason action codes, or delete old alarms.

Trend Display

Spotlight contains trend objects to display a simple real time trend or more complex historical value/status of selected tags in one of several strip chart formats. The list of tags displayed by the application can be customized, and each set of tags can be named and saved separately so that multiple displays can be configured and opened at will.

Editor (Editor.mde)

This application has five major functions:

- Sample Viewing/Editing – you select a tag and time interval and view/edit your sample data in a spreadsheet format
- Constant Viewing/Editing – you select a constant and view/edit its values and effective dates. Calibration gas bottle PGVP data is also entered here.
- Calibration Viewing/Editing – you select an instrument and time interval and view/edit your calibration data.
- Recalculations and Calibration Reassessment – after editing data, you may need to recalculate other tags that depend on the edited data and/or reassess calibration results.
- Part 60 or 75 QA/QC – Generates the CGA/Linearity and RATA test reports. Allows for selection/insert of CGA/Linearity data and identification of RATA run data.

EDR Generator (EDR Generator.mde)

This application has five functions:

- The general function is to Run the EDR report – you select an EDR (some sources have more than one), supply the quarter and year, and click the [Generate EDR] button. Completed EDRs can be viewed with Notepad.
- EDR Generator is the application to enter and review all Part75 certification test records on a periodic basis – you select an EDR and monitoring site, view your test record, and results in a readable “EDR-like” format.
- Review and quality assure hourly EDR data on a periodic basis – you select an EDR and monitoring site, view your data in a readable “EDR-like” format, check for problems using EDR PreCheck option, and recalculate.
- Import EDR data – Monitoring Plan, Emissions, and QA XML EDR files may be imported into the RegPerfect database for historical data archive and consistency.
- Queries of sample data – you select a tag and an interval and click a button to see your data.

RegPerfect Reports

The Reports application provides standard reports such as calibration listings, sample listings and Part 60 reports, as well as any custom reports purchased by the customer. With the exception of the EDR, CGA/linearity, and RATA full test reports, RegPerfect reports are run from this application. The 3rd party SQL Server Reporting Services application is the underlying report generation mechanism. SQL Server Reporting Services uses the Windows operating systems IIS Admin Service to process reporting features. Additionally, RegPerfect’s .MLabs Reports Watchdog Service challenges SQL reporting response mechanisms to operate smoothly.

UDC Viewer

The UDC Viewer application allows a user to peek into the processing of data collectors. Running this application shows a scrolling view of the data channels and communication status between UDC applications and data collection device(s).

CEMS Log

The CEM Log user interface is a simple electronic log book that simply accepts typed log entries and allows historical reporting of log entries by time.

RegPerfect Services

Service:	MLI Calculation Engine (MLICalcEngine.exe)
Display Name:	.MLabs Calc Engine
Description:	RegPerfect service that performs real-time and historical calculations.
Service:	DCSvc (DCSvc.exe)
Display Name:	.MLabs DC Watchdog
Description:	RegPerfect service that starts, monitors, and restarts the Bailey driver.
Note:	Only for Bailey data collectors.
Service:	UDC Service Controller Service (TML.RegPerfect.UDC.UDCCoordinator.exe)
Display Name:	.MLabs UDC Watchdog
Description:	RegPerfect service that starts, monitors, and restarts other UDC services.
Service:	UDC Data Processor (TML.RegPerfect.UDC.UDCDataProcessor.exe)
Display Name:	.MLabs UDC Data Processor
Description:	RegPerfect service that collects measured data and stores them into the RegPerfectDb database.
Service:	UDC Log Service (TML.RegPerfect.UDC.UDCLogService.exe)
Display Name:	.MLabs UDC Log
Description:	RegPerfect service that writes progress and error messages to a log file.
Service:	Reports Administrator Service (TML.RegPerfect.ReportsAdministrator.exe)
Display Name:	.MLabs Reports Watchdog
Description:	RegPerfect service that monitors SQL Server Reporting Services and periodically queries the ReportServer.
Service:	Reclaim RTU File Watch (TML.RegPerfect.Reclaim.RTUFileWatchService.exe)
Display Name:	.MLabs RTU File Watch
Description:	RegPerfect service that watches for the creation of the transmit file.
Note:	Only for Reclaim sites.
Service:	Reclaim RTU Service Controller (TML.RegPerfect.Reclaim.RTUServiceController.exe)
Display Name:	.MLabs RTU Service Watchdog
Description:	RegPerfect service that starts, monitors, and restarts other Reclaim services.
Note:	Only for Reclaim sites.

Service: Reclaim RTU Transmit Service
(TML.RegPerfect.Reclaim.RTUTransmitService.exe)
Display Name: .MLabs RTU Transmit
Description: RegPerfect service that transmits the Reclaim file.
Note: Only for Reclaim sites.

UDC Service Controller Service

The UDC (Universal Data Collector) Service Coordinator is responsible for automatically starting the other RegPerfect services (Data Collectors and MLI Calc Engine) on boot up, and for restarting these services whenever they abnormally terminate or are manually halted. The Service Coordinator checks every three minutes to ensure that the other services are running – if not, an error message to that effect is written to the UDC log and then the service is started again.

UDC Data Processor and UDC Data Collector Applications

The Data Collector applications are responsible for collecting data from PLCs, Data Loggers, Bailey systems, and other controllers. The Data Collectors write “measured” data (measured means the data comes from the data collection device) into the RegPerfect Sample, Calibration, and RangeTest tables, and write messages to the processing Queue (Z_RawSample_ProcessorQueue table):

- Message Type 0: this message is inserted each time a data collector successfully obtains raw data from the external controller in real time. The message instructs Calc Engine to proceed with real time calculations for the timestamp of the collected data.
- Message Type 3: this message is inserted each time a data collector successfully obtains new calibration error tests from an external controller. The message instructs Calc Engine to invoke the Cal Evaluator COM object to evaluate and process the new calibrations.
- Message Type 4: this message is inserted upon completion of the recovery of a buffer of raw data from the external controller. The message instructs Calc Engine to recalculate all data dependent on the tags/timestamps of data collected from the buffer.

MLI Calculation Engine

The MLI Calc Engine application has three major responsibilities:

- The calculation of sample data
- The evaluation of alarms
- Invoking Cal Evaluator to assess calibration results and grace periods

Calc Engine runs the calculation scripts for all calculated tags – both in real time and for recalculations required after edits and controller buffer recovery. Calc Engine is both clock driven and message driven. It wakes up automatically at approximately 30 seconds past the top of each minute to check for messages in the Queue (Z_RawSample_ProcessorQueue table) – these messages may indicate one of the following:

- Type 0: Real-time data collection completed by one Data Collector for time t
- Type 1: Request to recalculate listed tags over indicated interval and all dependent tags
- Type 2: Request to recalculate all tags over indicated interval
- Type 3: Request to reassess calibrations

- Type 4: Request to recalculate tags that are dependent of listed tags over indicated interval
- Type 5: Request to reread tag calculations scripts and reinitialize Calc Engine
- Type 6: Request to recalculate only the listed tags over indicated interval

When Type 3 messages are received, and at the top of each clock hours, Calc Engine invokes the Cal Evaluator COM component to assess calibration results and evaluate calibration and boiler startup grace periods.

Trace Server (MLITraceServer.exe) and UDC Log Service

These Services log operation and possibly debug information provided by the other RegPerfect service applications – UDC Service Coordinator, Universal Data Collector(s) and MLI Calc Engine – to a text file (usually in the %:\RegPerfect\Log folder). The trace log contains information about what the services are doing and any errors they encounter.

SQL Server Agent (a component of Microsoft SQL Server)

SQL Server Agent is an application used to automatically run tasks on user-configurable time schedules. In RegPerfect, it may be used to automatically make database backups to the hard drive, archive backups, pre-fill/purge data in the RegPerfect database, generate system alerts, run scheduled reports and EDRs (to print, to file, or to email), and generate PI output files.

Data Collection and Calculation

This section explains in more detail how RegPerfect collects data from external controllers and calculates additional parameters.

Tags, Samples and Directed Graphs

In RegPerfect, we define the following terms:

Sample: a time-stamped value, status and optional method of determination code (MODC) measured by an analyzer or other instrument, or calculated by RegPerfect. A sample for 1-minute NOx ppm might look like this:

Time	TagID	Value	Status	MODC
1/1/99 00:00	1	77.6	Valid	1

RegPerfect stores samples for all parameters in the Sample table.

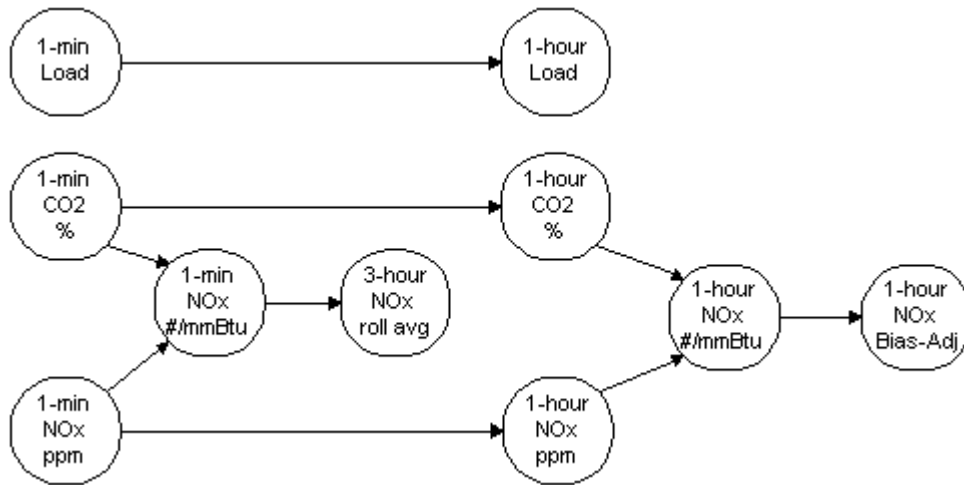
Tag: a parameter for which we collect/calculate and store samples. Some tags are measured, meaning that they are obtained from external controllers, and others are calculated, meaning that they are computed by RegPerfect using the samples of other tags and/or constants. For example, a 1-hour average NOx ppm tag is calculated from the samples of 1-minute NOx ppm and 1-minute UnitOperating tags.

Tags have names, IDs, data types (floating point or boolean), and many other properties which we store in the Tag table. One very important property of a tag is its sample interval: for a 1-minute tag, we store a new value every minute, while a 1-hour tag has a sample for each hour, and so on.

As discussed in RegPerfect Design Philosophy, RegPerfect does very little calculation during reports – tags are configured for every needed parameter and RegPerfect calculates values for those tags in real time. One of the problems that must be solved with this approach is for the system to be aware of which tags must be calculated before which other tags. For example, if at 4:00pm RegPerfect calculated hourly averages before calculating the 1-minute samples used in those averages, the system would not work. Similarly, 1-hour NOx ppm and CO2 must be calculated before NOx #/mmBtu.

To solve the problem of calculation precedence order, RegPerfect stores information about which tags depend on which other tags. This information is used by RegPerfect's Calc Engine to construct a directed, acyclic graph.

Example:

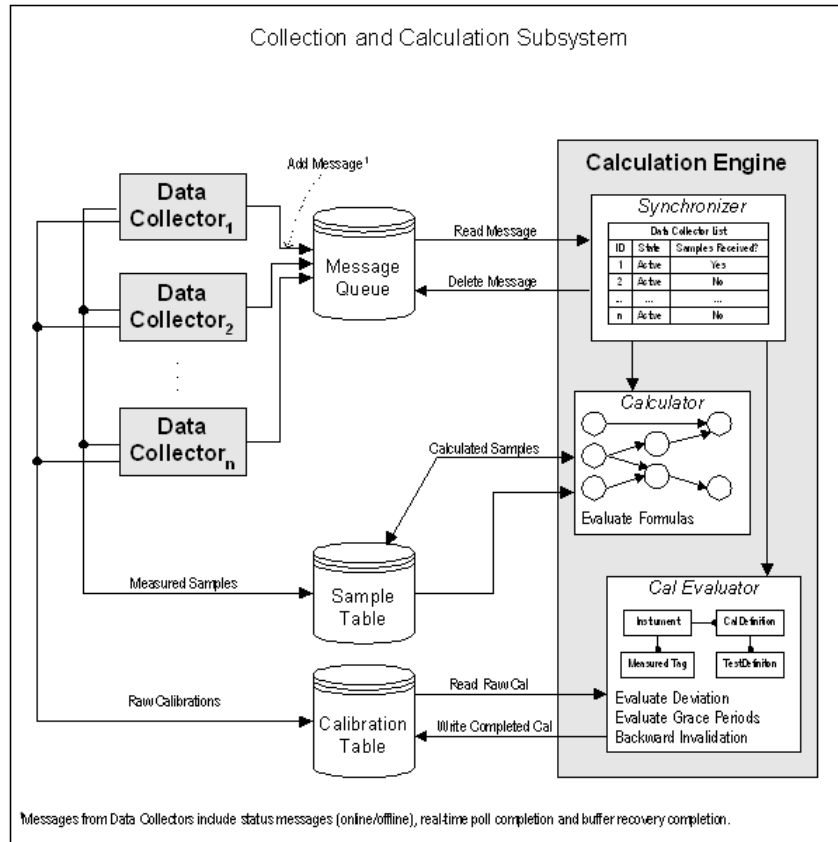


Each circle is a node in the graph corresponding to one RegPerfect tag. The links between nodes mean that a tag is used in the calculation of another tag (the node without the arrow is the tag that is used in the other tag's calculation). For example, 1-minute Load is used in the calculation of 1-hour Load.

RegPerfect's Calc Engine uses the directed graph to ensure that no tag is ever calculated before any of the tags it uses in its calculation.

Data Collection and Calculation in RegPerfect

The diagram below illustrates the key components of the RegPerfect collection and calculation subsystem. Each grey box represents an application, and the database symbols represent RegPerfect tables.



Data Collection

Each Data Collector acquires raw samples and calibrations from a single PLC, data logger, or other external controller. The Data Collector scales these raw samples into engineering units and inserts them into the sample table in the database. Since calibration evaluation and invalidation of data can be a lengthy process that might interfere with real-time data acquisition, the Data Collector simply writes the raw calibration data to the Calibration Database. Further processing of the calibrations takes place later in the Calc Engine.

After all samples and calibrations have been safely written to the database, the Data Collector sends a message to the Calculation Engine (via the Message Queue table) to indicate completion of a real-time poll. A message of Type 0 indicates the collection of new samples, while a message of Type 3 indicates the collection of one or more calibration error tests.

During buffer recovery, the process is similar except that the Data Collector informs the Calculation Engine of completion only after the entire buffer has been emptied and processed, and uses message Type 4.

Calc Engine

The Calc Engine has two main areas of responsibility – calculated tags and calibration processing. Calc Engine wakes up at 30 seconds past the top of each minute. It reads messages from the Message Queue and determines which calculations need to be performed based on these messages and the current clock time.

The precedence order and dependencies of calculated tags are represented inside the Calculator by a directed, acyclic graph. When a real-time polling cycle is completed for time *t*, the Calculator traverses the directed graph in precedence order and fires those calculations whose “time has come” (for example, if *t* is 12:06, all 1-minute and 6-minute calculations are fired, but not the 1-hour calculations). After the completion of a buffer recovery operation, the Calculator must traverse and fire calculations for that subset of the directed graph that is dependent on one or more of the measured tags that were recovered from the buffer.

After calculations have been performed, the Cal Evaluator is invoked to complete the processing of any raw calibrations that were collected during the real-time poll cycle or buffer recovery operation. The Cal Evaluator retrieves each new raw calibration from the database, computes deviation and rewrites the “completed” calibration back to the database. For Part 75 systems, the Cal Evaluator also detects grace period expiration. When a failed calibration or grace period expiration occurs, the Cal Evaluator reads measured samples, sets the OD (out-of-control) or QA (not quality assured) status flags, and rewrites the samples. When this occurs, the Cal Evaluator must also inform the Calculator that samples were modified so that dependent tags can be recalculated.

Message Queue

The Calculation Engine is responsible for computing and storing samples for all calculated tags and processing calibrations after receiving messages from the Data Collectors. These messages are inserted into the `Z_RawSample_Processor_Queue` table. The purpose of this table is two-fold. First, the messages are stored to prevent the Calculation Engine from being overrun when messages arrive faster than the calculations can be performed. Second, it greatly reduces the probability of messages being lost (and needed calculations being overlooked). If the Calc Engine is halted or crashes before processing all its messages, it reads them from the database when it is restarted. The Calc Engine only deletes messages from the table after completing all processing required by the message.



TELEDYNE MONITOR LABS

A Teledyne Technologies Company

RegPerfect® Dashboards

User Manual and Help Documentation

Updated: April 2023

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1.0 Dashboards

1.1 Overview

A dashboard is an application presenting the most significant information about a subject. The dashboard aggregates information and data from various sources and displays it in a centralized location. Essentially, a dashboard is a way to visually present critical data in summary form so that quick and effective decisions and actions can be made, in much the same way that a car dashboard works.

In the case of RegPerfect, the dashboard will provide relevant information regarding the RegPerfect system (e.g., values, alarms, reports, etc.). The relevant information contained on a RegPerfect dashboard is provided using a collection of widgets. The dashboard is, then, a container for many different types of widgets, which expose the significant system data.

1.2 General Dashboard Information

The Dashboards application is available for all users. That is, all RegPerfect user types (e.g., RP_ADMINS, RP_OPERATORS, etc.) can open/run and use the application without restriction.

All users can manage their own set of dashboards and all widgets on their dashboards (i.e., dashboards and all widgets contained therein are per-user entities and properties). A user can add dashboards, as well as edit (rename) and delete the dashboards they have created.


Additionally, a user can manage all the widgets on all dashboards they have created. Any widget, and multiple widgets (of the same kind or not), can be added to each dashboard. Each widget on a dashboard is configurable (each widget has its own specific configuration properties), as moveable and removable (deleted from a dashboard).

Once a dashboard has been created, with all widgets placed and configured, the entire configuration is saved to the RegPerfect database. As a user opens/runs the Dashboards application subsequent times, each configured dashboard is rebuilt and display based on how the user last saved the data.



Finally, the Dashboards application supports the concept of a "global" dashboard. A global dashboard allows all other users of the Dashboards application to view, but not change, the dashboard. Only the owner (or creator) of the global dashboard can change it.

1.2.1 Run Mode vs. Edit Mode


The Dashboards application has two modes of operation: Run Mode and Edit Mode.


When you start the application, it opens in Run Mode. The Run Mode indicator -  **Run Mode** - is shown in the 'on' position and green in the upper right corner of the screen.

While in Run Mode, updated data for some widgets (e.g., Alarms, Current Values, Multi-value, Matrix, etc.) will be pushed from the server to update any widgets configured on the active dashboard.

Clicking the Enable Edit Mode link -  - takes the currently active dashboard out of Run Mode and places it into Edit Mode. The Run Mode indicator -  Run Mode - is shown in the 'off' position and gray in the upper right corner of the screen.

Edit Mode is where you will configure the dashboard (dashboard structure, add/remove widgets, configuring widgets, etc.), add and position any widgets, and set the configuration properties for any/all widgets.

After configuring your dashboard and widgets, clicking the Save Changes link -  Save Changes - will save all the configuration properties to the RegPerfect database and return the dashboard to Run Mode (with a green, on Run Mode indicator).

Clicking the Undo Changes link -  Undo Changes - will discard all your changes to the configuration of the dashboard and return the dashboard to Run Mode (with a green, on Run Mode indicator).

1.3 General Widget Information

All widgets have borders, headers, and a details section. Headers contain:

- Base name/title (e.g., Alarms :)
- Configurable name/title property that is concatenated with the base name/title of the widget
- Controls
 - Configure, refresh, minimize, delete



Note: Not all widgets have all the header items listed above. For example, the Current Values widget does not have a base name/title, nor a configurable name/title property. Similarly, only widgets that are receiving "real-time" data from the server have a refresh button in the header.

When minimizing a widget, the details section is collapsed, while the header is still displayed.

Some widgets will have and display multiple statuses, represented by the border and header color. The widget frame (i.e., the border and header) of the entire widget will change color to indicate the status:

- Widget color (all good/normal - for normal status, the widget frame is the default color for all widgets)
- Yellow (warning/non-fatal fault)
- Red (error/fatal fault)
- Black (offline)



Note: Not all widgets have statuses associated with the data being displayed inside the widget. For these widgets, the widget frame does not change color; it stays the default widget color.

Widgets are sized vertically depending on the content of the widget. The horizontal sizing of each widget is based on the column width containing the widget(s). The widgets will fill all available horizontal width.

Finally, some widgets (e.g., Alarms, Current Values, etc.) have details screens to provide additional data and information regarding the item that was clicked. For example, clicking an alarm will open the details form to display additional data about the alarm.

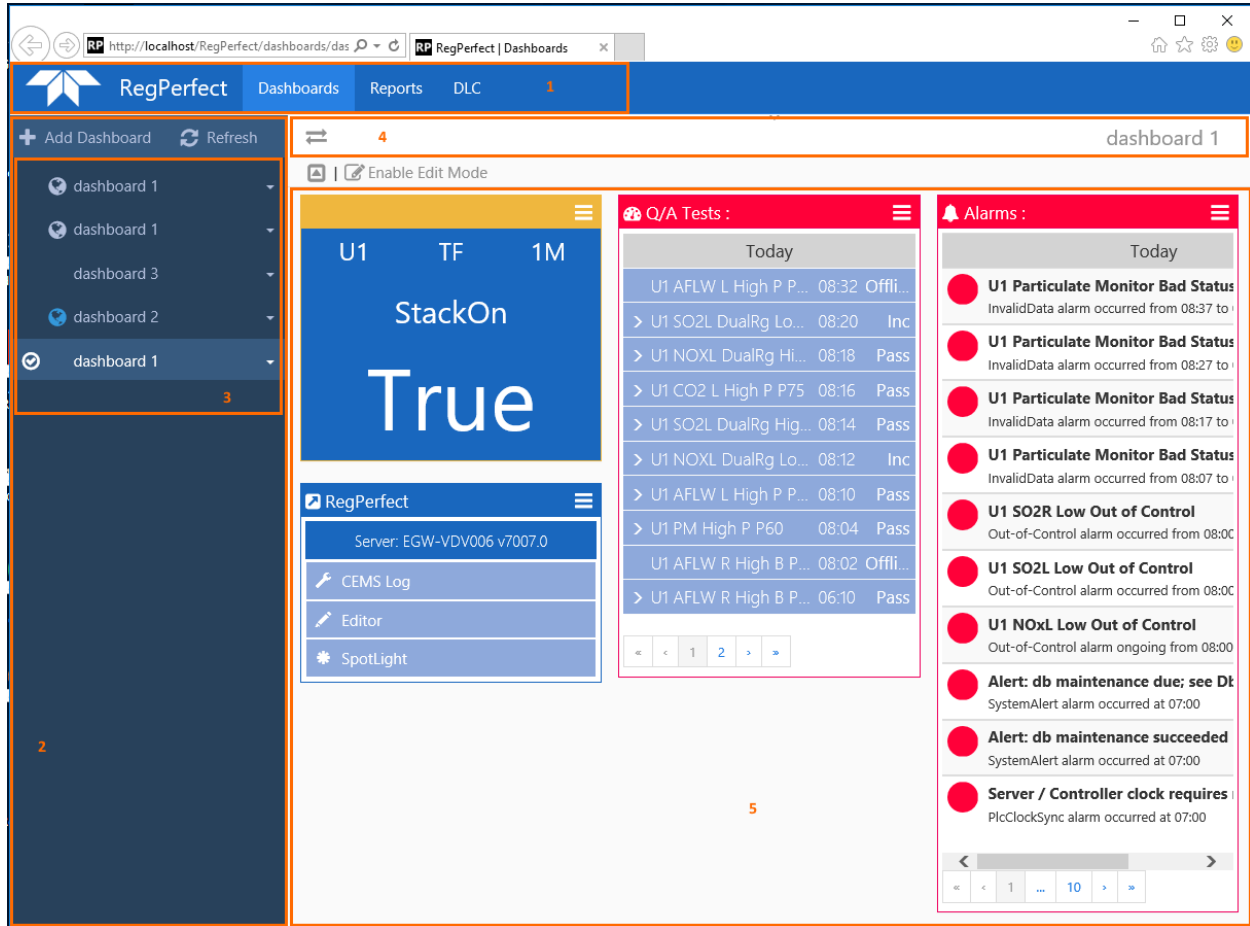
1.3.1 Available Widgets

Alarms	Use this widget to monitor alarm data, as well as acknowledge alarms and set reasons/actions.
Compliance	Use this widget to monitor compliance and related parameters with visual alarms.
Control	Use this widget to interact with and/or directly control devices. For example, start and abort calibrations.
Current Values	Use this widget to monitor the value, status, and limits for a single tag.
Links	Use this widget to save a list of links to favorite or important websites and/or documents.
Matrix	Use this widget to build a matrix of text boxes, tag values and constant values.
Multi-value	Use this widget to monitor the value, status, and limits for up to 32 tags.
Q/A Tests	Use this widget to monitor most recent daily calcs plus interference and integrity checks.
RegPerfect Health	Use this widget to monitor various RegPerfect health parameters (data calculation and collection and job status).
Reminders	Use this widget to get alerts of QA tests that need to be performed.
Reports	Use this widget to save a list of favorite reports. The reports can then be generated directly from the widget.
Shortcuts	This widget provides the server name and RegPerfect version, as well as a configurable list of shortcuts to open legacy applications.
Status	Use this widget to monitor the status/value of up to 10 boolean tags.
Trend	Use this widget to monitor the data changing trend of up to 6 tags.



Note: Each widget is described in greater detail later in this document.

1.4 Sections of the Dashboards Application



1 – Navbar – The navbar contains links for all available browser-based applications within the RegPerfect application suite.

2 – Sidebar – The sidebar is a collapsible panel that contains the list of available dashboards, as well as the controls to refresh the entire dashboard and add a new dashboard.

3 – List of Available Dashboards – The list of available dashboards shows both global and not global dashboards.

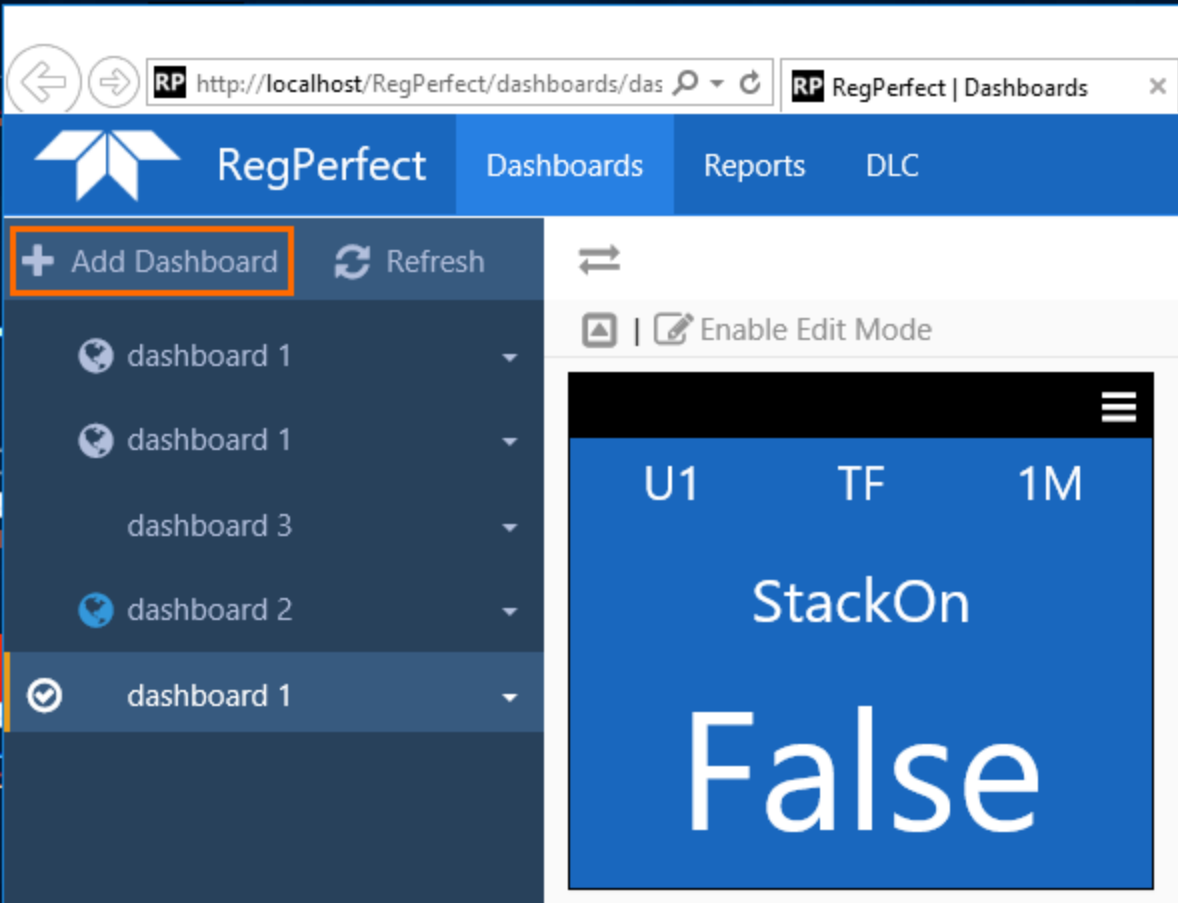
4 – Titlebar for the dashboard

5 – Widget Content Area

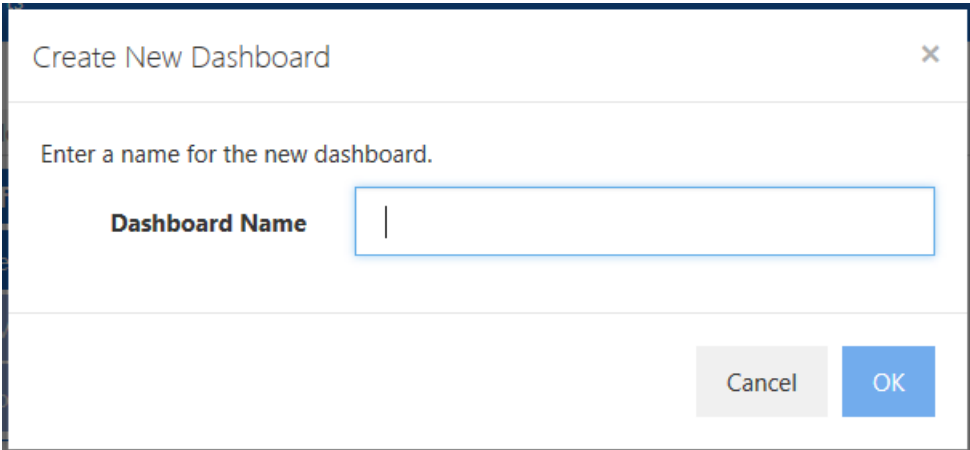
1.5 Dashboard Operations

1.5.1 Adding a Dashboard

To add a dashboard, click the + Add Dashboard button located at the top of the sidebar.



Clicking the + button will open the Create New Dashboard dialog. Enter a name for the dashboard and click the [OK] button.



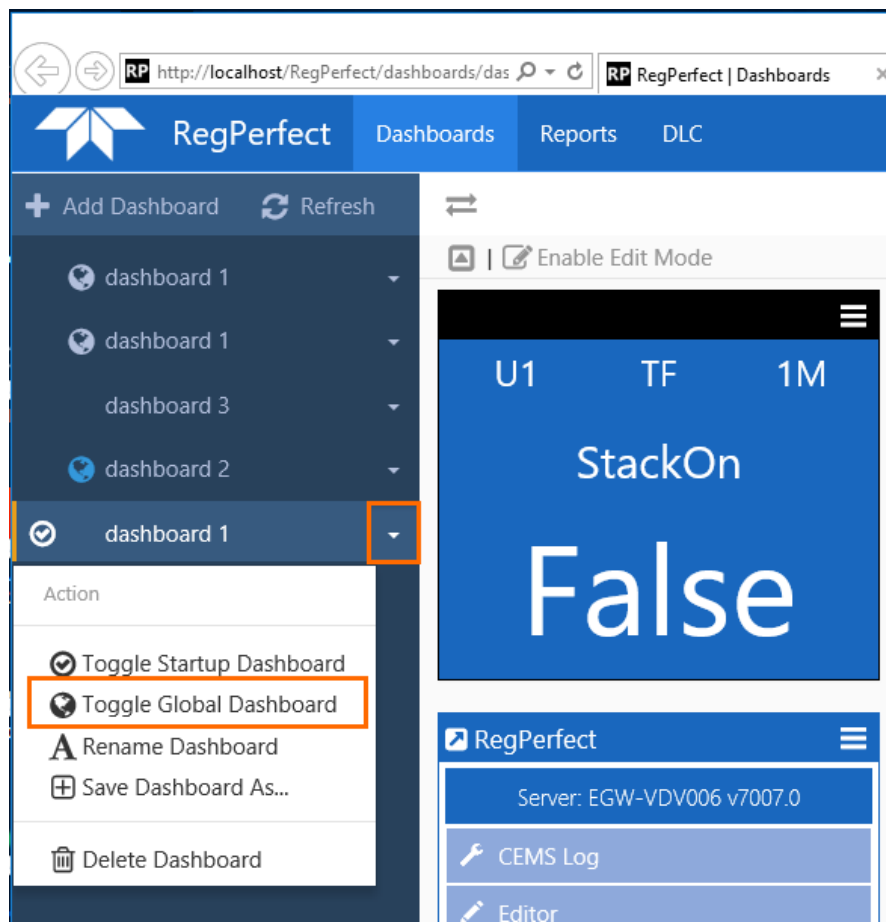
After clicking the [OK] button, the new dashboard will be created and another dashboard row will be added to the list of Available Dashboards in the sidebar.

1.5.2 Toggle a Dashboard between Global and Not Global

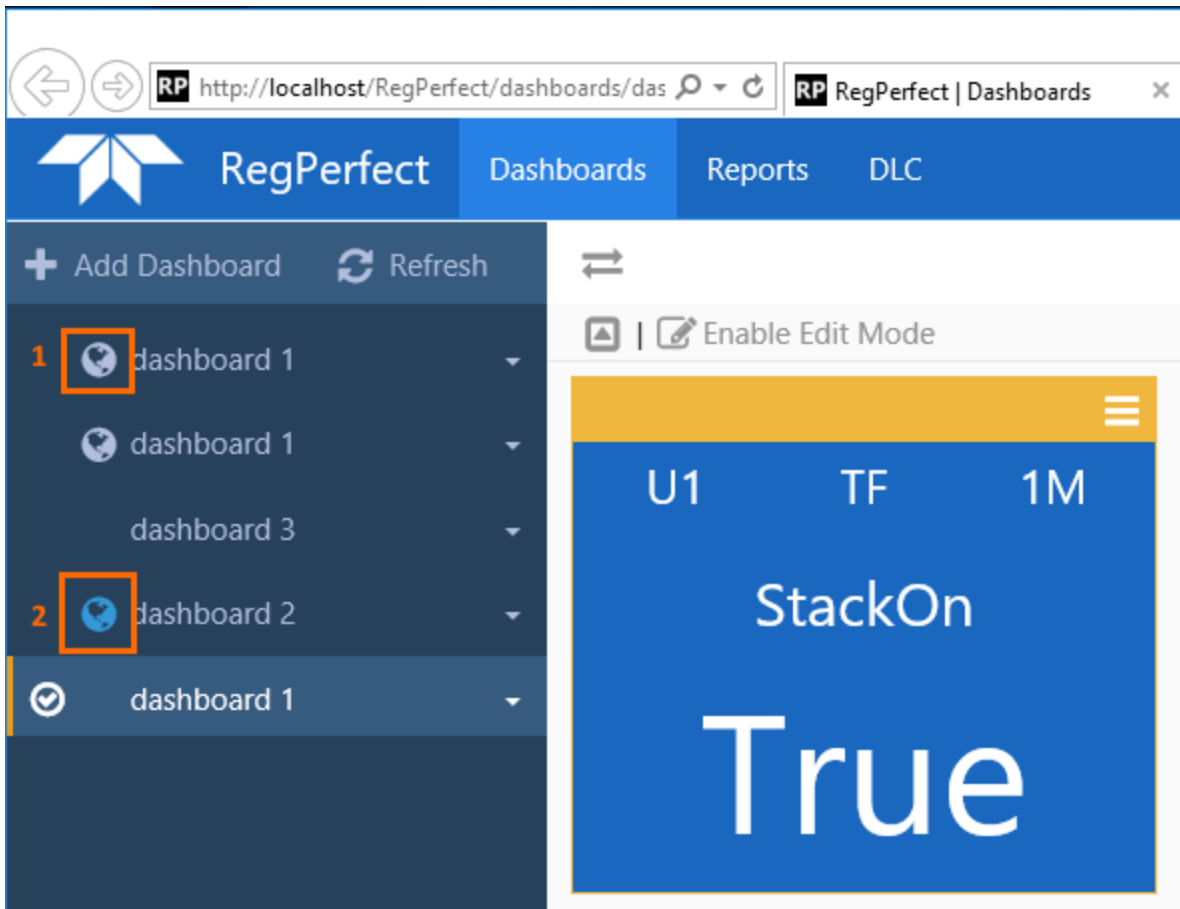
When a dashboard is created, only the user who created the dashboard can view it and the widgets and data on the dashboard. If you want to allow other users to view your dashboard in a read-only mode, you can change your dashboard to be a global dashboard.

- Global dashboard
 - Can be viewed and edited by the dashboard creator.
 - Can only be viewed by all other users (no other user can edit a global dashboard created by someone else).
- Not Global dashboard
 - Can be viewed and edited by the dashboard creator.
 - No other user can view (or edit) another users' not global dashboard.

By default, a dashboard is not global. To change the dashboard between a global dashboard and a not global dashboard, click the down arrow on the dashboard to be changed in the list of Available Dashboards to display the menu with additional options. On this menu, click the Toggle Global Dashboard menu item to toggle the state of the dashboard between global and not global.



A global dashboard will display a globe icon next to the dashboard name.

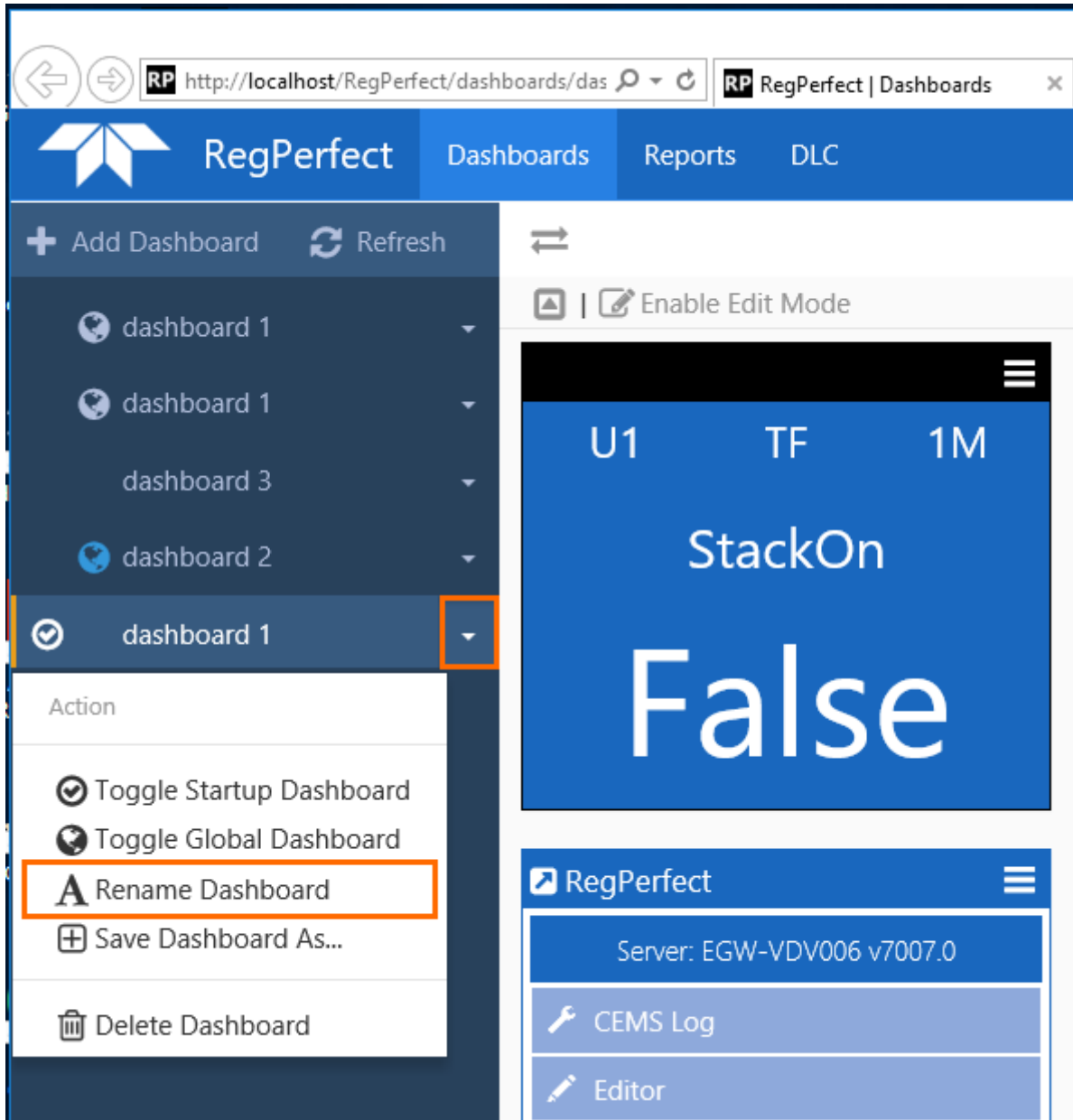


1 – (white globe icon) Global dashboard created by another user.

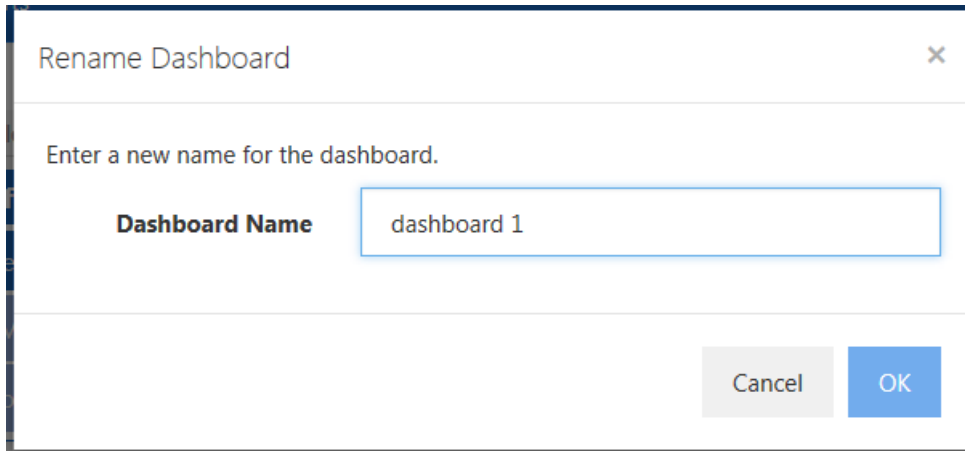
2 – (blue globe icon) Global dashboard created by the current user running the Dashboards application.

1.5.3 Renaming a Dashboard

To rename a dashboard, click the down arrow on the dashboard to be changed in the list of Available Dashboards to display the menu with additional options. On this menu, click the Rename Dashboard menu item.



Clicking the Rename Dashboard menu item will open the Rename Dashboard dialog. Enter a new name for the dashboard and click the [OK] button.



Rename Dashboard ×

Enter a new name for the dashboard.

Dashboard Name

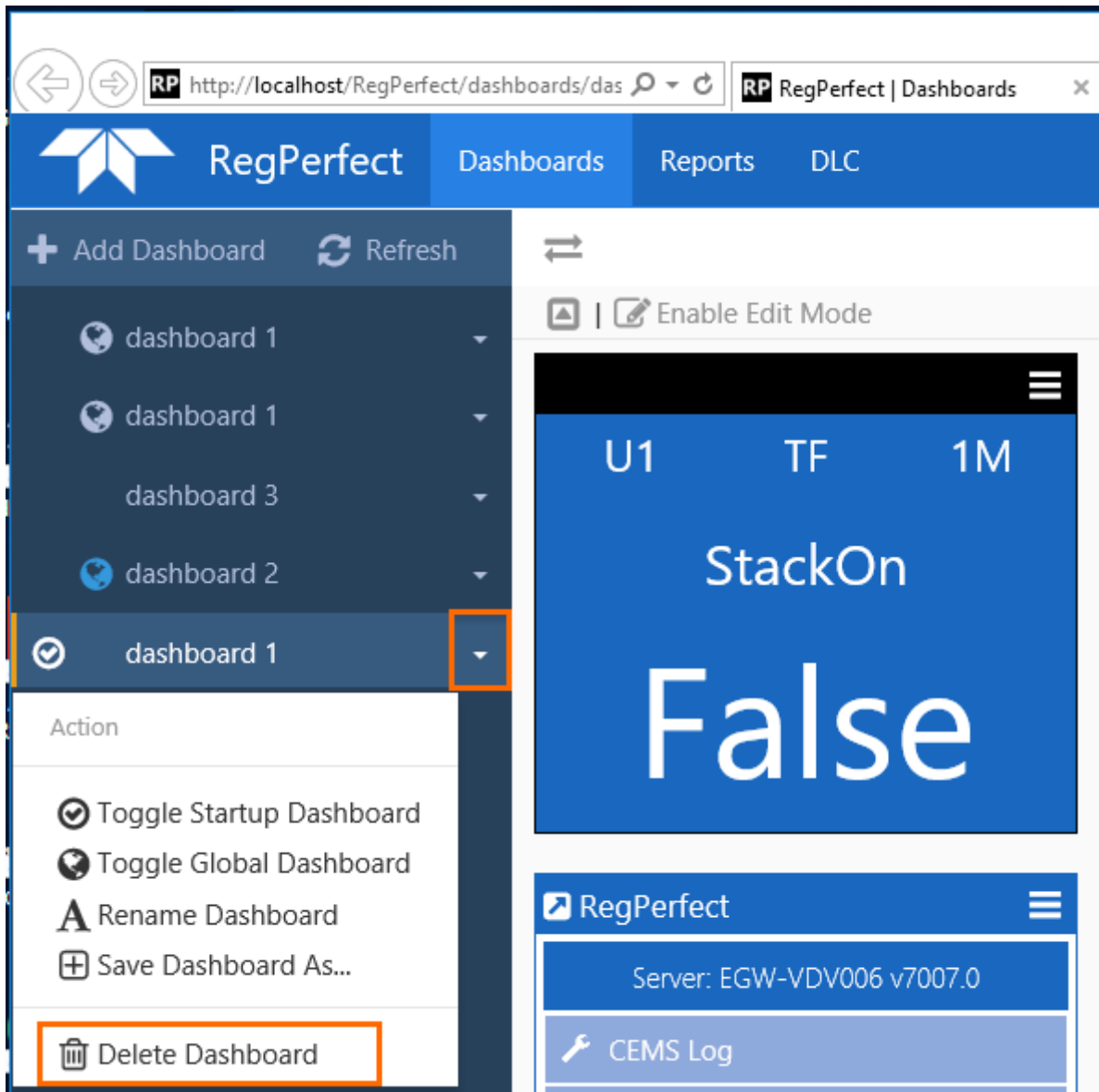
Cancel OK

The image shows a dialog box titled "Rename Dashboard" with a close button (X) in the top right corner. Below the title bar, there is a text prompt: "Enter a new name for the dashboard." Underneath this prompt, there is a label "Dashboard Name" followed by a text input field containing the text "dashboard 1". At the bottom right of the dialog, there are two buttons: a grey "Cancel" button and a blue "OK" button.

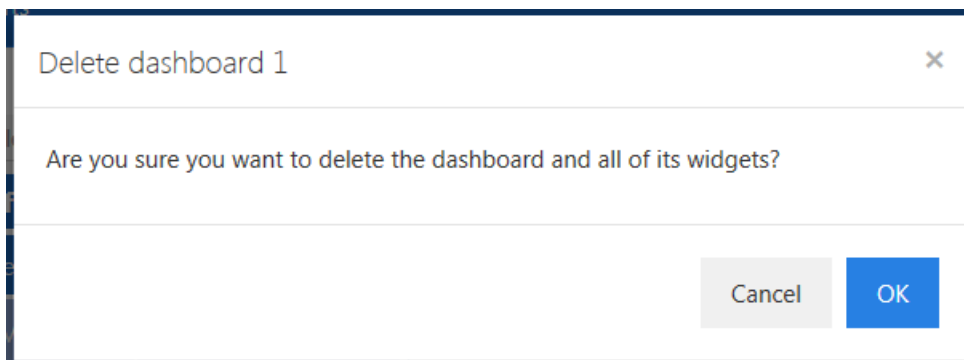
After clicking the [OK] button, the existing dashboard will be renamed and the dashboard row will be updated in the list of Available Dashboards in the sidebar.

1.5.4 Deleting a Dashboard

To delete a dashboard, click the down arrow on the dashboard to be deleted in the list of Available Dashboards to display the menu with additional options. On this menu, click the Delete Dashboard menu item.



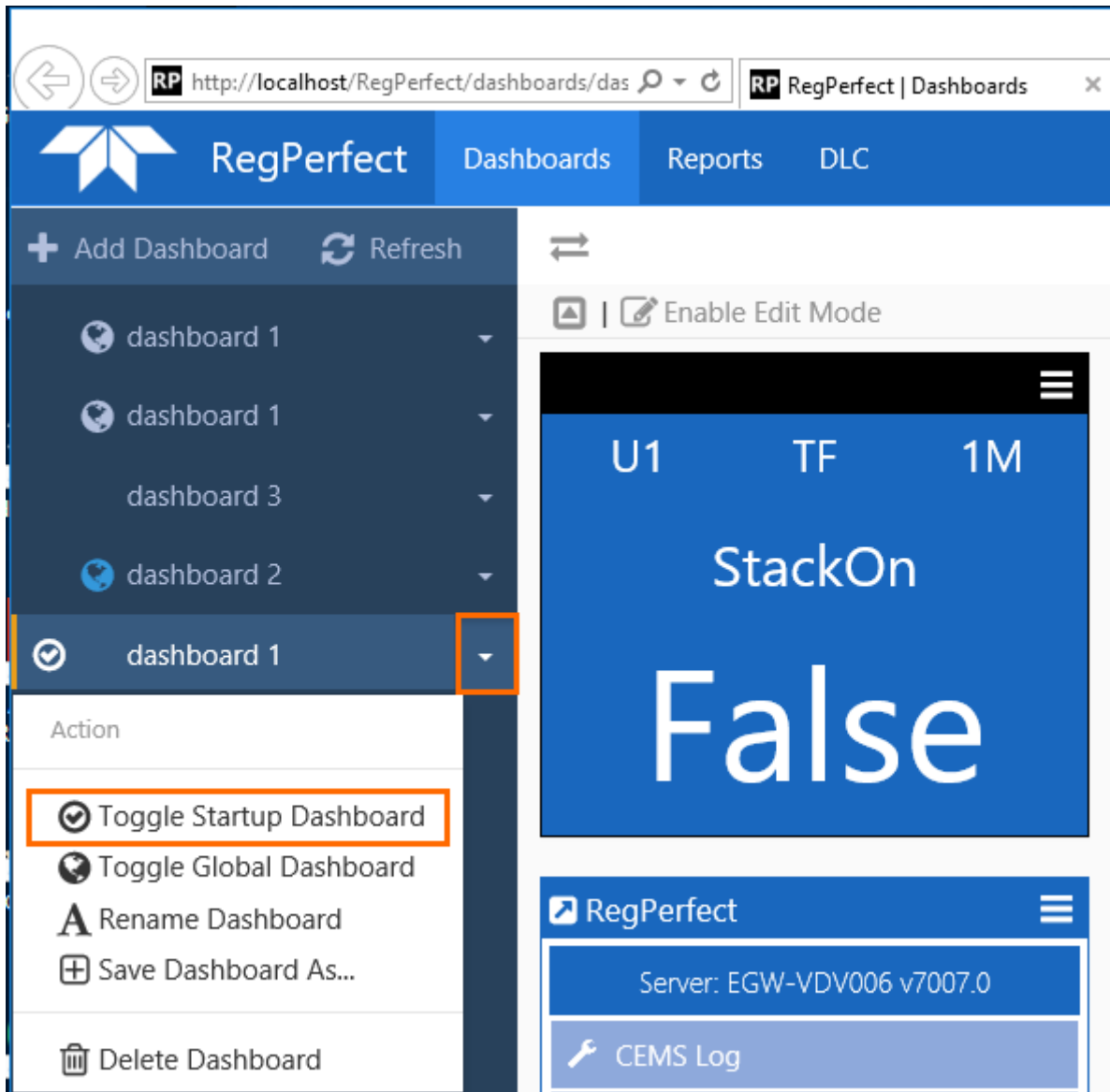
Clicking the Delete Dashboard menu item will open the delete confirmation dialog. Click the [OK] button to continue with the deletion. Click [Cancel] to not delete the dashboard.



1.5.5 Toggle Startup Dashboard

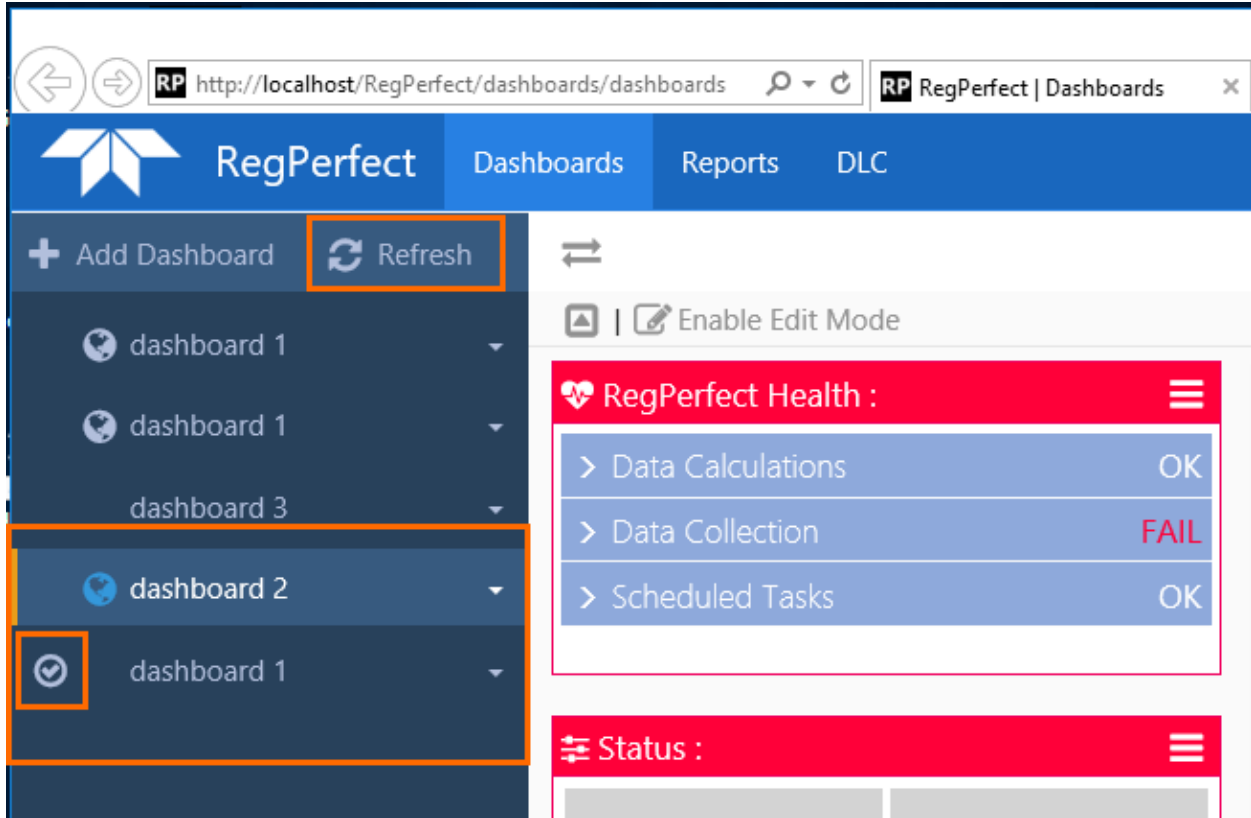
The startup dashboard is the dashboard that will be loaded when you first open the Dashboards application, or if you do a full refresh of the browser.

To change the startup dashboard, click the down arrow on the dashboard to be changed in the list of Available Dashboards to display the menu with additional options. On this menu, click the Toggle Startup Dashboard menu item to toggle the setting.



A dashboard can be Active but not the Startup dashboard. The Active dashboard is the dashboard currently be displayed in the details pane. As shown in the screenshot below, dashboard 2 is the Active dashboard (since it is highlighted), but dashboard 1 is the Startup dashboard (since the checkmark icon is next to the name).

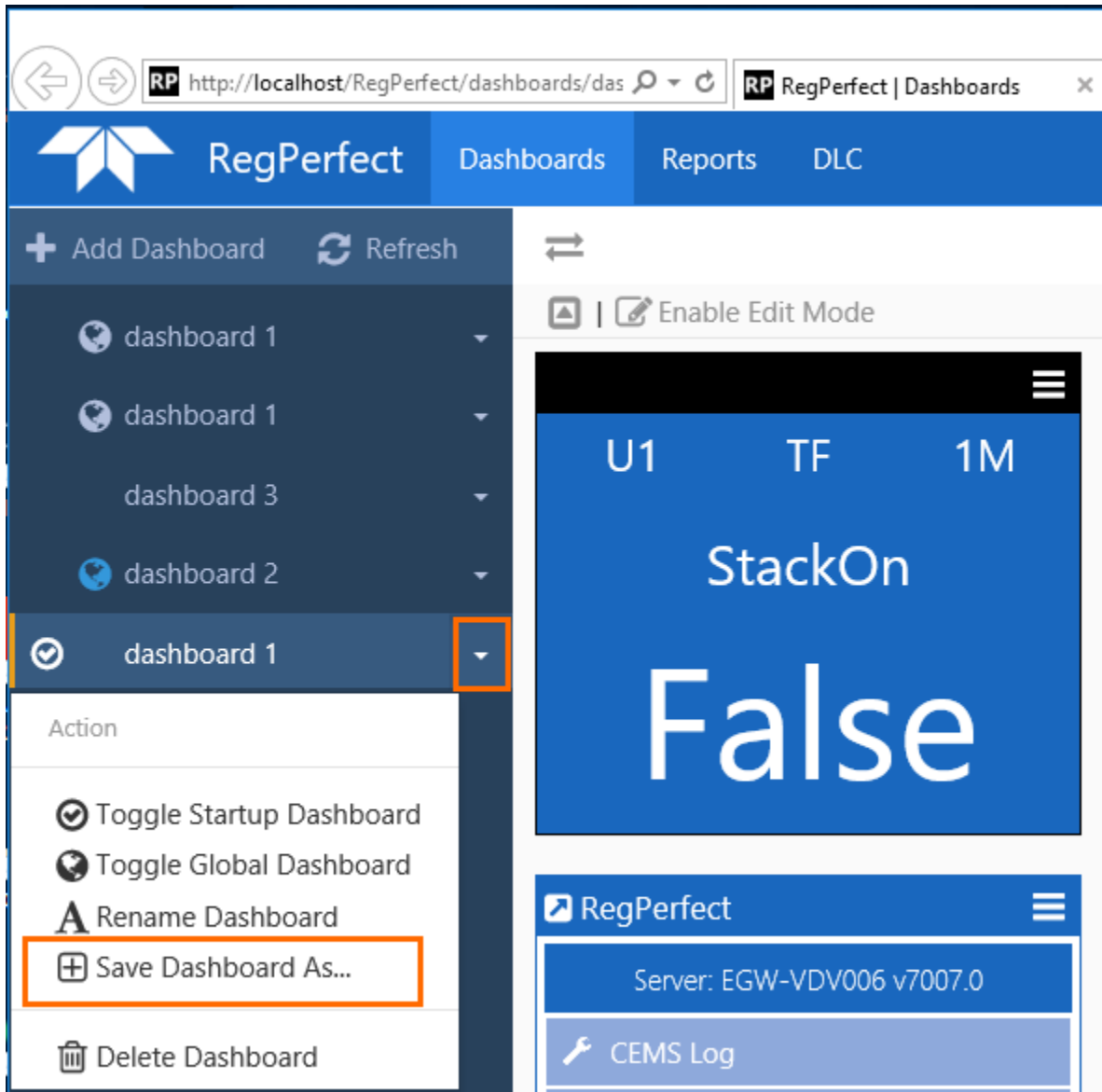
As explained above, if you click the browser refresh button, the Dashboards application will reload the Startup dashboard. However, if you click the Refresh button, the Active dashboard will update.



1.5.6 Save Dashboard As... (Saving a Dashboard with a Different Name)

For dashboards that you have created, you can copy and rename them in one-step. That is, save the dashboard as another, differently named dashboard. You might want to do this to give you a starting point for a new dashboard, instead of starting with a new, empty dashboard.

To save a dashboard as a new dashboard (which again copies the configuration – widgets and widget configuration), click the dropdown arrow for the dashboard you want to copy, and then click the Save Dashboard As... option.



After clicking the Save Dashboard As... option, you will be prompted to provide a name for the new dashboard.

Save Dashboard As... ×

Enter a new name for the dashboard.

Dashboard Name

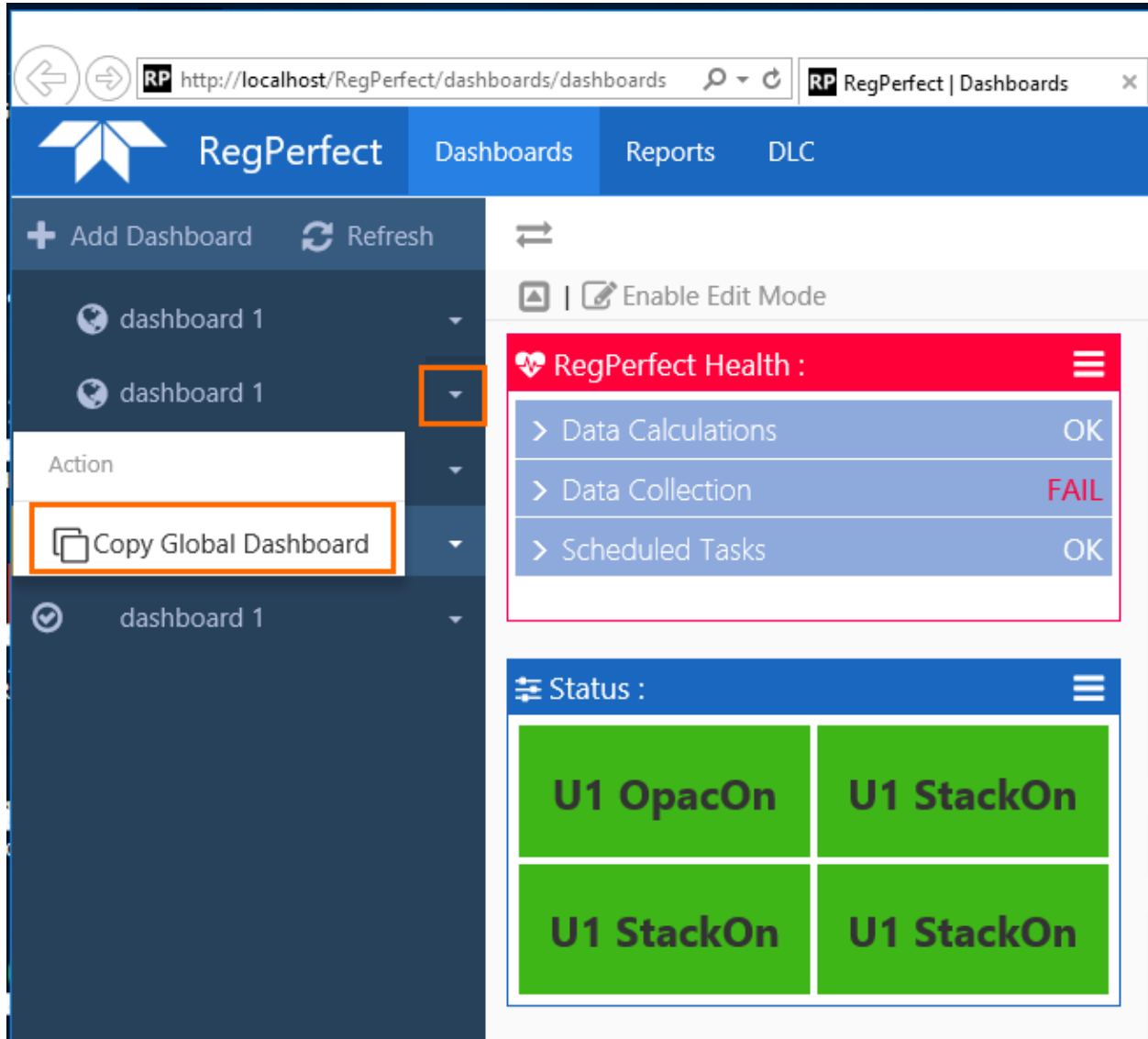
Cancel OK

Entering a name and clicking the OK button saves the copied dashboard.

1.5.7 Copy Another Users' Global Dashboard

For dashboards that you have NOT created, that another user has created and configured to be a global dashboard, you can copy the dashboard. The copied dashboard belongs to you to update as you see fit. You might want to do this to give you a starting point for a new dashboard, instead of starting with a new, empty dashboard.

To copy a dashboard as a new dashboard (which again copies the configuration – widgets and widget configuration), click the dropdown arrow for the global dashboard you want to copy, and then click the Copy Global Dashboard option.



After clicking the Copy Global Dashboard option, you will be prompted to provide a name for the new dashboard.

Copy Global Dashboard ×

Enter a new name for the dashboard.

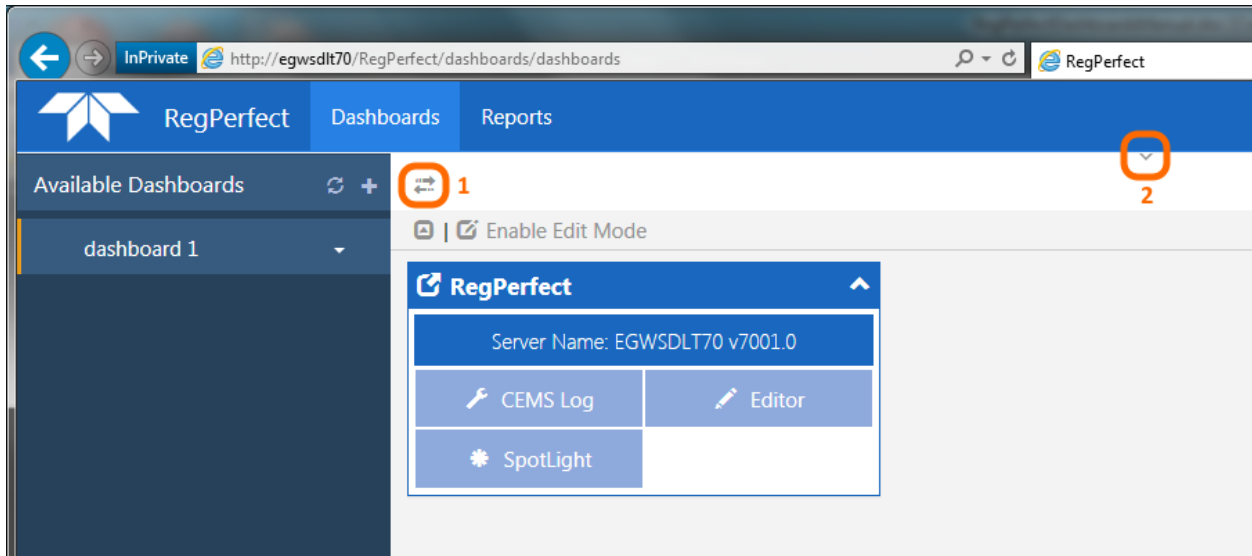
Dashboard Name

Cancel OK

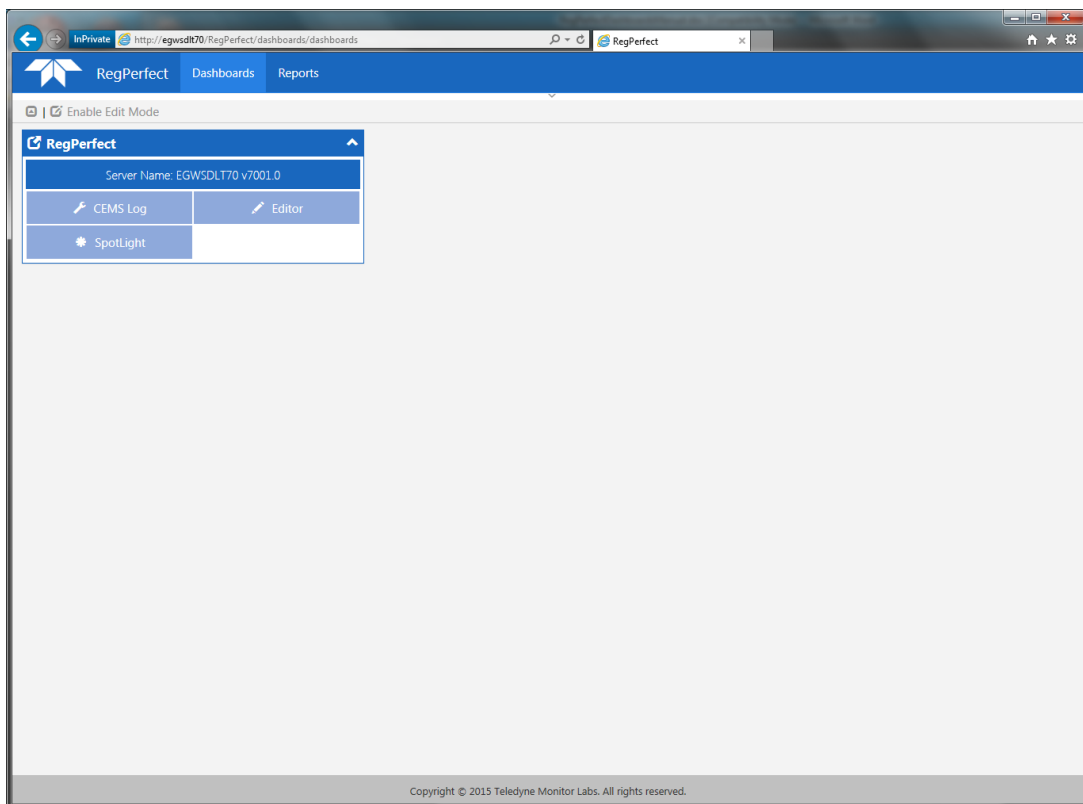
Entering a name and clicking the OK button saves the copied dashboard.

1.5.8 Maximizing the Widget Content Area

Two options exist to maximize the widget content area – by hiding other parts of the display.



Clicking the open/close sidebar link – 1 – will collapse the sidebar. Click the open/close titlebar link – 2 – will collapse the titlebar. Hiding portions of the dashboard display will maximize the available area for widget content.




Clicking those same buttons again, redisplay the sidebar and titlebar, as expected.





1.5.9 Editing a Dashboard Configuration

There are several options available for configuring a dashboard. These options include:

- Adding widgets to a dashboard.
- Removing widgets from a dashboard.
- Positioning widgets on a dashboard.
- Changing the dashboard structure.
- Configuring properties of individual widgets.
- Collapsing and expanding individual widgets and collapsing and expanding all widgets

To configure a dashboard, you need to put it into Edit Mode. Clicking the Enable Edit Mode link -

 [Enable Edit Mode](#) - takes the currently active dashboard out of Run Mode and places it into Edit Mode. After clicking the Enable Edit Mode link, a set of links appears for managing your dashboard configuration. These new links are:

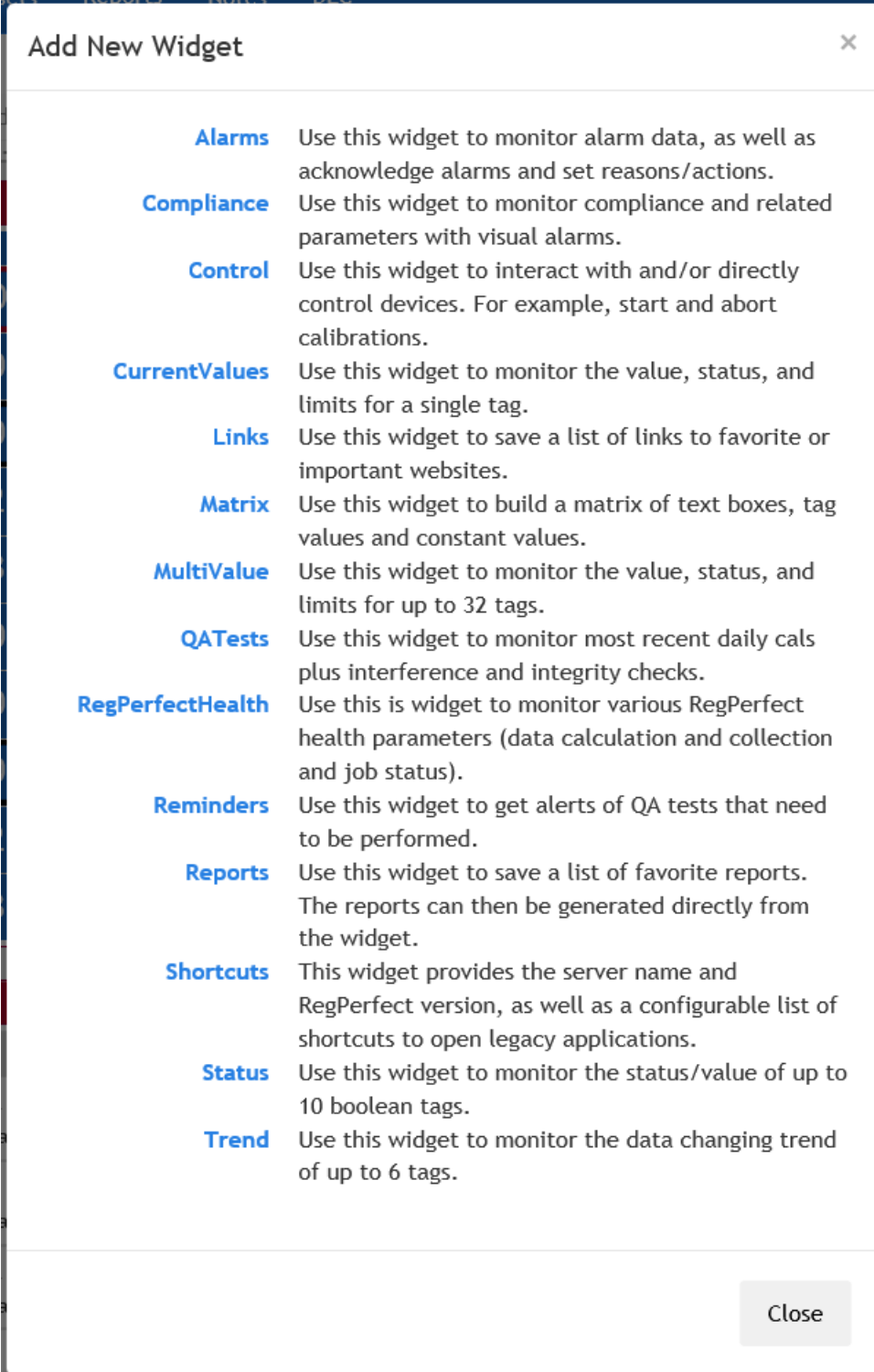
|  [Add Widget](#) |  [Edit Dashboard Structure](#) |  [Save Changes](#) |  [Undo Changes](#)

As can be inferred from the link names,

- The Add Widget link allows you to add widgets to the dashboard.
- The Edit Dashboard Structure link provides you with the facility to change the structure of the dashboard, including area in which to add widgets.
- The Save Changes link saves all your dashboard configurations to the database.
- The Undo Changes link discards all your changes to the dashboard and reverts the dashboard configuration back to the last saved state.

1.5.9.1 Adding a Widget to a Dashboard

To add a widget to a dashboard, while in Edit Mode, click the Add Widget link. Clicking the Add Widget link will open the Add New Widget dialog.



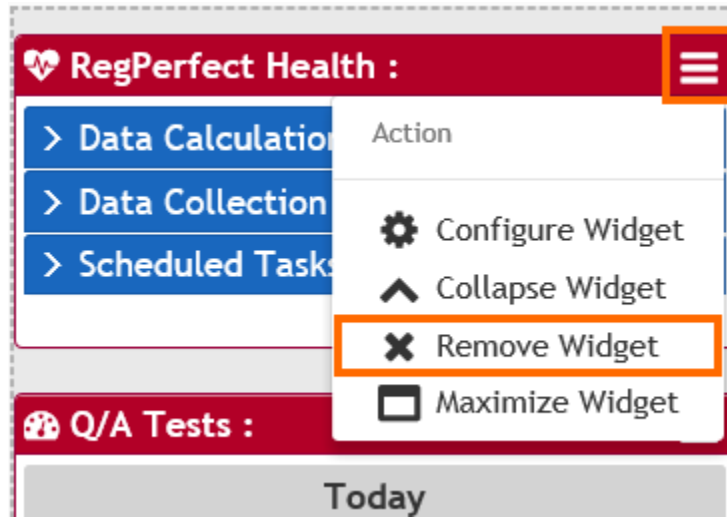
The screenshot shows a dialog box titled "Add New Widget" with a close button (X) in the top right corner. The dialog contains a list of widget types, each with a brief description of its function. The widget types are listed in blue text, and their descriptions are in black text. At the bottom right of the dialog, there is a "Close" button.

Widget Type	Description
Alarms	Use this widget to monitor alarm data, as well as acknowledge alarms and set reasons/actions.
Compliance	Use this widget to monitor compliance and related parameters with visual alarms.
Control	Use this widget to interact with and/or directly control devices. For example, start and abort calibrations.
CurrentValues	Use this widget to monitor the value, status, and limits for a single tag.
Links	Use this widget to save a list of links to favorite or important websites.
Matrix	Use this widget to build a matrix of text boxes, tag values and constant values.
MultiValue	Use this widget to monitor the value, status, and limits for up to 32 tags.
QATests	Use this widget to monitor most recent daily calcs plus interference and integrity checks.
RegPerfectHealth	Use this is widget to monitor various RegPerfect health parameters (data calculation and collection and job status).
Reminders	Use this widget to get alerts of QA tests that need to be performed.
Reports	Use this widget to save a list of favorite reports. The reports can then be generated directly from the widget.
Shortcuts	This widget provides the server name and RegPerfect version, as well as a configurable list of shortcuts to open legacy applications.
Status	Use this widget to monitor the status/value of up to 10 boolean tags.
Trend	Use this widget to monitor the data changing trend of up to 6 tags.

Click the link of the type of widget you want to add to the dashboard. The widget will be added to the dashboard and the dialog closed automatically. The widget will be placed on the dashboard in the first row, first column, and first position in that column.

1.5.9.2 Removing a Widget from a Dashboard

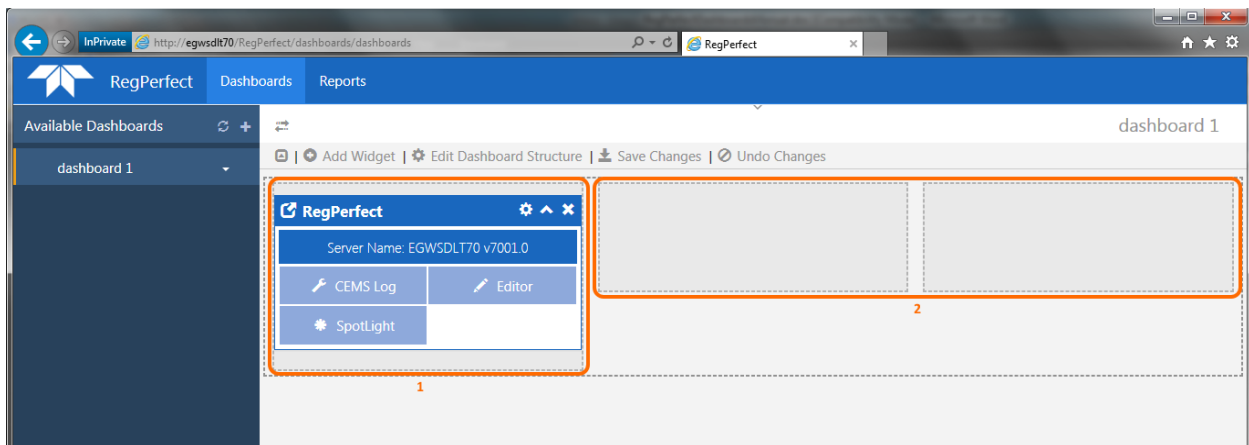
After you have added widgets to a dashboard, to remove any widgets, put the dashboard into Edit Mode. Once in Edit Mode, click the widget menu icon in the upper right corner of the widget and select the "Remove Widget" option from the dropdown menu.



Clicking the remove widget link will delete the widget from the dashboard.

1.5.9.3 Positioning Widgets on a Dashboard

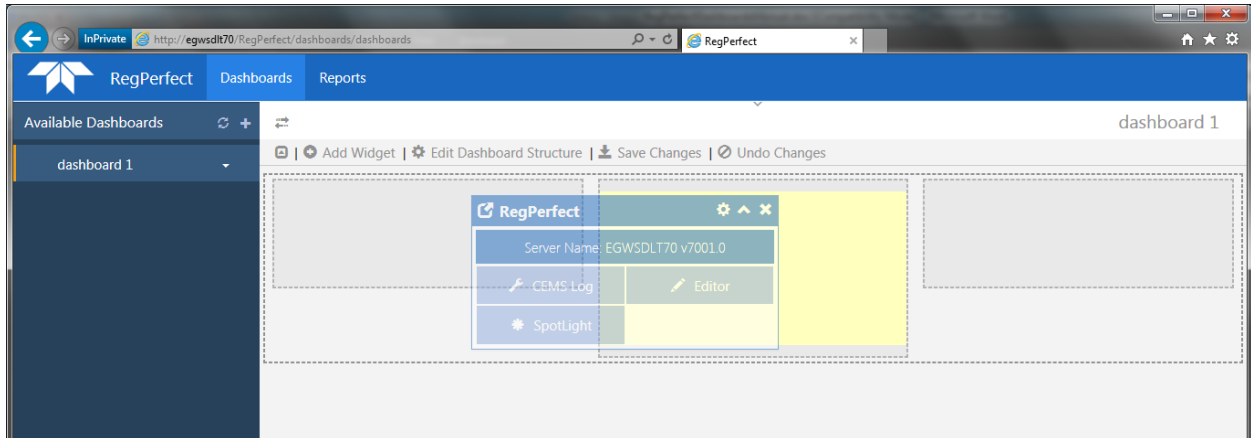
While in Edit Mode, widgets can be moved and positioned within the dashboard. After entering Edit Mode, the rows and columns of the dashboard structure will appear; highlighted by dashed lines. The available columns in which to place widgets will be shaded slightly darker.



In the screenshot above,

- 1 – Shows a column with one widget already in the column.
- 2 – Shows two empty columns. These two empty columns are available to have widgets placed into them.

To move a widget, using the header bar of the widget, drag and drop the widget into another position. A yellow area will appear to show you the available position where you can drop the widget.

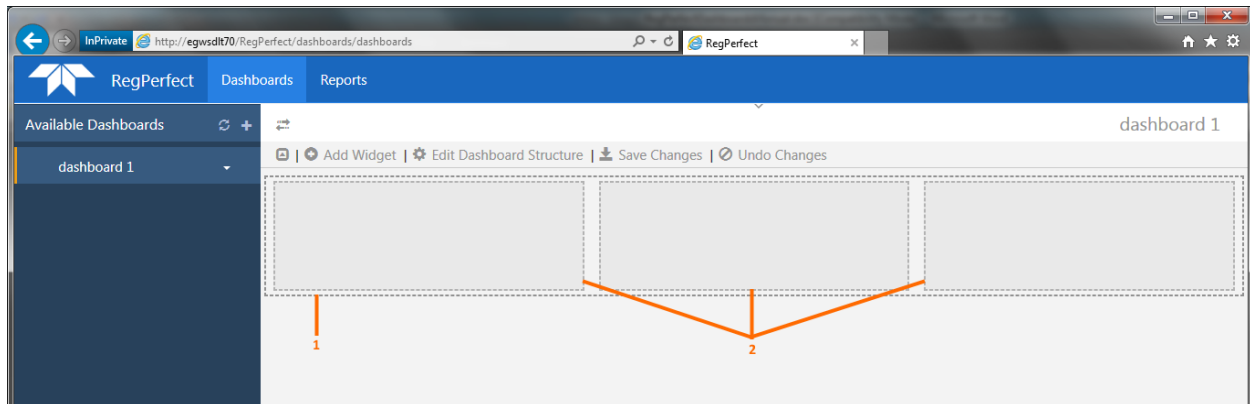


Note: You can place more than one widget in a column. Simply move any widgets above or below any other widgets already in the column.

1.5.9.4 Changing the Dashboard Structure

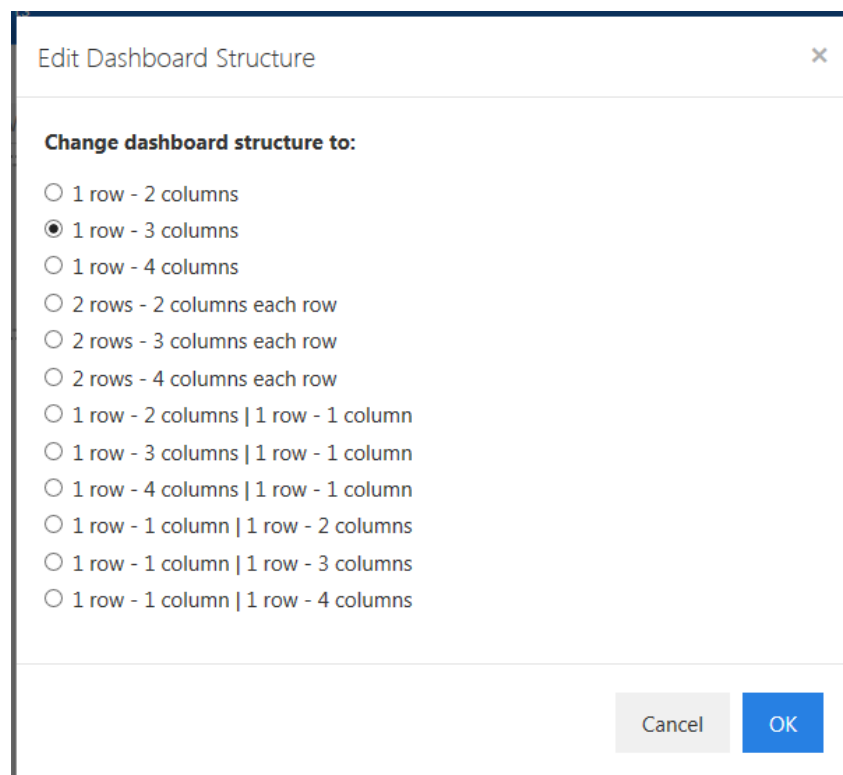
As alluded to in the discussion on positioning widgets, a dashboard has a structure with rows and columns. And, those rows and columns provide the areas in which to place widgets.

Putting the dashboard into Edit Mode enables the rows and columns, as well as allows for changing of the dashboard structure. By default, a dashboard has a structure of one row with three columns.



- 1 – A row as indicated by the dashed line around all the columns.
- 2 – The columns (in this case, three columns) contained within the row, also surrounded by dashed lines.

To change the dashboard structure, click the Edit Dashboard Structure link. Clicking this link will open the Edit Dashboard Structure dialog.



The current dashboard structure is indicated by the selected option (in the image above, it is "1 row – 3 columns"). The dialog provides a number of pre-defined options for various dashboard structures. To change the dashboard structure, simply select the option desired and click the [OK] button.

After clicking the [OK] button on the Edit Dashboard Structure dialog, and assuming you changed the structure, the Dashboards application will change the number of rows and columns for the dashboard and attempt to reorganize any widgets on the dashboard into the most logical location, based on the updated structure.



Note: You may have to move and rearrange widgets after changing the dashboard structure.

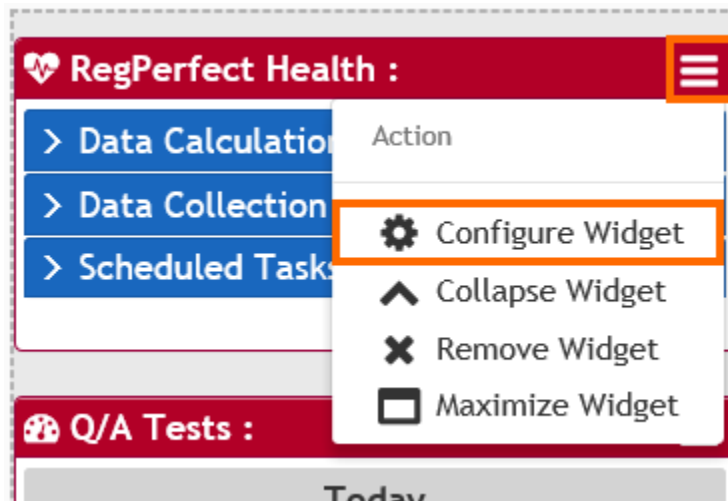
1.5.9.5 Configuring the Properties of Individual Widgets

Once in Edit Mode, and after adding one or more widgets to a dashboard, each widget can be configured. Each type of widget has its own configuration properties.



Note: All widgets and their individual configuration properties are discussed later in this document.

To configure a widget's properties, click the widget menu icon in the upper right corner of the widget and select "Configure Widget" from the dropdown menu.



Clicking this link will open the configuration form for the widget.

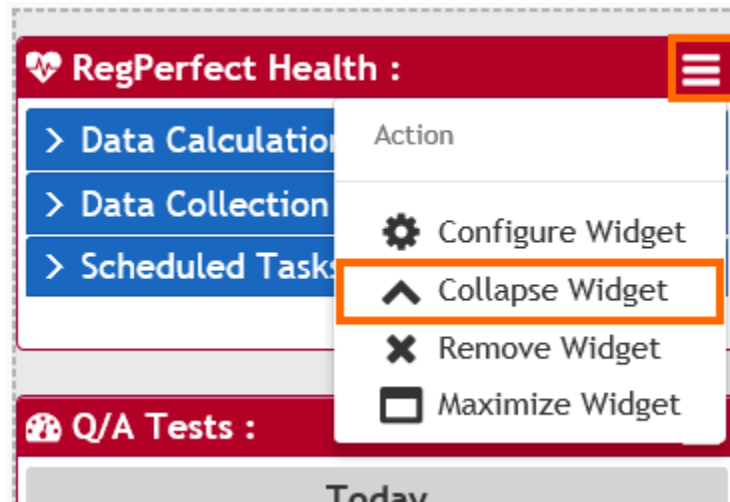
1.5.9.6 Collapsing and Expanding Individual Widgets and All Widgets

Every widget can be collapsed to save vertical space on the dashboard, and then be expanded again to view the details of the widget in the widget content area.

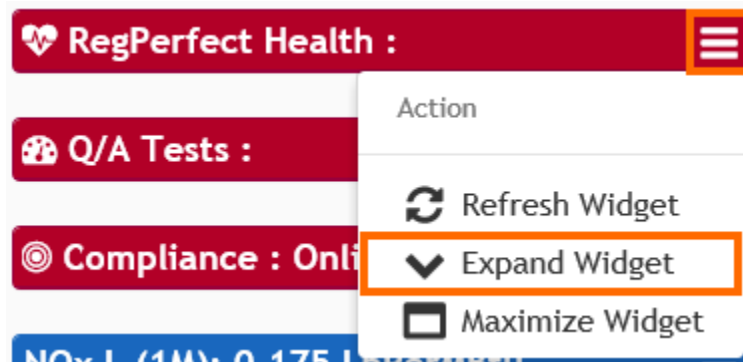


Note: Individual widgets and/or all widgets can be collapsed and expanded in both Run Mode and Edit Mode.

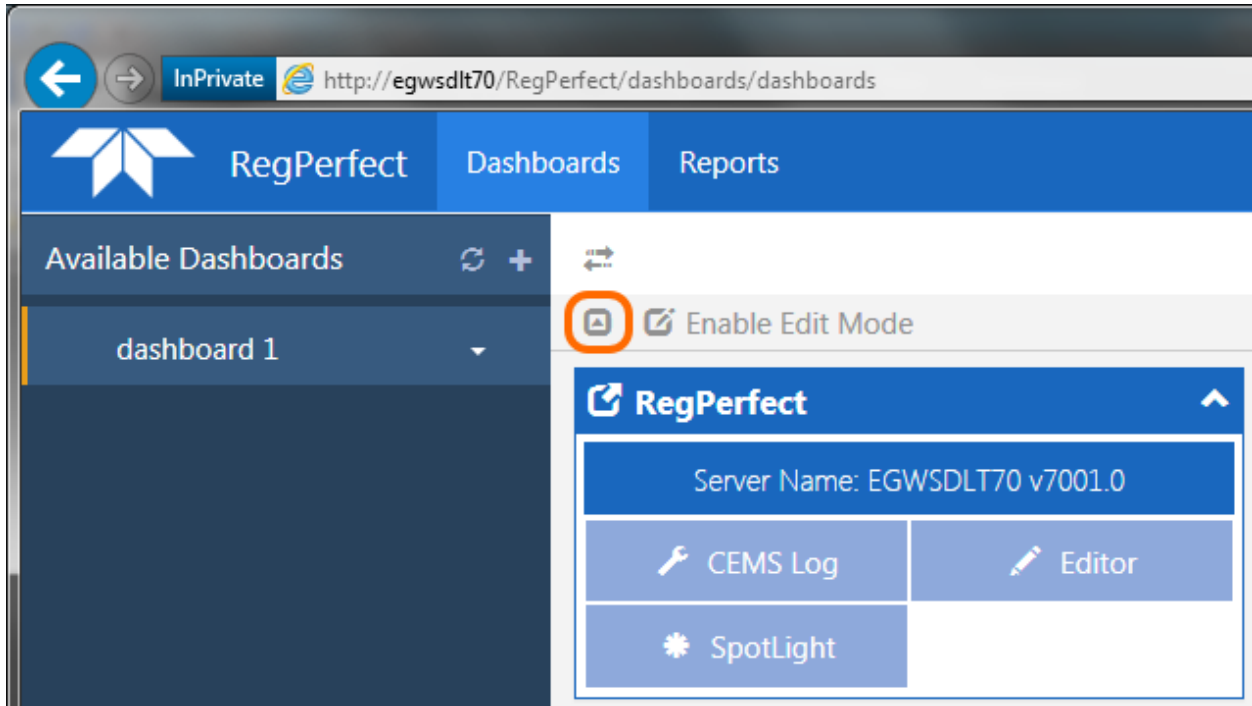
Expanded Widget – Click the widget menu icon in the upper right corner of the widget and select “Collapse Widget” from the dropdown menu.



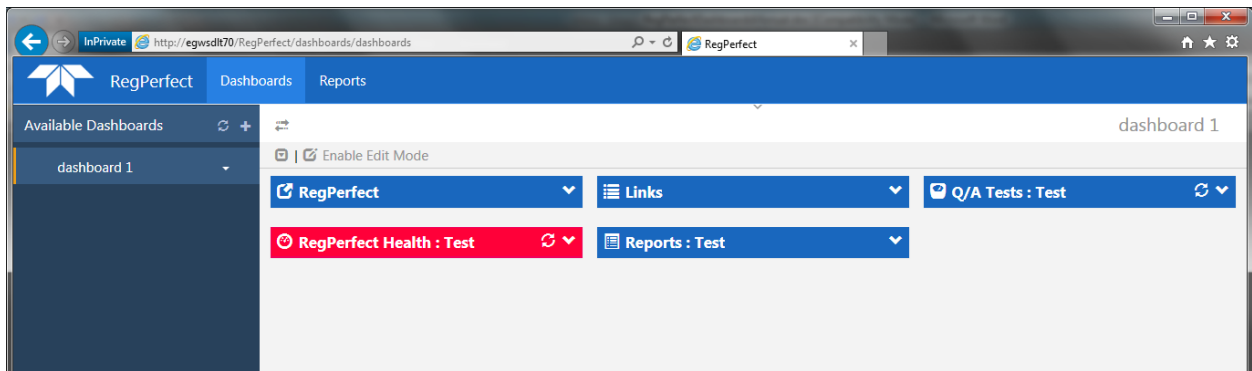
Collapsed Widget – Click the widget menu icon in the upper right corner of the widget and select “Expand Widget” from the dropdown menu.



To collapse or expand all widgets, click the collapse/expand all link.



Dashboard with All Widgets Collapsed



Note: For widgets that display status information by changing the color of the header and border, the status colors are still shown, even in a collapsed state.

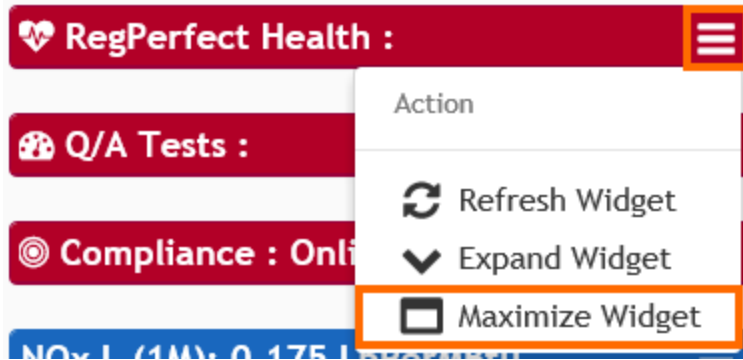
1.5.9.7 Maximizing and Restoring Individual Widgets

Every widget can be maximized to view more of the widget content.



Note: Individual widgets can be maximized and restored in both Run Mode and Edit Mode.

To maximize a widget, click the widget menu icon in the upper right corner of the widget and select "Maximize Widget" from the dropdown menu.



The widget will expand to fill the entire browser window.

To restore a maximized widget, click the restore icon in the upper right corner of a maximized widget.

The image shows a maximized widget titled "Compliance : Online 450 MWe" with a table of compliance data. The table has columns for Parameter, Base, Compliance, and Limit. The data is as follows:

Parameter	Base	Compliance	Limit
PM_3H LbPerMBtu	1-Hour 0.004	1-Hour 0.011	PM 3H LbPerMBtu < 0.030
CO2L_ProbeCheck Pct	1-Hour 0.0	1-Day 0.0	< 10.8
CO2R_ProbeCheck Pct	1-Hour 121.5	1-Day 0.0	CO2R Pct < 11.1
HeatIn_30D MBtu	1-Hour 0	1-Day 26417	< 0
SO2_30D LbPerMBtu	1-Hour 0.309	1-Day 0.27	so2 30d limit < 2.50
PM_3H LbPerMBtu	1-Hour 60.3	1-Hour 0.002	< 0.030



Note: You can still collapse and expand, as well as refresh, widgets that are maximized

2.0 Widgets

2.1 Links Widget

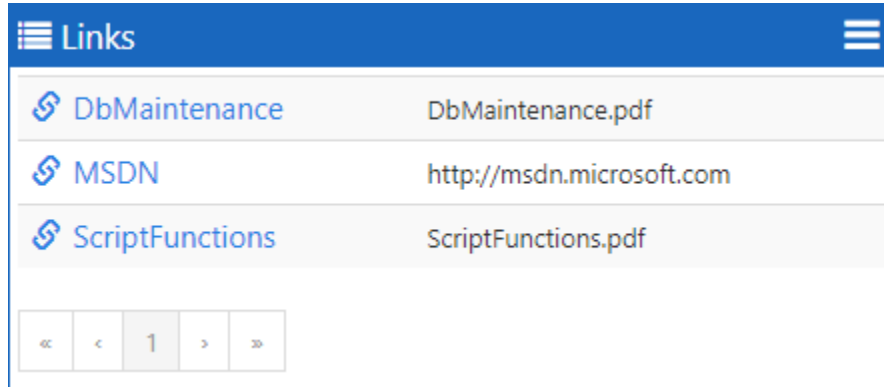
Links widget allows you to place a list of links to your favorite or important websites on your dashboard. It provides a handy way to launch websites that you visit frequently from your dashboard. Links widget also allows you to place a list of links to your frequently viewed documents on your dashboard. You are now able to open a document from your dashboard by a click.



Note: The computer on which you are running the Dashboards application will need to have Internet access to be able to navigate to the URL of the link.

2.1.1 Run Mode

In run mode, Links widget displays a list of URL and file links that you configured, as shown below.



The pagination control at the bottom of the widget will not become enabled until the number of links configured to show on the widget exceeds 10. Each page displays 10 links or optionally, you may add multiple link widgets to your dashboard to avoid using paging. Clicking a URL link opens the website specified by the link in a new tab of your browser window if your RegPerfect computer has Internet access for external URLs. Clicking a file link opens the document:

- In IE, a prompt appears at the bottom of the browser window asking whether to open or save the file. Upon clicking [Open], the document is displayed in a standalone pdf viewer.
- In Chrome, the document is displayed on a new tab of the browser window upon allowing pop-ups from localhost.

2.1.2 Edit Mode

In edit mode, clicking the control dropdown on the header of the Links widget and selecting Configure Widget opens the *Edit Links Widget* form, as shown below, where you can configure the links to be displayed on the widget.

	Name	URL	
<input checked="" type="checkbox"/>	DbMaintenance	DbMaintenance.pdf	×
<input checked="" type="checkbox"/>	MSDN	http://msdn.microsoft.com	×
<input checked="" type="checkbox"/>	ScriptFunctions	ScriptFunctions.pdf Browse	×

+ Add URL + Add File New Files Uploaded Files

Cancel OK

- To add a new URL link, click the [Add URL] button and enter a unique name and valid URL in the blank record appeared at the bottom of the list.
- To edit an existing URL link, make changes in the Name and URL text boxes.
- To add a new file link, click the [Add File] button and enter a name in the Name text box of the blank record appeared at the bottom of the list:
 - Selecting New Files allows you to browse your local file system and select a file, which will be uploaded to a designated location of your web server.
 - Selecting Uploaded Files allows you to pick a file from a list of already uploaded files located in a designated folder of your web server.
- To edit an existing file link, change the name and pick a different file from the dropdown list or select a new file by clicking the [Browse] button.
- To show/hide a link on the widget, click the checkbox in front of the link.
- To delete a link, click the [x] to the right of the link.
- To save all the configuration changes and close the edit form, click the [OK] button.
- To discard changes and close the edit form, click the [Cancel] button or click the [x] at the top-right of the form.

2.2 Q/A Tests Widget

Q/A Tests widget allows you to monitor most recent daily calibrations plus interference, integrity and beam intensity checks. It automatically updates the display in a configurable time interval, one minute by default.

2.2.1 Run Mode

In run mode, Q/A Tests widget displays a list of test results of the most recent daily calibrations plus interference, integrity and beam intensity checks in descending order of test end time and grouped by date. Each page displays 10 results if more than 10 tests are available. Clicking the control dropdown on the header of the widget and selecting Refresh Widget refreshes the widget display by retrieving latest data from the RegPerfect database. Otherwise, the widget receives latest data and updates its display every minute by default.



The screenshot shows the 'Q/A Tests' widget interface. At the top, there is a blue header with a globe icon, the text 'Q/A Tests :', and a hamburger menu icon. Below the header is a grey bar labeled 'Today'. The main content area is a list of ten test results, each on a blue background. Each entry includes a right-pointing chevron, the test name, the test end time, a dropdown arrow, and a green 'Pass' button. At the bottom, there is a pagination control with a double left arrow, a left arrow, a page number '1' (highlighted), page numbers '2', '3', '4', '5', '6', a right arrow, and a double right arrow.

Today			
>	U1 SO2R DualRg High B P75	11:54	Pass
>	U1B CO2 Inlet High P P60	11:52	Pass
>	U1B NOX Inlet High P P60	11:50	Pass
>	U2A CO Inlet High P P60	11:48	Pass
>	U2A NOX Inlet High P P60	11:46	Pass
>	U1B CO Inlet High P P60	11:44	Pass
>	U2A CO2 Inlet High P P60	11:42	Pass
>	U1D SO2 High P P60	11:40	Pass
>	U1D CO2 High P P60	11:38	Pass
>	U2D SO2 High P P60	11:36	Pass

« < 1 2 3 4 5 6 > »

The widget frame color indicates the overall status of all the tests in the set of tests retrieved from the database:

- Blue – Normal – no test has a result of Fail, 5Day, Warn, Inc, Part or Offline
- Yellow – Warning – no test has a result of Fail or 5Day, but at least one test has a result of Warn, Inc, Part or Offline
- Red – Error – at least one test has a result of Fail or 5Day

Except for interference checks, click each row to show/hide detailed information of the daily calibration, integrity check or beam intensity check as shown below.

Q/A Tests :			
Today			
>	U2A NOX Outlet High P P60	06:09	Pass
>	U2 AFLW R High B P75	06:08	Pass
>	U2 HG High P P75	05:58	FAIL
∨	U2B CO Inlet High P P60	05:40	FAIL
	Reference	Actual	Drift
	High 883	-2.2	88.5
	Zero 0	-2.2	0.2
>	U2B CO2 Inlet High P P60	05:40	Pass
>	U2B NOX Inlet High P P60	05:40	Pass
>	U1A NOX Inlet High P P60	05:39	Pass
>	U1A CO2 Inlet High P P60	05:39	Pass
>	U1A CO Inlet High P P60	05:39	FAIL

« ‹ 1 2 3 4 5 6 › »

2.2.2 Data Details View

Clicking the dropdown icon on a main calibration row and selecting Data Details brings up the *Calibration Data Details* form showing the 1-minute data samples from 5 minutes before the calibration started to 10 minutes after the calibration ended, as shown below. Invalid samples are highlighted in red.

Date/Time	Value	Flags
04/17/2019 05:43	5	
04/17/2019 05:42	5	
04/17/2019 05:41	5	
04/17/2019 05:40	5	
04/17/2019 05:39	5	
04/17/2019 05:38	5	<
04/17/2019 05:37	5	<
04/17/2019 05:36	5	<
04/17/2019 05:35	5	<
04/17/2019 05:34	2.5	<
04/17/2019 05:33	0	C - < - LT
04/17/2019 05:32	0	C - <
04/17/2019 05:31	0	C - <
04/17/2019 05:30	0	C - <
04/17/2019 05:29	5.5	C - <
04/17/2019 05:28	11	C - < - HT
04/17/2019 05:27	11	C - <
04/17/2019 05:26	11	C - <
04/17/2019 05:25	11	C - <
04/17/2019 05:24	8	C - <
04/17/2019 05:23	5	
04/17/2019 05:22	5	
04/17/2019 05:21	5	
04/17/2019 05:20	5	
04/17/2019 05:19	5	

> Status Flag Legend

Close

2.2.3 Calibration Chart View

Clicking the dropdown icon on a main calibration row other than an interference type and selecting Calibration Chart switches the widget to the configuration view, as shown below, where you can select a time range, draw level and chart type for the calibration chart. Click a quick date link to select a time range for which the calibration chart will be drawn.

Q/A Tests :	
Today	Last 24 Hours
Yesterday	Last 3 Days
Month to Date	Last 7 Days
Quarter to Date	Last 30 Days
Year to Date	Last 365 Days
Current 12 Months	Last 12 Months
Previous Month	Previous Quarter
Previous 2 Quarters	Previous Year

From 03/29/2019 00:00

To 04/05/2019 12:08

Draw Level High Zero Both

Chart Type Line Bar

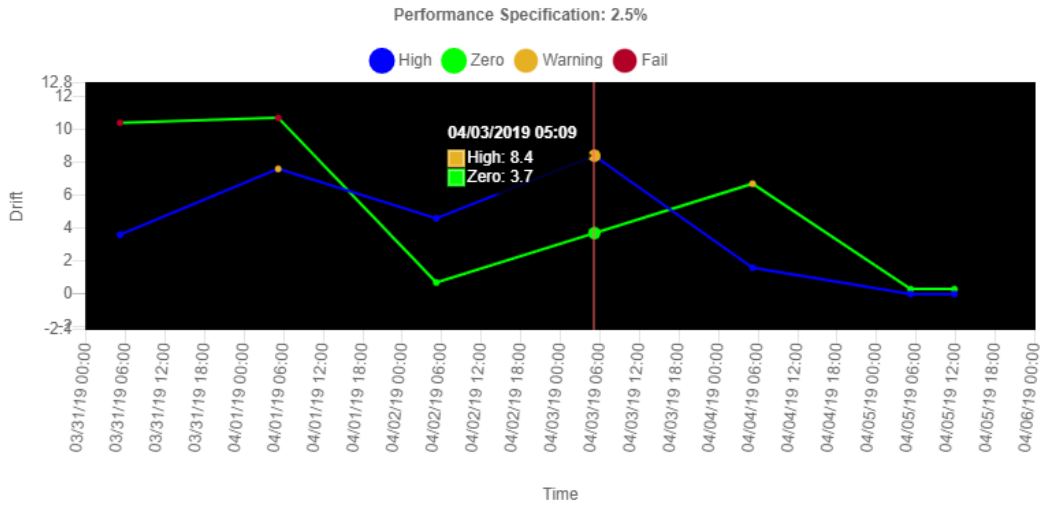
OK **Cancel**

Clicking the [Cancel] button switches the widget back to the calibration list view. Clicking the [OK] button opens the *Calibration Chart* form displaying the test drift chart for the time range and test level(s) selected in the selected chart type.

- Drift status is indicated by the data point or bar color.
- Value Display: Moving mouse pointer onto any data point makes a tooltip pop up showing the time and drift value for each test level drawn on the chart.
- Zoom: Pointing on the chart and dragging an area zooms in the chart. When zooming in, clicking the Reset Chart Zoom link appearing in the lower right of the chart form resets the chart.

Calibration Chart

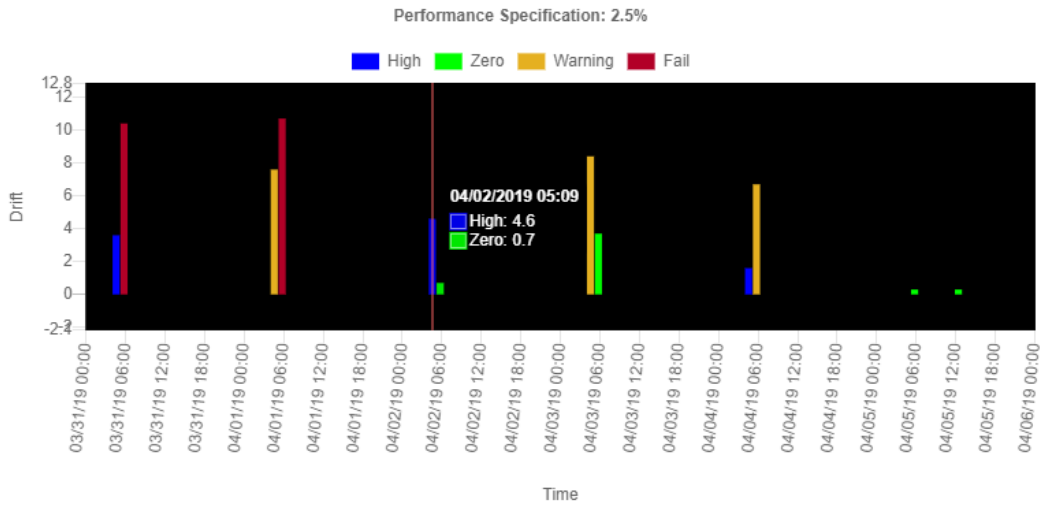
U2A CO Inlet High P P60



Close

Calibration Chart

U2A CO Inlet High P P60



Close

2.2.4 Edit Mode

In edit mode, clicking the control dropdown on the header of the Q/A Tests widget and selecting Configure Widget opens the *Edit QATests Widget* form, as shown below.

Edit QATests Widget [x]

Title
Unit 2

Monitoring Site
Unit 2

1x Calibrations as Warnings (Turn on/off showing 1x calibrations as warnings)

Instruments All (Select or clear all instruments)

<input checked="" type="checkbox"/> U2_AFLWL_P_Instrument	<input checked="" type="checkbox"/> U2_AFLWR_B_Instrument
<input checked="" type="checkbox"/> U2_CO2L_P_Instrument	<input checked="" type="checkbox"/> U2_CO2R_B_Instrument
<input checked="" type="checkbox"/> U2_Hg_P_Instrument	<input checked="" type="checkbox"/> U2_NOXLDualRg_P_Instrument
<input checked="" type="checkbox"/> U2_NOXRDualRg_B_Instrument	<input checked="" type="checkbox"/> U2_OPAC_P_Instrument
<input checked="" type="checkbox"/> U2_PM_P_Instrument	<input checked="" type="checkbox"/> U2_SO2LDualRg_P_Instrument
<input checked="" type="checkbox"/> U2_SO2RDualRg_B_Instrument	

Cancel OK

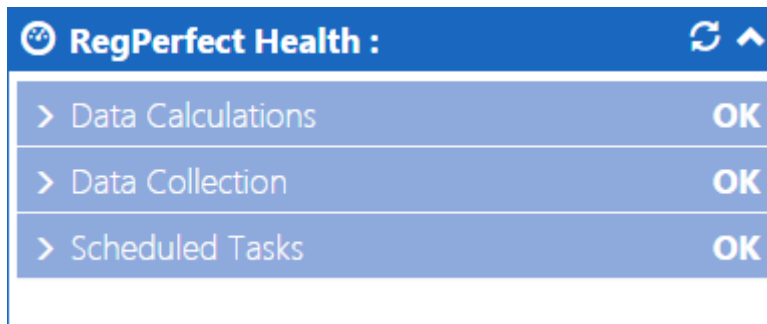
- Provide a title to display on the header of the widget.
- Select a monitoring site from the *Monitoring Site* dropdown to filter the instrument list.
- Select any or all instruments to filter the daily calibrations and interference/integrity checks for display on the widget.
- Click the *1x Calibrations as Warnings* checkbox to turn on/off showing 1x calibrations as warnings.
- To save all the configuration changes and close the edit form, click the [OK] button.
- To discard changes and close the edit form, click the [Cancel] button or click the [x] at the top-right of the form.

2.3 RegPerfect Health Widget

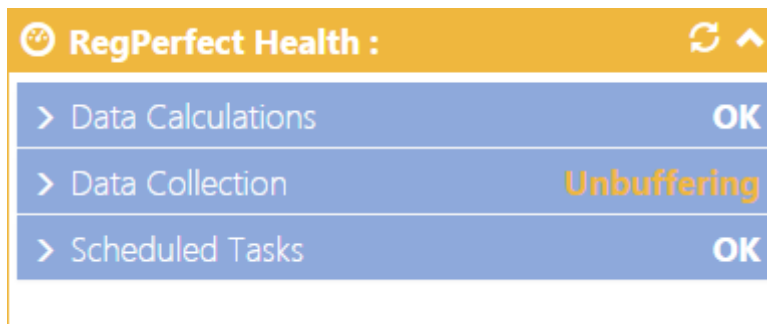
RegPerfect Health widget allows you to monitor various RegPerfect health parameters from your dashboard. It provides an easy way for you to capture your RegPerfect server status at a glance.

2.3.1 Run Mode

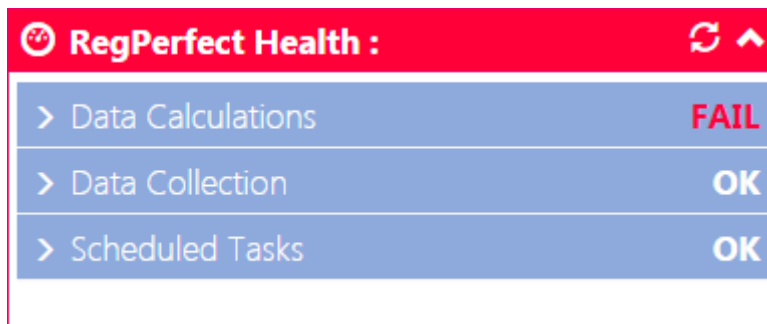
In run mode, RegPerfect Health widget displays a list of important server status information in three categories: data calculation, data collection, and job status (SQL Server Agent jobs). Each row shows the summary of the individually monitored system item. Clicking the refresh icon on the header of the widget refreshes the widget display by retrieving latest data from the RegPerfect database. Otherwise, the widget receives latest data and updates its display every minute by default.



RegPerfect Health :	
> Data Calculations	OK
> Data Collection	OK
> Scheduled Tasks	OK



RegPerfect Health :	
> Data Calculations	OK
> Data Collection	Unbuffering
> Scheduled Tasks	OK



RegPerfect Health :	
> Data Calculations	FAIL
> Data Collection	OK
> Scheduled Tasks	OK

The widget frame color, as shown above, indicates the overall server status:

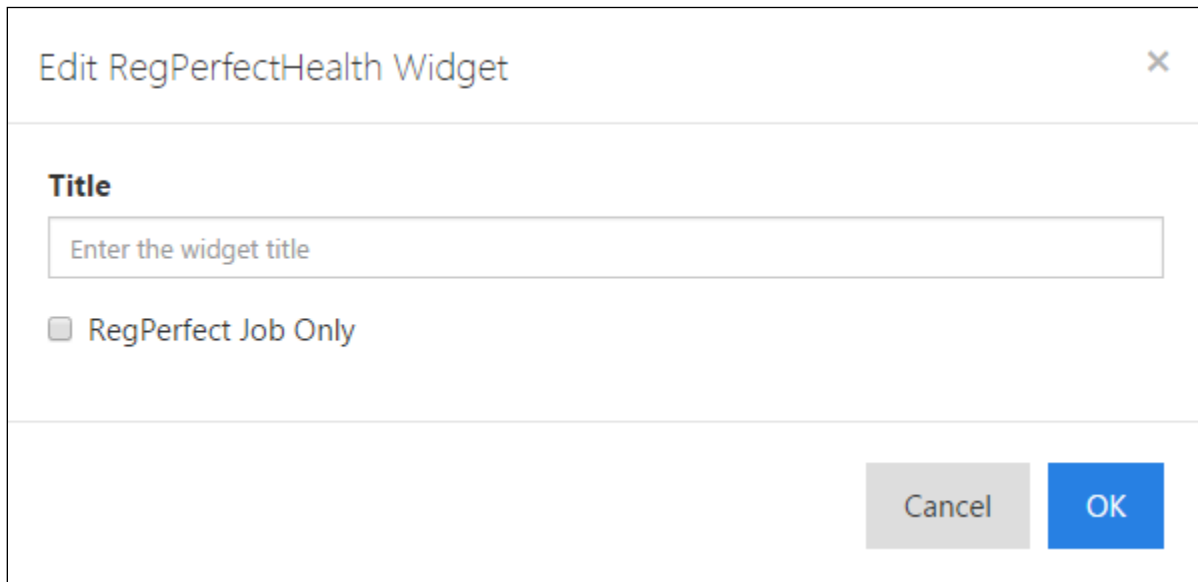
- Blue – Normal – all system checks are ok
- Yellow – Warning – one or more data collector is in “Unbuffering” mode
- Red – Error – one or more of the system checks indicates an error condition

Click each system item row to show/hide detailed information of the item. The details pane lists status and last operation/execution time of CalcEngine, each data collector and each job respectively.

RegPerfect Health :		
Data Calculations		OK
Service	Status	Last Operation
CalcEngine	OK	01/08/2016 15:50
Data Collection		Unbuffering
Collector	Status	Last Operation
U1_DL32_L1_Controller	OK	01/08/2016 15:50
U1_DL32_M1_Controller	Unbuffering	01/08/2016 15:50
U1_DL32_R1_Controller	OK	01/08/2016 15:50
U1A_DL32_P_Controller	OK	01/08/2016 15:50
U1B_DL32_P_Controller	OK	01/08/2016 15:50
U1D_DL32_P_Controller	OK	01/08/2016 15:50
U2_DL32_L2_Controller	OK	01/08/2016 15:50
U2_DL32_L2_P_Controller	OK	01/08/2016 15:50
U2_DL32_M2_Controller	OK	01/08/2016 15:50
U2_DL32_R2_Controller	OK	01/08/2016 15:50
U2_DL32_R2_P_Controller	OK	01/08/2016 15:50
U2A_DL32_P_Controller	OK	01/08/2016 15:50
U2B_DL32_P_Controller	OK	01/08/2016 15:50
U2D_DL32_P_Controller	OK	01/08/2016 15:50
Scheduled Tasks		OK

2.3.2 Edit Mode

In edit mode, clicking the configuration icon on the header of the RegPerfect Health widget opens the *Edit RegPerfectHealth Widget* form, as shown below.



The screenshot shows a dialog box titled "Edit RegPerfectHealth Widget" with a close button (X) in the top right corner. Below the title bar, there is a section labeled "Title" with a text input field containing the placeholder text "Enter the widget title". Underneath the input field is a checkbox labeled "RegPerfect Job Only". At the bottom right of the form, there are two buttons: "Cancel" (grey) and "OK" (blue).

- Provide a title to display on the header of the widget.
- Click the *RegPerfect Job Only* checkbox to make the widget show all enabled jobs or only all enabled RegPerfect jobs.
- To save all the configuration changes and close the edit form, click the [OK] button.
- To discard changes and close the edit form, click the [Cancel] button or click the [x] at the top-right of the form.

2.4 Reports Widget

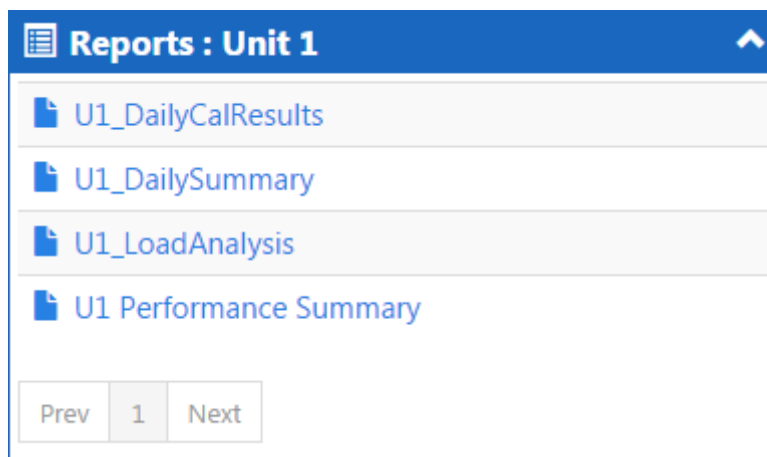
Reports widget allows you to place a list of your favorite, already configured reports on your dashboard. It provides an alternative way to generate reports that are used most often from your dashboard. The list is a subset of reports that have been previously configured using the RegPerfect Reports application.



Note: You must use the standard Reports application to create a configured report from a master report before adding the report to the widget.

2.4.1 Run Mode


In run mode, Reports widget displays a list of clickable reports that you selected, as shown below.



The pagination control at the bottom of the widget will not become enabled until the number of reports selected for the widget exceeds 10. Each page displays 10 reports or optionally, you may add multiple report widgets to your dashboard to avoid using paging.

2.4.2 Quick Date Selection View

Clicking a report switches the widget to the quick date selection view where you can select a time range and generate the report.

Reports : Unit 1 

Today	Last 24 Hours
Yesterday	Last 3 Days
Month to Date	Last 7 Days
Quarter to Date	Last 30 Days
Year to Date	Last 365 Days
Current 12 Months	Last 12 Months
Previous Month	Previous Quarter
Previous 2 Quarters	Previous Year

From 01/07/2016 00:00

To 01/07/2016 23:59

OK Cancel

Click a quick date link to select a time range for which the report will be generated.

Click the [OK] button to generate the report for the time range selected and switch the widget back to the reports list view:

- In IE, a prompt appears at the bottom of the browser window asking whether to open or save the report. Upon clicking [Open], the generated report is displayed in a standalone pdf viewer.
- In Chrome, the generated report is displayed on a new tab of the browser upon allowing pop-ups from localhost.

Click the [Cancel] button to switch the widget back to the reports list view without generating the report.

2.4.3 Edit Mode

In edit mode, clicking the configuration icon on the header of the Reports widget opens the *Edit Reports Widget* form, as shown below, where you can select reports from those configured in your RegPerfect system and add them to the widget.

The screenshot shows the 'Edit Reports Widget' form. It features a title bar with the text 'Edit Reports Widget' and a close button (x). Below the title bar is a 'Title' section with a text input field containing 'Unit 1'. Underneath are two dropdown menus: 'Monitoring Site' (set to 'Unit 1') and 'Available Reports' (empty). To the right of the 'Available Reports' dropdown is a blue 'Add' button with a plus icon. Below these is a 'Selected Reports' section containing a list of four items, each with an 'x' delete icon: 'U1_DailyCalResults', 'U1_DailySummary', 'U1_LoadAnalysis', and 'U1 Performance Summary'. At the bottom right are 'Cancel' and 'OK' buttons.

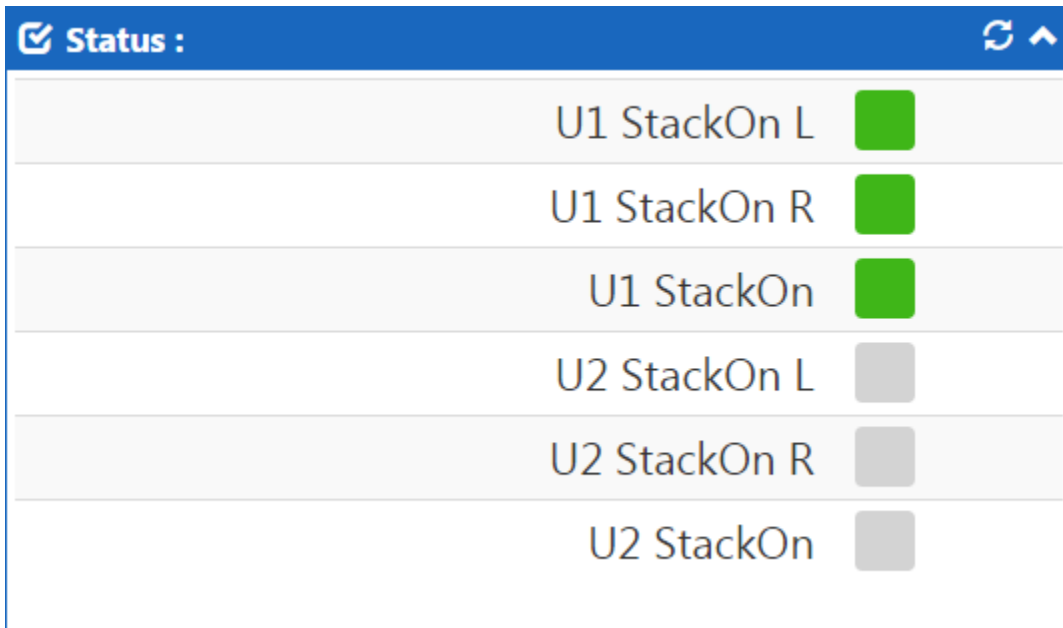
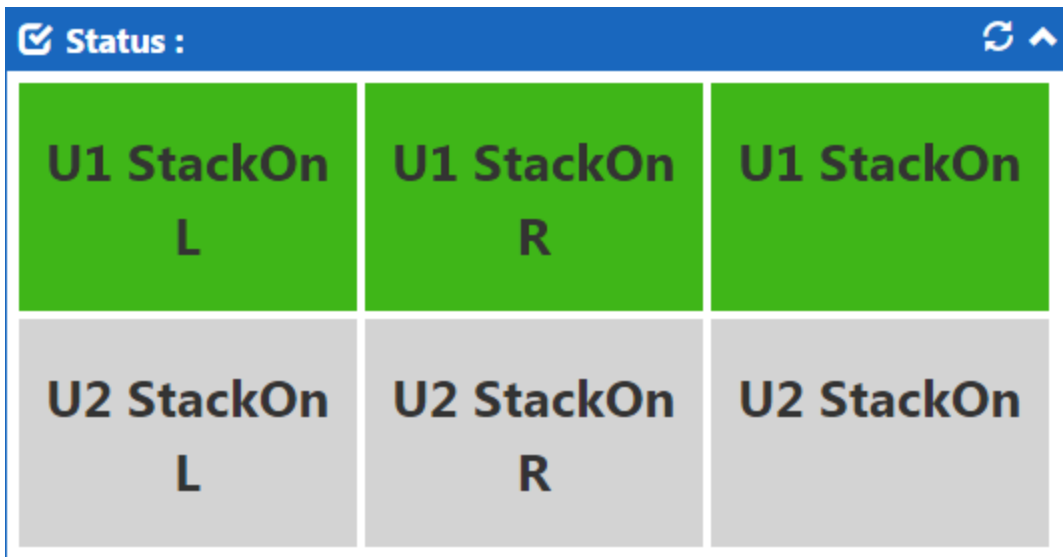
- Provide a title to display on the header of the widget.
- Select a monitoring site from the *Monitoring Site* dropdown to filter the reports in the *Available Reports* dropdown for easy selection.
- The [Add] button only becomes enabled whenever a report is selected into the *Available Reports* select box.
- To add a report, select a report from the *Available Reports* dropdown and click the [Add] button.
- To delete a report, click the [x] to the left of the report.
- To save all the configuration changes and close the edit form, click the [OK] button.
- To discard changes and close the edit form, click the [Cancel] button or click the [x] at the top-right of the form.

2.5 Status Widget

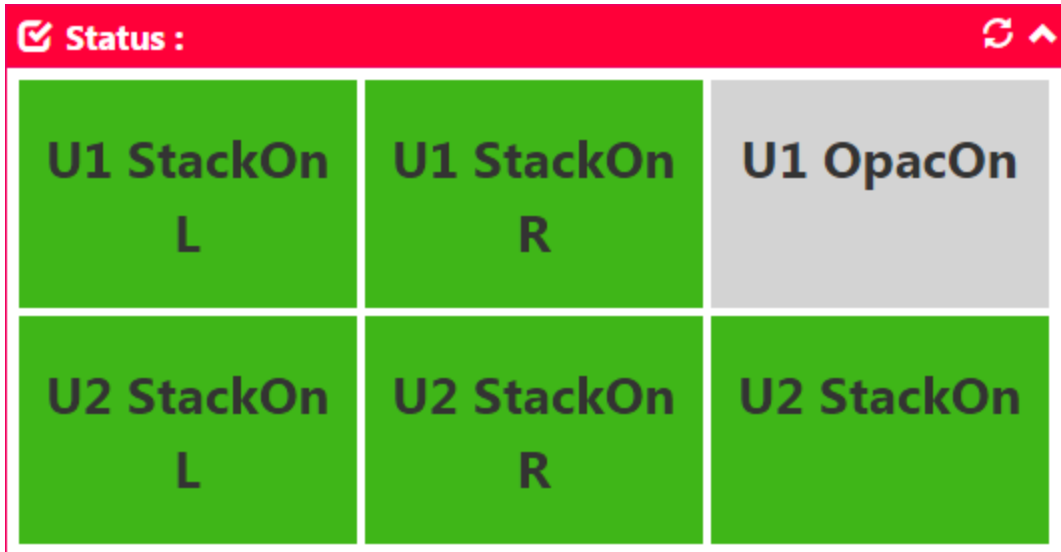
The Status widget allows you to monitor value and status of up to 10 boolean tags. It makes it easy for you to capture a set of information about CEMs operations at a glance. It automatically updates the display in a configurable time interval, one minute by default.

2.5.1 Run Mode

In run mode, Status widget displays the on/off states for the configured boolean tags using configurable color scheme in one of two view modes: Grid view and LED view, as shown below. The status grid inside the widget may show 1, 2, or 3 columns depending on the widget width. Clicking the refresh icon on the header of the widget refreshes the widget display by retrieving latest data from the RegPerfect database. Otherwise, the widget receives latest data and updates its display every minute by default.



The widget frame color changes to red if any selected tag is missing (Missing status flag is set).



2.5.2 Details View

Click anywhere inside the widget brings up the *Status Details* form, as shown below, where you can view the tags' past values up to current in a tabular view.

Date/Time	U1 StackOnL TF 1M	U1 StackOnR TF 1M	U1 OpacOn TF 1M	U2 StackOnL TF 1M	U2 StackOnR TF 1M	U2 StackOn TF 1M
01/11/2016 13:12	1	1	0	1	1	1
01/11/2016 13:11	1	1	0	1	1	1
01/11/2016 13:10	1	1	0	1	1	1
01/11/2016 13:09	1	1	0	1	1	1
01/11/2016 13:08	1	1	0	1	1	1
01/11/2016 13:07	1	1	0	1	1	1
01/11/2016 13:06	1	1	0	1	1	1
01/11/2016 13:05	1	1	0	1	1	1
01/11/2016 13:04	1	1	0	1	1	1
01/11/2016 13:03	1	1	0	1	1	1
01/11/2016 13:02	1	1	0	1	1	1
01/11/2016 13:01	1	1	0	1	1	1
01/11/2016 13:00	1	1	0	1	1	1
01/11/2016 12:59	1	1	0	1	1	1
01/11/2016 12:58	1	1	0	1	1	1
01/11/2016 12:57	1	1	0	1	1	1
01/11/2016 12:56	1	1	0	1	1	1
01/11/2016 12:55	1	1	0	1	1	1
01/11/2016 12:54	1	1	0	1	1	1
01/11/2016 12:53	1	1	0	1	1	1

Prev 1 2 3 4 -- Next

Close

The amount of data shown depends on the sample interval:

- 2 hours of 1M data
- 6 hours of 6M or 15M data
- 24 hours of 1H data
- 30 days of 1D data

2.5.3 Edit Mode

In edit mode, clicking the configuration icon on the header of the Status widget opens the *Edit Status Widget* form, as shown below.

Edit Status Widget
✕

Title

Display Mode Grid view LED view

Type Filter	▼
Time Filter	1 Minute(s) ▼
Site Filter	▼
Parameter Filter	▼

		Color		
Tag Name	Display Text	On	Off	Text
U1_OpacOn_TF_1M ▼	U1 Opac	■	■	■ ✕
U1_StackOn_TF_1M ▼	U1 Stack	■	■	■ ✕
U2_OpacOn_TF_1M ▼	U2 Opac	■	■	■ ✕
U2_StackOn_TF_1M ▼	U2 Stack	■	■	■ ✕

+ Add

Add up to 10 boolean tags of the SAME sample interval.

Drag and drop rows to reorder the tags.

Cancel
OK

- Provide a title to display on the header of the widget.
- Select either Grid view or LED view mode.
- Select any filter combination to filter the tags in the *Tag Name* dropdown for easy selection.
- Select only tags of the same sample interval.
- To add a tag, click the [Add] button.
- To edit a tag:

- Select a tag from the *Tag Name* dropdown.
 - Leave the default display text or change it in the *Display Text* edit box.
 - Leave the default On/Off/Text colors or click the color boxes and select different colors.
- To delete a tag, click the [x] at the end of the tag row.
- Drag and drop rows to change the order of the tags that are shown in the display mode.
- To save all the configuration changes and close the edit form, click the [OK] button.
- To discard changes and close the edit form, click the [Cancel] button or click the [x] at the top-right of the form.

2.6 Alarms Widget

The Alarms widget allows you to monitor alarms, as well as acknowledge alarms and set reasons and actions. The widget displays the past four days of alarms, up to a maximum 100 alarms (not configurable). It automatically updates the display in a configurable time interval, one minute by default.

2.6.1 Run Mode

In run mode, the Alarms widgets shows the most recent alarms in descending order by start time. Clicking the refresh icon on the header of the widget refreshes the widget display by retrieving latest data from the RegPerfect database. Otherwise, the widget receives latest data and updates its display every minute by default.



The screenshot shows the 'Alarms' widget interface. At the top, there is a red header bar with a bell icon, the text 'Alarms :', a refresh icon, and an upward arrow icon. Below the header, the word 'Today' is centered in a grey bar. The main content area lists ten alarms, each with a circular status icon (red for active, green for acknowledged, yellow for pending), a bold title, and a description. The alarms are ordered by start time in descending order. At the bottom, there is a pagination control with buttons for 'Prev', '1', '2', '3', '4', '...', and 'Next'.

Today	
	U2 6-Minute Opacity > 20% Excess Emission alarm occurred at 12:00
	U1 Particulate Monitor Bad Status InvalidData alarm occurred from 12:00 to 12:00
	U2 PM Bad Status Other alarm ongoing from 12:00
	U1 Particulate Monitor Bad Status InvalidData alarm occurred from 11:55 to 11:55
	U2 PM Bad Status Other alarm ongoing from 11:55
	U2 6-Minute Opacity > 20% Excess Emission alarm occurred at 11:54
	U1 Particulate Monitor Bad Status InvalidData alarm occurred from 11:50 to 11:50
	U2 PM Bad Status Other alarm ongoing from 11:50
	U2 6-Minute Opacity > 20% Excess Emission alarm occurred at 11:48
	U1 Particulate Monitor Bad Status InvalidData alarm occurred from 11:45 to 11:45

Prev 1 2 3 4 ... Next

Most recent alarms are grouped under headers "Today" and "Yesterday" (if appropriate). Alarms that occurred prior to yesterday are shown under their respective date groupings.

The widget frame will change according to the overall status of all the alarms in the set of alarms retrieved from the database:

- Normal widget color – Ok – no alarms in the entire set of alarms with a yellow warning or red error status
- Yellow – Warning – at least one alarm in the entire set of alarms with a yellow warning status and no alarms with a red error status
- Red – Error – at least one alarm in the entire set of alarms with a red error status

Individual alarm statuses:

- Red
 - Latching | Not acknowledged | Active
 - Latching | Not acknowledged | Not active
 - Not latching | Not acknowledged
- Yellow
 - Latching | Acknowledged | Active
- Green
 - Latching | Acknowledged | Not active
 - Not latching | Acknowledged

An "A" in yellow and green icons will be shown on the display for acknowledged alarms. A red circle icon on the left indicates that the alarm has not been acknowledged.

If you double-click on any red icon for a latching/inactive alarm (indicated by "from" and "to" dates), the icon will turn green with an "A" inside the circle indicating acknowledged.

If you double-click on any red icon for a latching/active alarm (indicated by "ongoing from" a certain time), the icon will turn yellow.


If you double-click on any red icon for a non-latching alarm (indicated by "at" a certain time), the icon will turn green with an "A" inside the circle indicating acknowledged.

Alarms will be shown in pages of 10. Navigation through the pages of alarms is performed using the pagination control at the bottom of the widget.

2.6.2 Details View

Clicking anywhere inside an individual alarm brings up the *Status Details* form, as shown below, where you can view more data about the alarm and acknowledge and/or set reasons/actions for the alarm.

Today ×

 **U2 6-Minute Opacity > 20%**
Excess Emission alarm occurred at 11:00


Not Acknowledged **Acknowledge**

Reason Monitor Equipment Malfunction ▼

Action Restored Power ▼

Cancel OK

Today ×

 **U1 Particulate Monitor Bad Status**
InvalidData alarm occurred from 14:25 to 14:25

Acknowledged By Manager at 01/11/2016 15:00

Reason ▼

Action ▼

Date/Time	Value	Flags
01/11/2016 14:27	80	FF - EV - ES
01/11/2016 14:26	160	FF - EV - ES
01/11/2016 14:25	160	FF - EV - ES
01/11/2016 14:24	110	C - EV - ES
01/11/2016 14:23	110	C - EV - ES
01/11/2016 14:22	110	C - EV - ES

Cancel OK

- The red circular icon indicates that the alarm has not been acknowledged.
- If you acknowledge the alarm, by clicking the [Acknowledge] button, the icon will change to either green or yellow color. If the alarm has already been acknowledged, no [Acknowledge] button will be shown, instead the view will show who acknowledged the alarm and at what time.
- You can also provide a Reason and/or Action and save the changes by pressing the [Ok] button.

- If you press the [Cancel] button, the Reason and/or Action changes will not be saved. However, if you had already acknowledged the alarm, the change will not be undone.
- For alarms with an associated Tag and Sample records, the sample that caused the alarm and a maximum of three previous and three succeeding samples are shown in the details screen. The sample causing the alarm is highlighted in red.



Note: There are some alarm types that do not have Sample data associated with them, and, thus, do not show the snippet of data on the details view (as shown in the top image above).

2.6.3 Edit Mode

In edit mode, clicking the configuration icon on the header of the Alarms widget opens the Edit Alarm Widget form, as shown below.

Edit Alarms Widget
✕

Title

Monitoring Site

▼

Alarm Priority

Alarm

Warning

Informational

Alarm View

All

Active

Acknowledged

Unacknowledged

Alarm Sound

Enable Sound Test

When new alarms occur (once each time new alarms are found)

When unacknowledged alarms exist within look-back period (once per minute)

Audible notification look-back

Minute(s) ▼

Cancel

OK

The configuration or edit view essentially provides different filtering options for showing alarms in "run" mode. There are mainly three options and they are self-explanatory.

- You can pick alarms from "All" monitoring sites or from a specific site.
- From Alarm Priority check boxes, you can either select one, two, or all three check boxes.
- From the Alarm View option buttons, you can select only one button at a time

After making your filtering options selection, click the [OK] button to save and apply the filter(s) to the entire list of alarms.

Users can now configure audible alarm notifications when audio capabilities are supported in the browser.

2.7 Current Values Widget

The Current Values widget allows you to monitor the value, status, and limits for a single tag. It automatically updates the display in a configurable time interval, one minute by default.

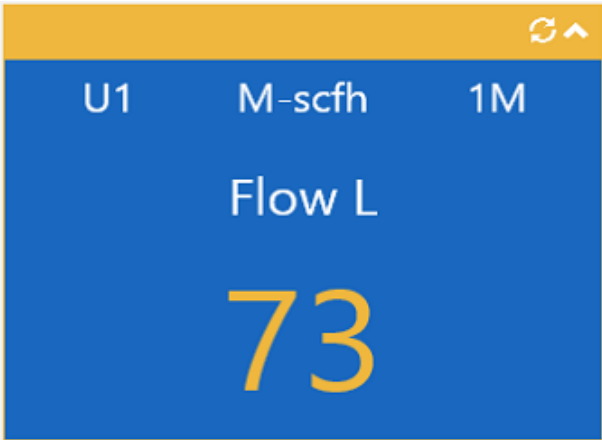
2.7.1 Run Mode

In run mode, the Current Values widget shows the mnemonic, units, sample interval, parameter, and current value of the configured tag. If a unit-prefix of "K" is configured, K- is prepended to the units and the value shown is divided by 1000. If a unit-prefix of "M" is configured, M- is prepended to the units and the value shown is divided by 1,000,000. If a unit-prefix of "G" is configured, G- is prepended to the units and the value shown is divided by 1,000,000,000.

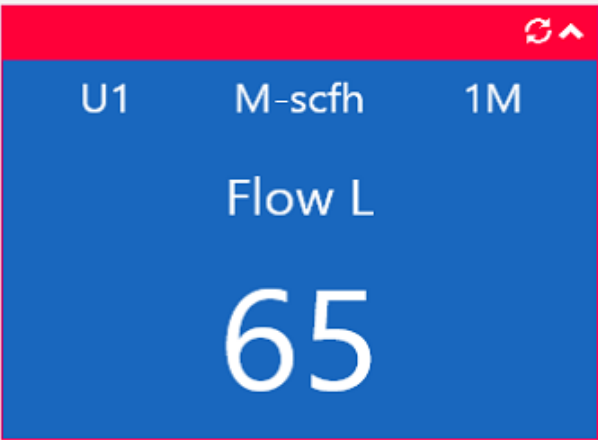
Normal operation



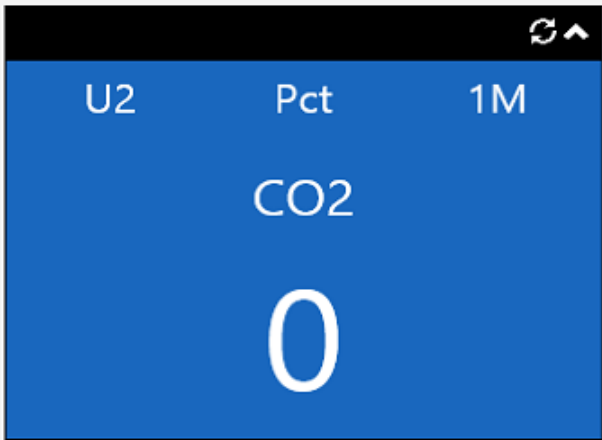
Parameter in Warning status



Parameter in Error status

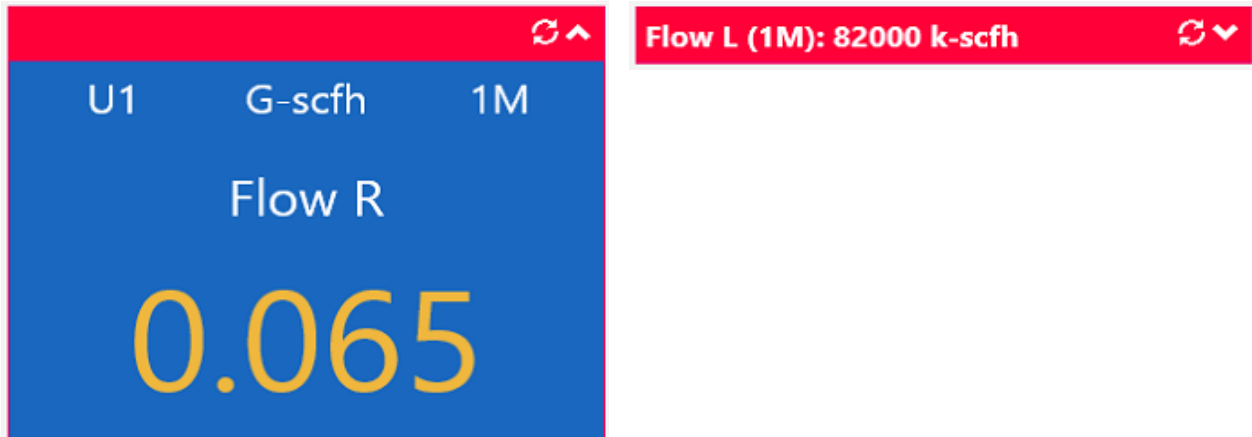


Offline



Parameter value exceeds a limit value

Minimized



The header and border (widget frame) changes color based on status:

- Widget frame color matches tile background color for normal operations.
- Widget frame color is yellow for a warning (non-fatal) status.
- Widget frame color is red for an error/fault (fatal) status.
- Widget frame color is black for unit offline.

Status flags that cause non-fatal color:

- NonFatalFault
- InCalibration
- InZeroTest
- InLowTest
- InMidTest
- InHighTest
- OutOfService
- TooFewSamples (online only)
- ZeroCalError2x/HighCalError2x (OOC_Daily not set)

Status flags that cause fatal color:

- FatalFault
- ZeroCalError2x/HighCalError2x (OOC_Daily set)
- ZeroCalError4x/HighCalError4x (OOC_Daily set)
- FiveDayCalDrift (OOC_Daily set)
- OOC_Manual
- NotQualityAssured
- InterferenceTestFailed
- InterferenceTestNotQA
- ExceedsScale

The widget displays a maximum of seven digits. If the number of digits exceeds seven, #### will be shown.

Normally, the value of the tag will be shown in white color. However, if the value exceeds the configured HiHi Limit or goes below the LoLo Limit, the value will be shown in red color. Likewise, if the value is between the Hi Limit and HiHi Limit or between the LoLo Limit and Lo Limit, it will be displayed in yellow color.

2.7.2 Details View

Clicking anywhere on the tile inside the widget opens a details view.

U1_FlowL_scfh_1M ×			
Date/Time	Value	Flags	MODC
01/11/2016 13:50	73000000	C - EV - ES	0
01/11/2016 13:49	73000000	C - EV - ES	0
01/11/2016 13:48	65000000	M - EV	0
01/11/2016 13:47	65000000	M - EV	0
01/11/2016 13:46	65000000	M - EV	0
01/11/2016 13:45	65000000	FF - EV - ES	0
01/11/2016 13:44	82000000	FF - EV - ES	0
01/11/2016 13:43	82000000	FF - EV - ES	0
01/11/2016 13:42	73000000	C - EV - ES	0
01/11/2016 13:41	73000000	C - EV - ES	0
01/11/2016 13:40	73000000	C - EV - ES	0
01/11/2016 13:39	65000000	M - EV	0
01/11/2016 13:38	65000000	M - EV	0
01/11/2016 13:37	65000000	M - EV	0
01/11/2016 13:36	65000000	FF - EV - ES	0
01/11/2016 13:35	82000000	FF - EV - ES	0
01/11/2016 13:34	82000000	FF - EV - ES	0
01/11/2016 13:33	73000000	C - EV - ES	0
01/11/2016 13:32	73000000	C - EV - ES	0
01/11/2016 13:31	73000000	C - EV - ES	0

Prev 1 2 3 4 ... Next

Close

The details screen displays samples in descending order of time and shows a maximum of 20 samples per page. It shows the value, status flag symbols, and MODC of the samples. The total number of samples shown varies based upon the sample interval period of the tag; it shows 24 hours of 1H data, 6 hours of 6M or 15M data, 2 hours of 1M data, and 30 days of 1D data.

2.7.3 Edit Mode

In edit mode, clicking the configuration icon on the header of the Current Values widget opens the Edit CurrentValues Widget form, as shown below.

The screenshot shows a window titled "Edit CurrentValues Widget" with a close button (X) in the top right corner. The form contains the following fields and controls:

- Tag Name:** A dropdown menu with the value "U1_FlowL_scfh_1M" selected.
- Filtering Section:** A shaded area containing four dropdown menus:
 - Type Filter: empty
 - Time Filter: empty
 - Site Filter: "All"
 - Parameter Filter: empty
- Display Name:** A text input field with the placeholder text "(optional) Enter a display name".
- Unit Prefix:** Radio buttons for "None", "K", "M", and "G", with "K" selected.
- Limit Values:** Four text input fields:
 - HiHi Limit Value: 90000
 - Hi Limit Value: 85000
 - Lo Limit Value: 75000
 - LoLo Limit Value: 70000
- Buttons:** "Cancel" and "OK" buttons at the bottom right.

The configuration screen allows the user to pick a tag name and optionally configure a display name, which can be used to override the tag name parameter value shown in the middle of the widget (in Run Mode). It provides combo boxes for easy filtering of tag names. Additionally, it provides options for unit prefixes and allows for configuring limit values.

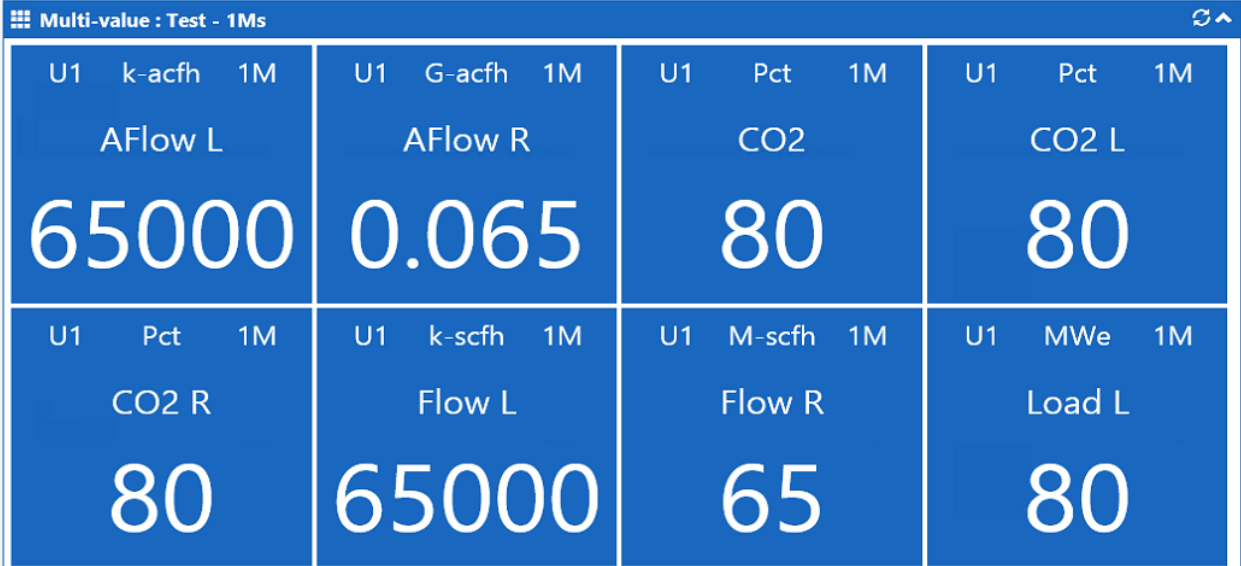
2.8 Multi-value Widget

The Multi-value widget allows you to monitor the value, status, and limits for up to 32 tags. It automatically updates the display in a configurable time interval, one minute by default.

2.8.1 Run Mode

In run mode, the Multi-value widget shows the mnemonic, units, sample interval, parameter, and current value of the configured tags. If a unit-prefix of "K" is configured, K- is prepended to the units and the value shown is divided by 1000. If a unit-prefix of "M" is configured, M- is prepended to the units and the value shown is divided by 1,000,000. If a unit-prefix of "G" is configured, G- is prepended to the units and the value shown is divided by 1,000,000,000.

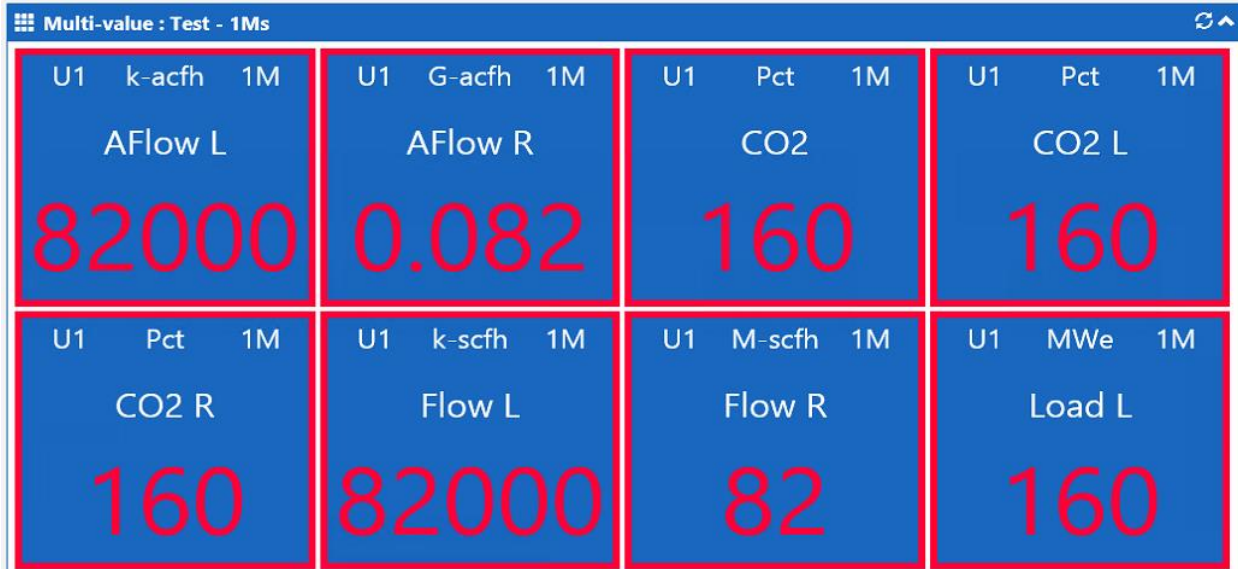
Normal operation



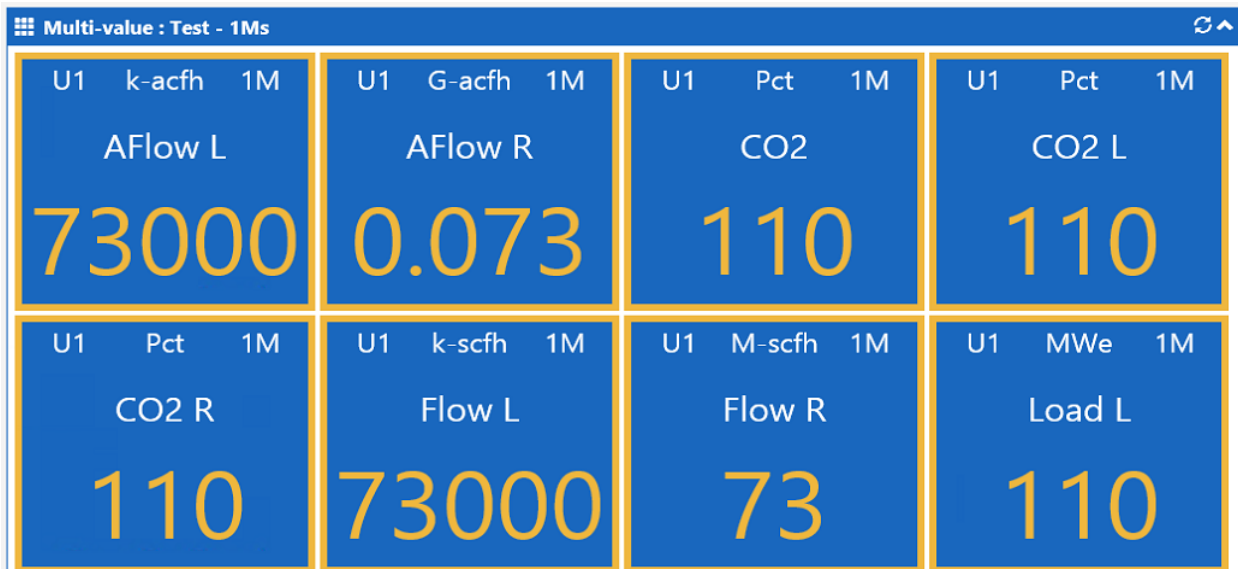
The screenshot shows a widget titled "Multi-value : Test - 1Ms" with a refresh icon in the top right. It displays eight data points in a 2x4 grid. Each cell contains a status indicator (U1), a unit prefix, a unit, a sample interval (1M), a parameter name, and a large numerical value.

U1 k-acfh 1M AFlow L 65000	U1 G-acfh 1M AFlow R 0.065	U1 Pct 1M CO2 80	U1 Pct 1M CO2 L 80
U1 Pct 1M CO2 R 80	U1 k-scfh 1M Flow L 65000	U1 M-scfh 1M Flow R 65	U1 MWe 1M Load L 80

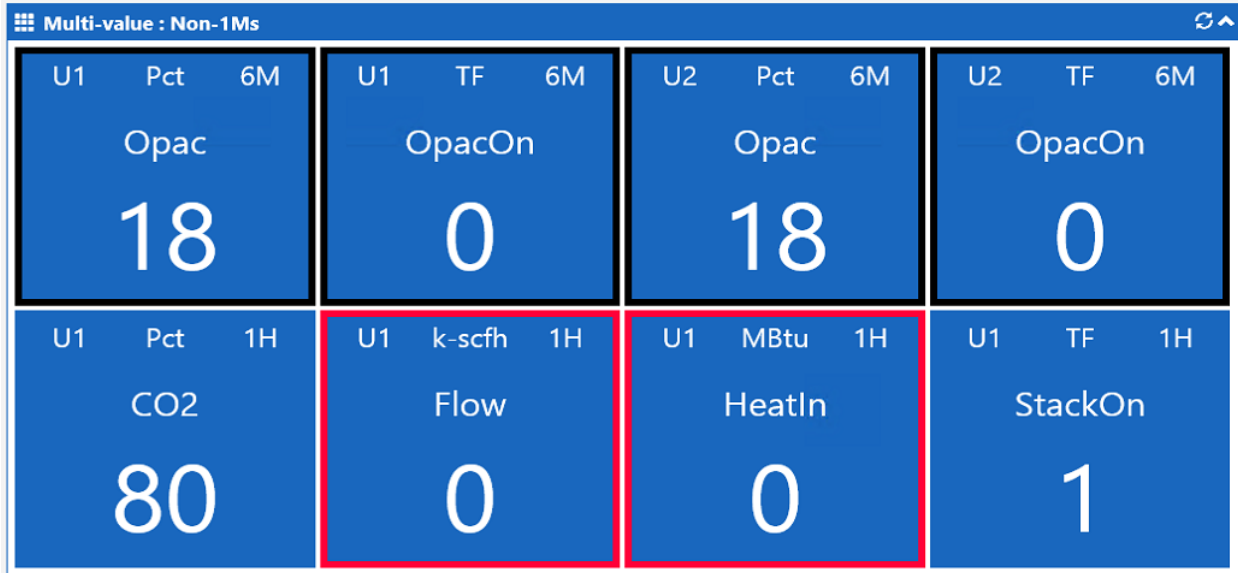
Errors: invalid status (red border on the tile) and exceeded limit (red value in the tile)



Warnings: non-fatal status (yellow border on the tile) and exceeded limit (yellow value in the tile)



Multiple tag periodicities (i.e., 6M and 1H tags) and offline status (black border on the tile)



The header and border (widget frame) of the entire widget does not change color. However, each individual tile within the widget changes color based on status:

- The color matches tile background color for normal operations.
- The color is yellow for a warning (non-fatal) status.
- The color is red for an error/fault (fatal) status.
- The color is black for unit offline.

Status flags that cause non-fatal color:

- NonFatalFault
- InCalibration
- InZeroTest
- InLowTest
- InMidTest
- InHighTest
- OutOfService
- TooFewSamples (online only)
- ZeroCalError2x/HighCalError2x (OOC_Daily not set)

Status flags that cause fatal color:

- FatalFault
- ZeroCalError2x/HighCalError2x (OOC_Daily set)
- ZeroCalError4x/HighCalError4x (OOC_Daily set)
- FiveDayCalDrift (OOC_Daily set)
- OOC_Manual
- NotQualityAssured
- InterferenceTestFailed
- InterferenceTestNotQA
- ExceedsScale

Each tile displays a maximum of seven digits. If the number of digits exceeds seven, #### will be shown.

Normally, the value of the tag will be shown in white color. However, if the value exceeds the configured HiHi Limit or goes below the LoLo Limit, the value will be shown in red color. Likewise, if the value is between the Hi Limit and HiHi Limit or between the LoLo Limit and Lo Limit, it will be displayed in yellow color.

2.8.2 Details View

Clicking anywhere on a tile inside the widget opens a details view for the configured tag.

Date/Time	Value	Flags	MODC
01/13/2016 09:27	65000000	FF - EV - ES	0
01/13/2016 09:26	82000000	FF - EV - ES	0
01/13/2016 09:25	82000000	FF - EV - ES	0
01/13/2016 09:24	73000000	C - EV - ES	0
01/13/2016 09:23	73000000	C - EV - ES	0
01/13/2016 09:22	73000000	C - EV - ES	0
01/13/2016 09:21	65000000	M - EV	0
01/13/2016 09:20	65000000	M - EV	0
01/13/2016 09:19	65000000	M - EV	0
01/13/2016 09:18	65000000	FF - EV - ES	0
01/13/2016 09:17	82000000	FF - EV - ES	0
01/13/2016 09:16	82000000	FF - EV - ES	0
01/13/2016 09:15	73000000	C - EV - ES	0
01/13/2016 09:14	73000000	C - EV - ES	0
01/13/2016 09:13	73000000	C - EV - ES	0
01/13/2016 09:12	65000000	M - EV	0
01/13/2016 09:11	65000000	M - EV	0
01/13/2016 09:10	65000000	M - EV	0
01/13/2016 09:09	65000000	FF - EV - ES	0
01/13/2016 09:08	82000000	FF - EV - ES	0

Prev 1 2 3 4 ... Next

Close

When a tile in the multi-value widget is clicked, the details screen is opened for the tag that is configured. The details screen displays samples in descending order of time and shows a maximum of 20 samples per page. It shows the value, status flag symbols and MODC of the samples. The total number of samples shown varies based upon the sample interval period of the tag. It shows 24 hours of 1H data, 6 hours of 6M or 15M data, 2 hours of 1M data, and 30 days of 1D data.

2.8.3 Edit Mode

In edit mode, clicking the configuration icon on the header of the Multi-values widget opens the Edit MultiValues Widget form, as shown below.

Tag Name	Display Name	Unit Prefix/ Show value as	HiHi Limit	Hi Limit	Lo Limit	LoLo Limit
U1_Opac_Pct_6M		None	19	7		
U1_OpacOn_TF_6M	U1 Opac On	True/False				
U2_Opac_Pct_6M	(optional) Enter display name	None				
U2_OpacOn_TF_6M		1/0				
U1_CO2_Pct_1H		None				
U1_Flow_scfh_1H		K				
U1_HeatIn_MBtu_1H		None				
U1_StackOn_TF_1H		1/0				

The configuration screen allows the user to pick up to 32 tags to be displayed. For each tag selected, the user can, optionally, configure a display name, which can be used to override the tag name parameter value shown in the middle of the tag tile (in Run Mode). A unit prefix override and/or a show Boolean values as 1/0, On/Off, or True/False is also configurable. Additionally, the form provides options for configuring limit values.

The Edit MultiValue Widget dialog also provides combo boxes for easy filtering of tag names.

To configure tags for a multi-value widget, click the [Add] button to create a default tag row, which will add the first available tag from either the entire list of tags or the filtered list of tags.

Next click the blue button on the end of the row to put that tag row into an edit mode. In this row edit mode, you can change the tag using the dropdown list of tags, enter the Display Name, and configure the other available options for the parameter.

Once in row edit mode, clicking the black button on the end of the row will take the row out of edit mode.

Clicking the red button on the end of the row will remove the tag from the list of configured tags for the widget.

Once you have configured all the tags for the widget, clicking the [OK] button will save the configuration, close the edit form, and return the display back to the dashboard, where the newly configured multi-value widget will be displayed.



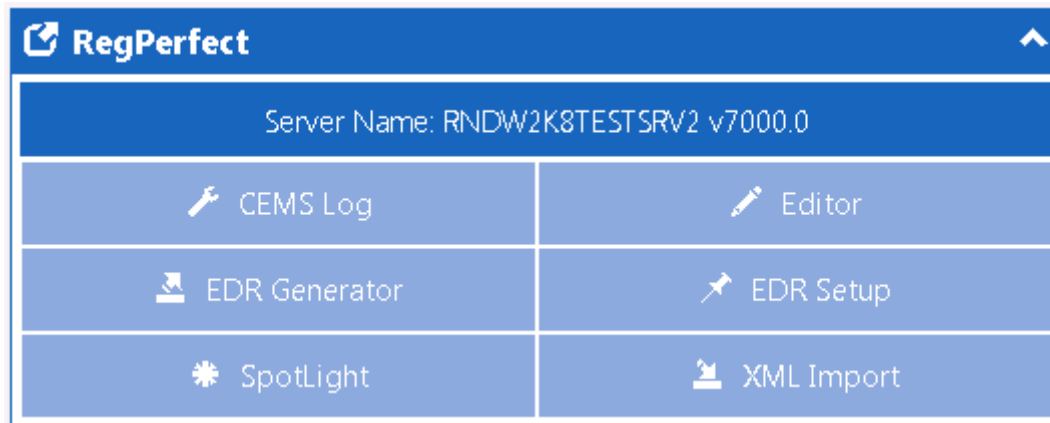
Note: After you have added 32 tags to the list, the [Add] button will be disabled and you will no longer be able to add tags to the list.

2.9 Shortcuts Widget

The Shortcuts widget provides a configurable list of links to legacy RegPerfect applications.

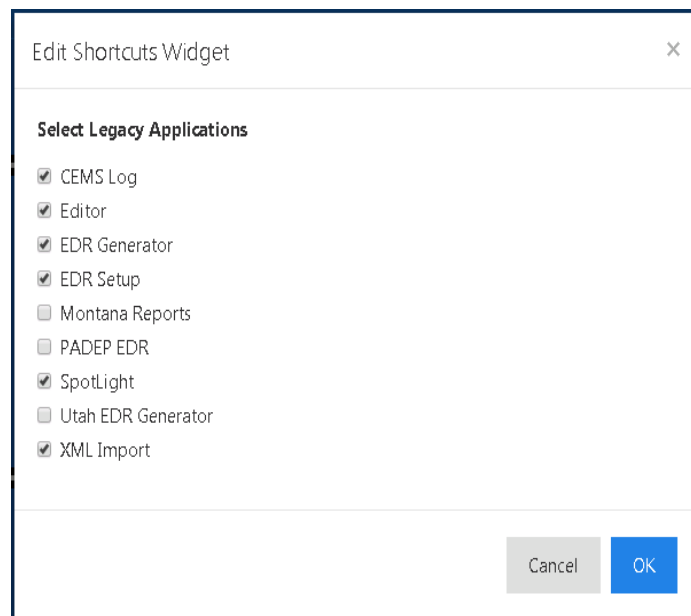
2.9.1 Run Mode

In run mode, the Shortcuts widgets shows the server name and database version, as well as tiles for each legacy application configured in the widget. When a certain tile is clicked, the corresponding application is opened.



2.9.2 Edit Mode

In edit mode, clicking the configuration icon on the header of the Shortcuts widget opens the Edit Shortcuts Widget form, as shown below.



The edit screen allows the user to select the applications for which an individual tile is shown in the Shortcuts widget. The user can add/ remove tiles from the widget by selecting/unselecting different applications. Clicking [OK] saves the legacy application selections.

2.10 Compliance Widget

The Compliance widget allows you to monitor the value, status, and limit for up to 16 compliance, base and prediction tags. Availability status may also be monitored.

2.10.1 Run Mode

In run mode, each set of tags consumes one row and contains columns for a two-line label to describe the compliance parameter, a base label and value, a compliance label and value, a limit label and value, a prediction label and value. All labels are limited to 22 characters. The prediction tag is optional and if no rows contain a prediction tag, the entire column will be hidden. Base and compliance tags are required as is a limit tag or constant. The limit tile and text colors are configurable; all others are blue and white, respectively. Optionally, online/offline status and a load value and units can be displayed in the widget header next to the title.

Normal operation

Compliance: Widget 1 Online 56 MWe ☰				
Parameter	Base	Compliance	Limit	Prediction
CO LbPerHr	1-Minute 56.1	1-Hour Current 56.20	SUSD ≤ 62.700	1-Hour Current 56.3000
NOx LbPerMBtu	1-Minute 57.1	30-Day Current 57.20	Normal Op < 63.100	30-Day Current 57.3000
WaterToFuel Ratio	1-Minute 59.1	1-Hour Current 59.20	Load above 25% ≥ 53.600	1-Hour Current 59.3000
Load MWe	1-Minute 60.1	1-Hour Current 60.20	All > 54.100	1-Hour Current 60.3000

Warnings: low availability (yellow CO parameter tile), non-fatal statuses (yellow borders on CO base and compliance tags, NOx prediction tag and WaterToFuel prediction tag) and tag value not within warning value (yellow tiles on CO base tag, NOx prediction tag, Load prediction tag and corresponding limits)

© Compliance: Widget 1 Online 34 MWe ☰				
Parameter	Base	Compliance	Limit	Prediction
CO LbPerHr	1-Minute 38.2	1-Hour Current 34.20	SUSD ≤ 38.200	1-Hour Current 34.3000
NOx LbPerMBtu	1-Minute 35.1	30-Day Current 35.20	Normal Op < 38.900	30-Day Current 38.8000
WaterToFuel Ratio	1-Minute 37.1	1-Hour Current 37.20	Load above 25% ≥ 33.600	1-Hour Current 37.3000
Load MWe	1-Minute 38.1	1-Hour Current 38.20	All > 34.200	1-Hour Current 34.3000

Errors: invalid status (red border on THC base tag) and tag value not within limit value (red tiles on Opacity prediction tag and corresponding limit)

© Compliance: Widget 2 Online				
Parameter	Base	Compliance	Limit	Prediction
THC	100.0	0.20	< 100.00	0.300
Opacity	1.1	1.20	< 80.00	80.000

Offline status (black borders)

© Compliance: Widget 2 Offline				
Parameter	Base	Compliance	Limit	Prediction
THC	39.1	39.20	< 100.00	39.300
Opacity	40.1	40.20	< 80.00	
Mercury	1000000.0	1000000	No limit	
Temperature	-100000.0	-100000.00	No limit	-100000.000

For base, compliance and prediction tags, each individual border changes color based on status:

- The color matches tile background color for normal operations.
- The color is yellow for a warning (non-fatal) status.
- The color is red for an error/fault (fatal) status.
- The color is black for unit offline.

Status flags that cause non-fatal color:

- NonFatalFault
- InCalibration
- InZeroTest
- InLowTest
- InMidTest
- InHighTest
- OutOfService
- TooFewSamples (online only)
- ZeroCalError2x/HighCalError2x (OOC_Daily not set)

Status flags that cause fatal color:

- FatalFault
- ZeroCalError2x/HighCalError2x (OOC_Daily set)
- ZeroCalError4x/HighCalError4x (OOC_Daily set)
- FiveDayCalDrift (OOC_Daily set)
- OOC_Manual
- NotQualityAssured
- InterferenceTestFailed
- InterferenceTestNotQA
- ExceedsScale

For base, compliance and prediction tags, each individual tile changes color based on a limit comparison when the tag value is online and valid:

- The color is blue when the tag value is within the warning value.
- The color is yellow when the tag value is not within the warning value.
- The color is red when the tag value is not within the limit value.

The limit tile and border on a row will be red when any of the others tiles in the same row are red and yellow when any of the other tiles on the same row are yellow, but none are red.

The parameter tile and border will be yellow when availability is below the configured percentage.

The header and border (widget frame) of the entire widget will be red when any of the limit tiles are red and yellow when any of the limit tiles or parameter tiles are yellow, but none are red.

A color legend can be seen by clicking Show Legend in the action menu.

© Compliance: Widget 2 | Online

Parameter	Base	Compliance	Limit	Action
THC	37.1	37.20	< 100.0	Refresh Widget
Opacity	1-Minute No sample	No sample	< 80.0	Collapse Widget
				Maximize Widget
				Show offline rows
				Hide legend

Compliance Legend

Overall value alarm and tag status indicated by header and frame color

- Red** - at least one border or tile is red
- Yellow** - at least one border or tile is yellow, but none are red
- Blue** - no borders or tiles are red or yellow

Availability warning indicated by parameter tile color

- Yellow** - availability is below warning percent
- Blue** - availability is at or above warning percent

Value alarm indicated by tag tile color

- Red** - valid online value outside limit
- Yellow** - valid online value outside warning, but within limit
- Blue** - value within warning or offline or invalid

Tag status indicated by border color

- Red** - online with fatal fault
- Yellow** - online with nonfatal fault
- Blue** - online with no fault
- Black** - offline

Rows that contain offline base, compliance and prediction (when configured) tags or have no limit are hidden by default, but there is an option to show these rows in the action menu. No limit is indicated by a limit tag value of 999999 for a high limit or -99999 for a low limit.

Parameter	Base	Compliance	Limit	Action
THC	2.1	2.20	< 100.00	<ul style="list-style-type: none"> Refresh Widget Collapse Widget Maximize Widget Show offline rows
Opacity	3.1	3.20	< 80.00	

2.10.2 Details View

Clicking anywhere on a row inside the widget opens a details view which contains columns for the date and time, the configured availability and prediction tag values, the limit value, and values and flags for the configured compliance and base tags and all remaining referenced tags of the compliance tag. The details table also shows a Status Code to define the condition of any data that is flagged with warning or alarm status (yellow or red rows).

Status Code	Date/Time	Limit	Compliance		Base		U1_CO2R_ProbeCheck_Pct_1H		U1_StackOn_TF_1D	
			Value	Flags	Value	Flags	Value	Flags	Value	Flags
5	04/23/2019 10:00	11.1			121.5	c - >	0.0	<		
	04/23/2019 09:00	11.1			121.3		0.0	<		
	04/23/2019 08:00	11.1			121.0		0.0	<		
	04/23/2019 07:00	11.1			120.8		0.0	<		
5	04/23/2019 06:00	11.1			120.5	c - >	0.0	<		
	04/23/2019 05:00	11.1			119.9		0.0	<		
	04/23/2019 04:00	11.1			119.6		0.0	<		
	04/23/2019 03:00	11.1			119.1		0.0	<		
5	04/23/2019 02:00	11.1			117.9	c - >	0.0	<		
	04/23/2019 01:00	11.1			116.2		0.0	<		
4	04/23/2019 00:00	11.1	10.5	c - > - B	114.6		0.0	<	1	
	04/22/2019 23:00	11.1			112.6		0.0	<		
5	04/22/2019 22:00	11.1			111.5	c - >	0.0	<		
	04/22/2019 21:00	11.1			110.5		0.0	<		
	04/22/2019 20:00	11.1			109.4		0.0	<		
	04/22/2019 19:00	11.1			107.8		0.0	<		
5	04/22/2019 18:00	11.1			106.2	c - >	0.0	<		
	04/22/2019 17:00	11.1			105.1		0.0	<		
	04/22/2019 16:00	11.1			104.4		0.0	<		
	04/22/2019 15:00	11.1			103.7		0.0	<		

To see the definition of each Status Code, click the "Status Code Legend" link at the bottom left corner.

	04/22/2019 20:00	11.1		109.4		0.0	<		
	04/22/2019 19:00	11.1		107.8		0.0	<		
5	04/22/2019 18:00	11.1		106.2	c - >	0.0	<		
	04/22/2019 17:00	11.1		105.1		0.0	<		
	04/22/2019 16:00	11.1		104.4		0.0	<		
	04/22/2019 15:00	11.1		103.7		0.0	<		

« < 1 2 > »

> Status Flag Legend
 v Status Code Legend

Status Code	Description
1	Compliance Tag Sample has Error Status
2	Base Tag Sample has Error Status
3	Prediction Tag Sample has Error Status
4	Compliance Tag Sample has Warning Status
5	Base Tag Sample has Warning Status
6	Prediction Tag Sample has Warning Status

Close

The details screen displays samples in descending order of time and shows a maximum of 20 samples per page. The total number of samples shown varies based upon the smallest sample interval of all configured tags. It shows 24 hours of 1H data, 6 hours of 6M or 15M data, 2 hours of 1M data, and 30 days of 1D data.

If a row has no prefilled data for all of the configured tags (displayed as "No sample"), there will be no details view; i.e., nothing will happen when clicking on the row.

2.10.3 Edit Mode

In edit mode, clicking "Configure Widget" in the action menu opens the Edit Compliance Widget form, as shown below.

Edit Compliance Widget
✕

Title

Widget 2

Operating Tag

U3_UnitOnHgCom_TF_1M

Load Tag

Site Filter:

Compliance Tag Filter: Tags with value alarms

Base Tag Filter: Referenced tags only

Constant Category Filter: #AlarmLimit and EmissionsLimit#

Type Filter:

Time Filter:

Parameter Filter:

Compliance Tag Name Compliance Label	Parameter Upper Label Parameter Lower Label	Base Tag Name Base Label	Inequality/Limit Type		Limit Color Tile/Text	Warning % Limit/Avail	Prediction Tag Prediction Label Availability Tag	
			Limit Name	Limit Label				
U3_THC1HrRun_Ppm_1M	THC	U3_THC_Ppm_1M	< (High Limit)	Constant	■ <input type="checkbox"/>	90 90	U3_THCPre_Ppm_1M	✎ ✖
U3_Opac6MRun_Pct_1M	Opacity	U3_Opac_Pct_1M	< (High Limit)	Constant	■ <input type="checkbox"/>	90 90		✎ ✖
U3_Hg1HrRun_ugPerScm_1M	Mercury	U3_Hg_ugPerScm_1M	< (High Limit)	Tag	■ <input type="checkbox"/>	90 90		✎ ✖
U3_Temp1HrRun_DegF_1M	Temperature	U3_Temp_DegF_1M	>= (Low Limit)	Tag	■ <input type="checkbox"/>	110 90	U3_TempPre_DegF_1M	✎ ✖

+ Add

Add up to 16 tags to be displayed in the widget.

Drag and drop rows to reorder the tags.

Cancel
OK

The configuration screen allows the user to select an operating tag, a load tag and add up to 16 rows for display in the widget. For each row added, the user must select a compliance tag, a base tag, a limit type and a limit name. The limit colors and warning percents are also required parameters, but have defaults and cannot be set to nothing. All other parameters are optional. Configuring a tag or limit label box with nothing in it will leave just the value vertically centered in the tile. Configuring a parameter label box with nothing in it will leave the other parameter label vertically centered in the tile or, when both parameter label boxes are configured with nothing in them, a blue tile with nothing in it.

The Edit Compliance Widget dialog also provides combo boxes for easy filtering of tag and constant names. The site filter applies to all dropdown lists. The default compliance tag filter restricts the compliance dropdown list to include only tags with value alarms. The default base tag filter restricts the base tag dropdown list to include only tags that are referenced tags of the compliance tag. The default constant category filter restricts the limit name dropdown list to include only constants from the alarm limit and emissions limit categories when "Constant" has been selected as the limit type.

The type, time and parameter filters are an alternative to the default compliance and base tag filters. These filters only apply to the compliance tag dropdown list when "Use other filters" has been selected as the compliance tag filter and to the base tag dropdown list when "Use other filters" has been selected as the base tag filter. These filters never apply to any other dropdown list.

The operating tag dropdown list includes only tag names from the selected site that end in "_TF_1M". The load tag dropdown list includes only tag names from the selected site that contain "Load" and have a periodicity of 1M. The limit name dropdown list includes only tag names from the selected site that

contain "Lim" when "Tag" has been selected as the limit type or constants from the selected site and constant category when "Constant" has been selected as the limit type. The prediction tag dropdown list includes only tag names from the selected site that contain "Pr" and do not contain "Pres", "Probe" or "Prb". The availability tag dropdown list includes only tag names from the selected site that contain "Avail".

To configure rows for a compliance widget, click the [Add] button to create a default row, which will add the first available tag from the filtered list of tags as the compliance tag. The compliance label will default to the tag's periodicity. The parameter upper label will default to the tag's parameter and qualifier. The parameter lower label will default to the tag's units. The inequality will default to "< (Low Limit)". The limit colors will default to a light shade of red for the tile and white for the text. The warning percents will both default to 90. The base tag, limit type and limit name fields will contain red text indicating they need to be configured. The OK button will be disabled until there is no red text.

Next, click the blue button at the end of the row to put that row into edit mode. In this row edit mode, you can change any of the parameters. Any required parameter that has not been configured will have a red border. The OK button will be disabled until there are no red borders. Note that the warning percent default and dropdown lists change when switching from a high limit to a low limit or vice-versa. The high limit default is 90% and the low limit default is 110%. As an example, when the inequality is "<= (High Limit)", the limit value is 100 and the warning percent is 90; a tag value greater than 90 will result in a yellow warning tile and a tag value greater than 100 will result in a red error tile. Another example, when the inequality is "> (Low Limit)", the limit value is 100 and the warning percent is 110; a tag value less than or equal to 110 will result in a yellow warning tile and a tag value less than or equal to 100 will result in a red error tile.

Once in row edit mode, clicking the black button on the end of the row will take the row out of edit mode.

Clicking the red button on the end of the row will remove the tag from the list of configured tags for the widget.

Once you have configured all the rows for the widget, clicking the [OK] button will save the configuration, close the edit form, and return the display back to the dashboard, where the newly configured compliance widget will be displayed.



Note: After you have added 16 rows to the list, the [Add] button will be disabled and you will no longer be able to add rows to the list.

2.11 Trend Widget

The Trend widget allows you to monitor the data changing trend for up to 6 tags. It automatically updates the display in a configurable time interval, one minute by default.

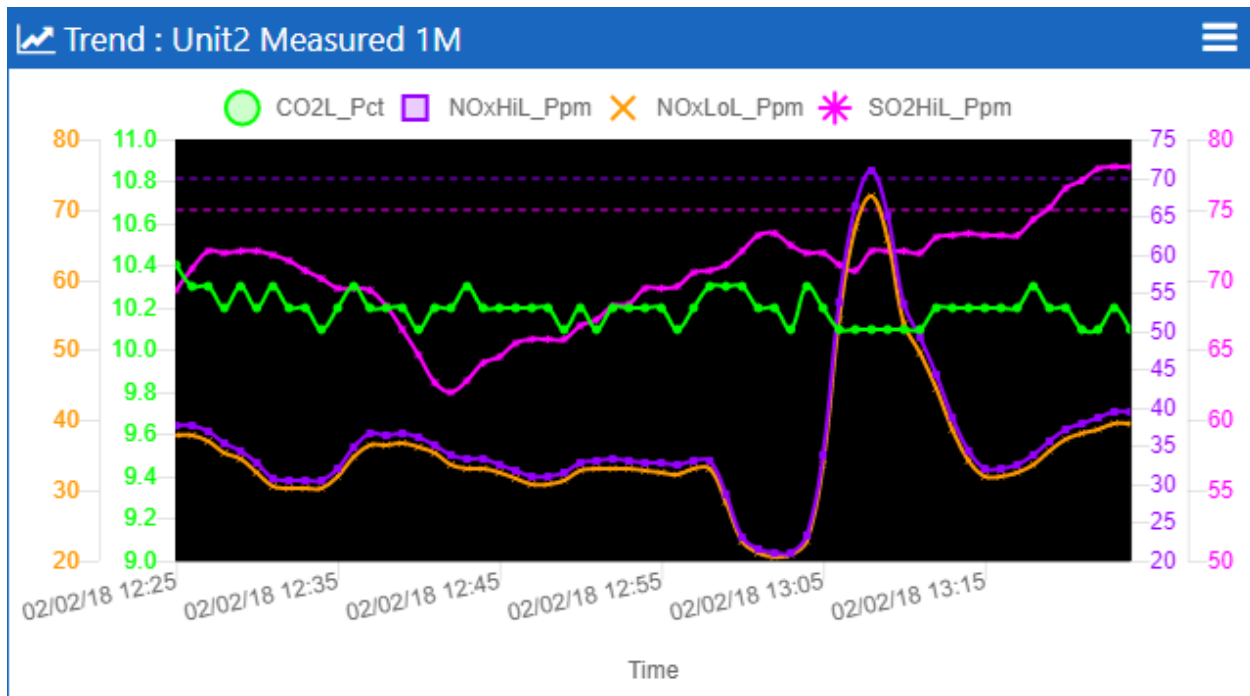
2.11.1 Run Mode

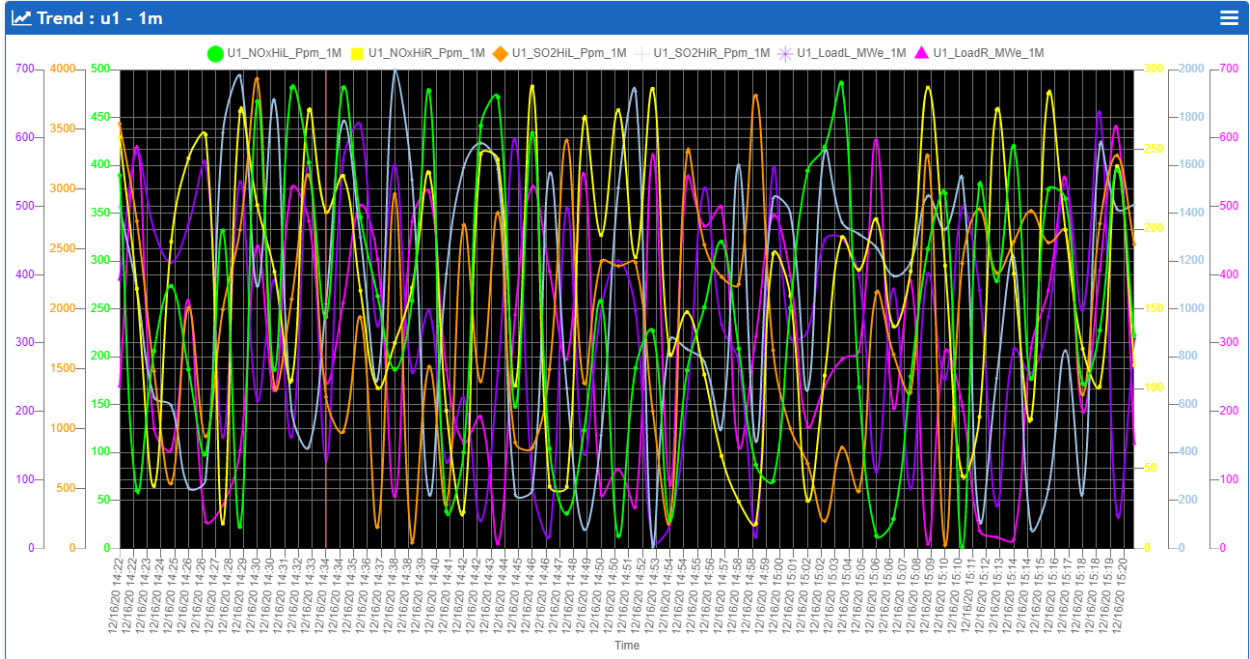
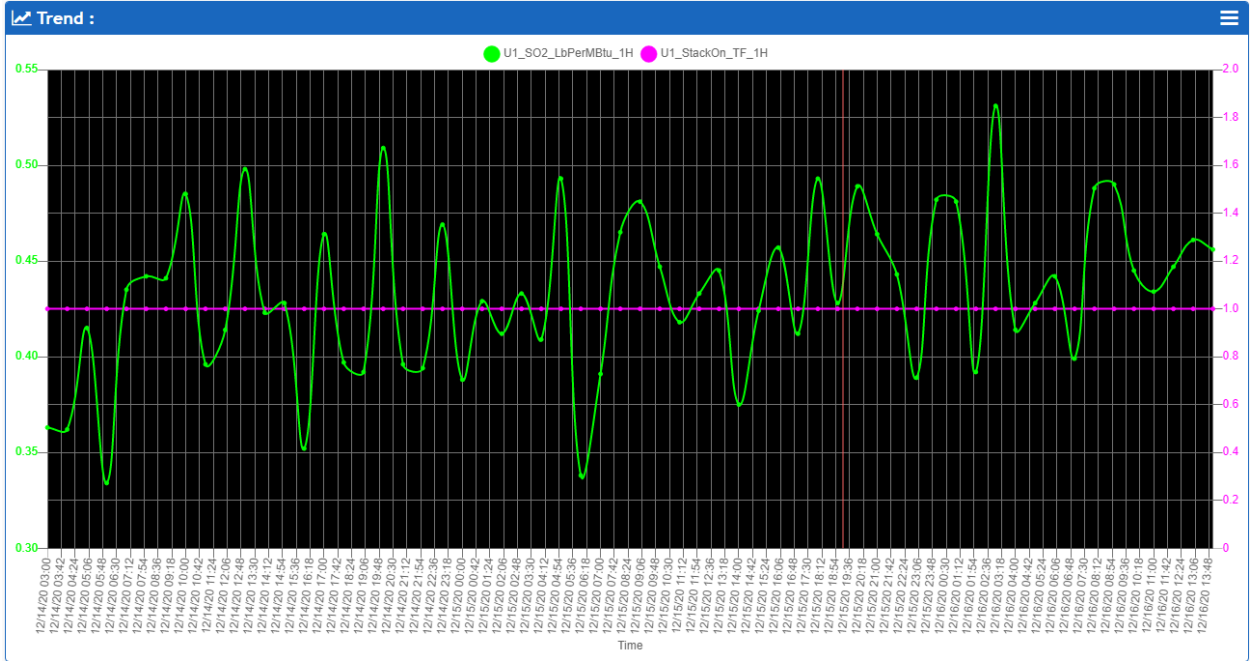
In run mode, the Trend widget displays a two-dimension graph that shows the sample data change with time or tag for up to 6 tags of the same sample interval. Line plots are used for trends of tags (Y) versus time (X) and scatter plots are used for tags (Y) versus tag (X). Options of overlapped y-axes and single y-axis are available. The trend widget displays real-time data by automatically updating itself for the configured time range up to current time.

The maximum length of time range to be displayed on the Trend widget depends on the sample interval of the tag(s) configured for the widget:

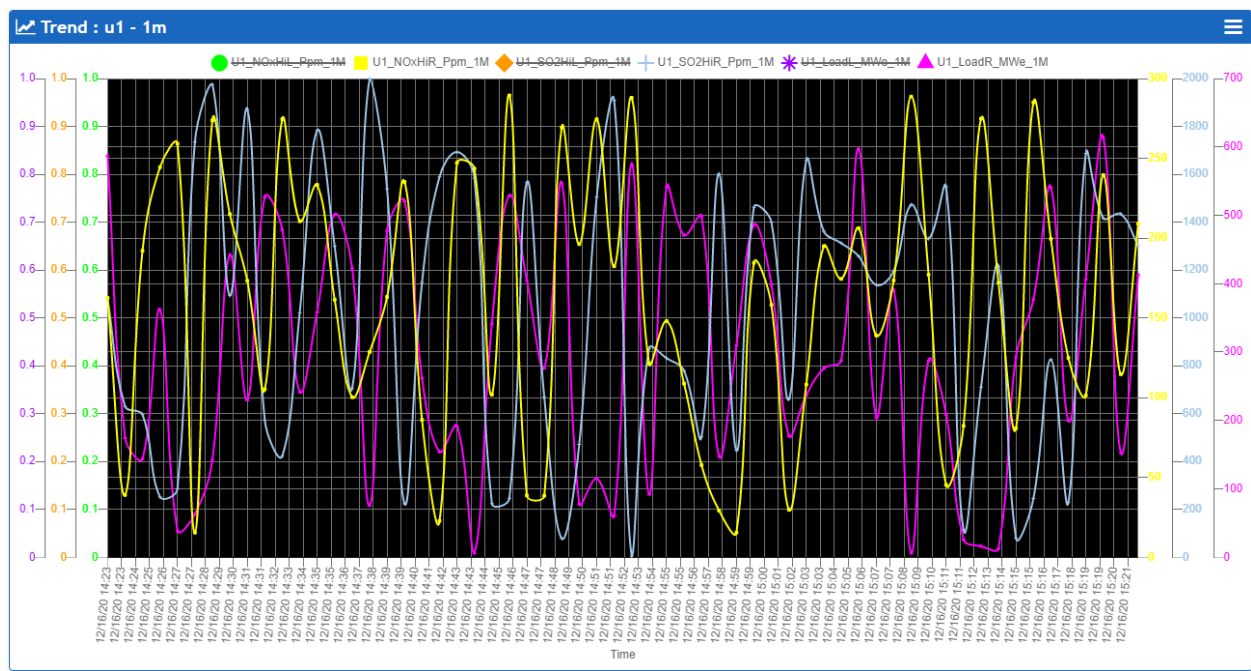
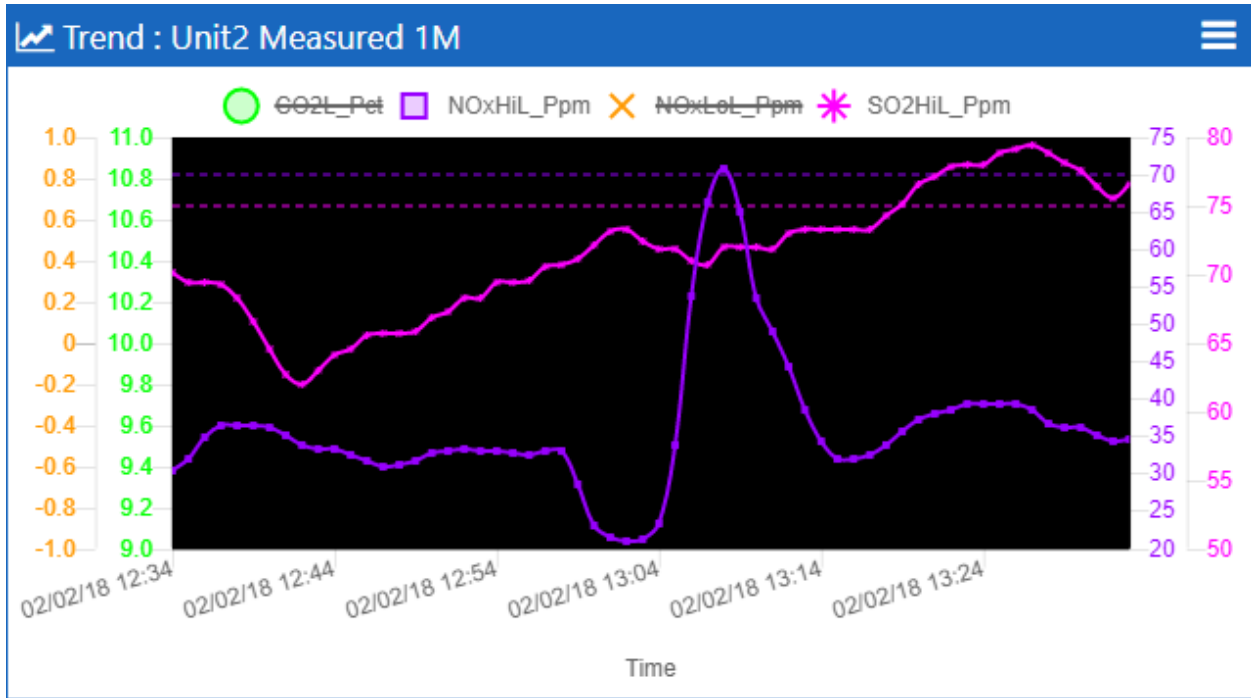
- 2 hours for 1M tag
- 6 hours for 6M tag
- 6 hours for 15M tag
- 24 hours for 1H tag
- 30 days for 1D tag

Line Plot (3 examples)

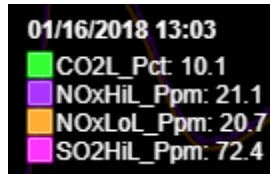




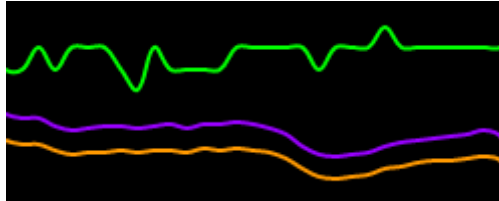
Hiding Plot: In addition to hiding plot for any individual tag through configuration, clicking the legend label toggles hiding/showing that tag plot instantly. (2 examples)



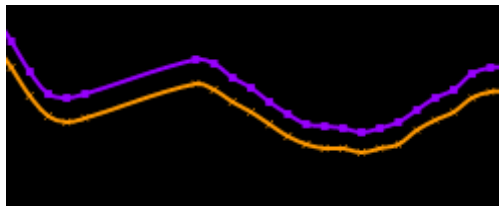
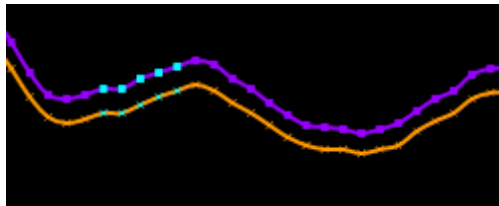
Value Display: Moving mouse pointer onto any data point makes a tooltip pop up showing the time and value for each tag drawn on the graph.



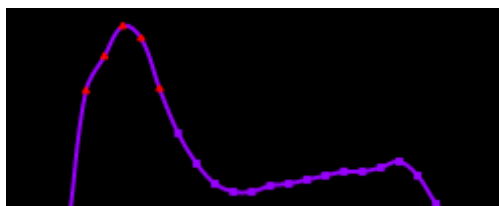
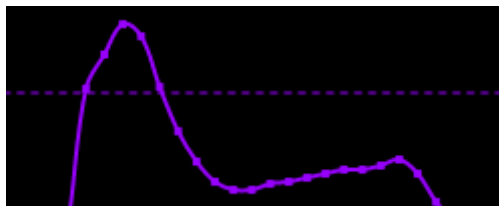
Hiding Data Points: Data points can be configured not shown on plot lines.



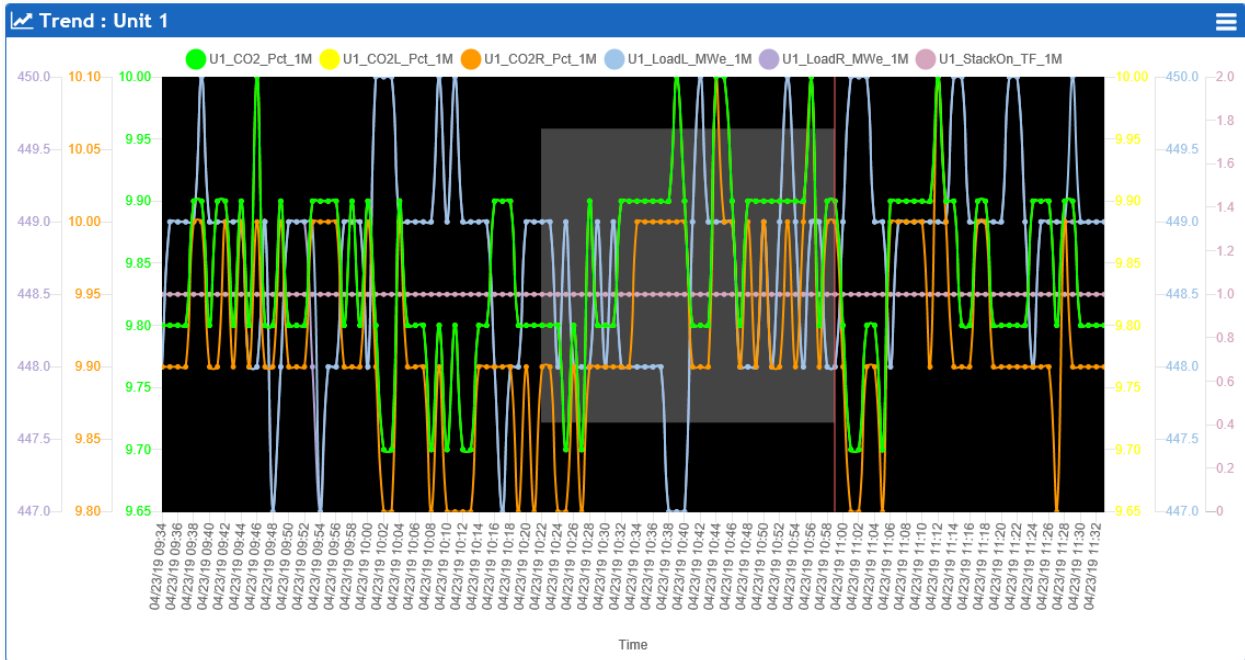
Showing/Hiding Invalid Data: Invalid data points can be shown in different symbol color or hidden from displaying through configuration.



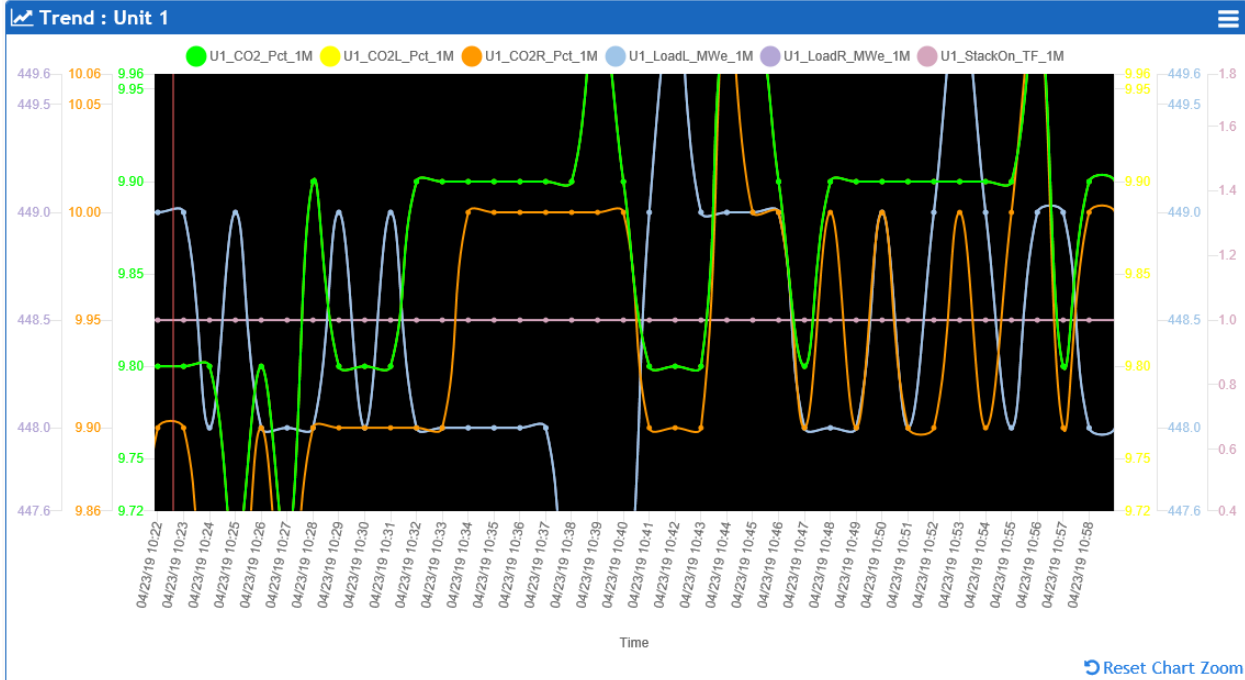
Exceeding Limit: There are two ways to indicate that a tag value is in excess of a limit, a horizontal dotted limit line in the same color as plot color or an upward triangle limit symbol in a configurable color, preferably different from plot color. Both high and low limits may be specified.



Zoom: To zoom in on the data/chart, using your mouse, drag a rectangular area for the zoom location.

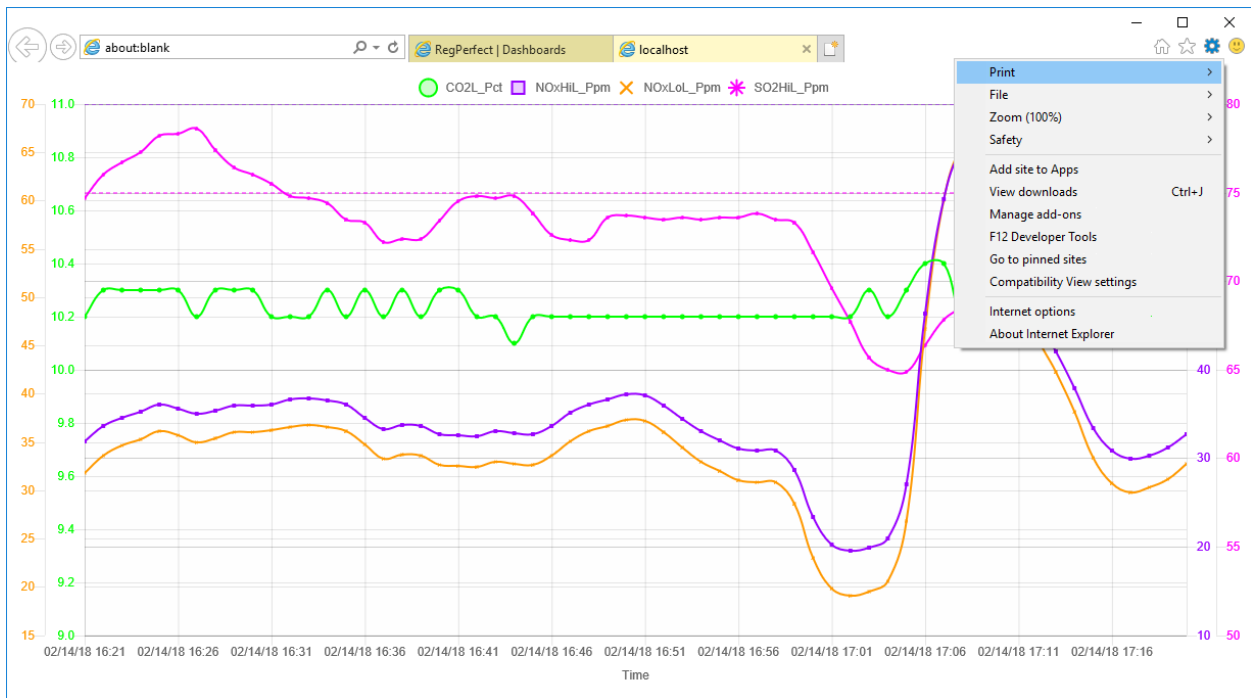


After selecting a zoom area, the Trend widget will display the data/chart for closer inspection.



Clicking the "Reset Chart Zoom" button at the lower left corner of the widget will return it to its normal view.

Print: Clicking the control dropdown on the widget header and selecting Print Chart maximizes the widget and opens the chart image in a new browser tab, where the chart can be printed via the browser's Print menu.



2.11.2 Historical View

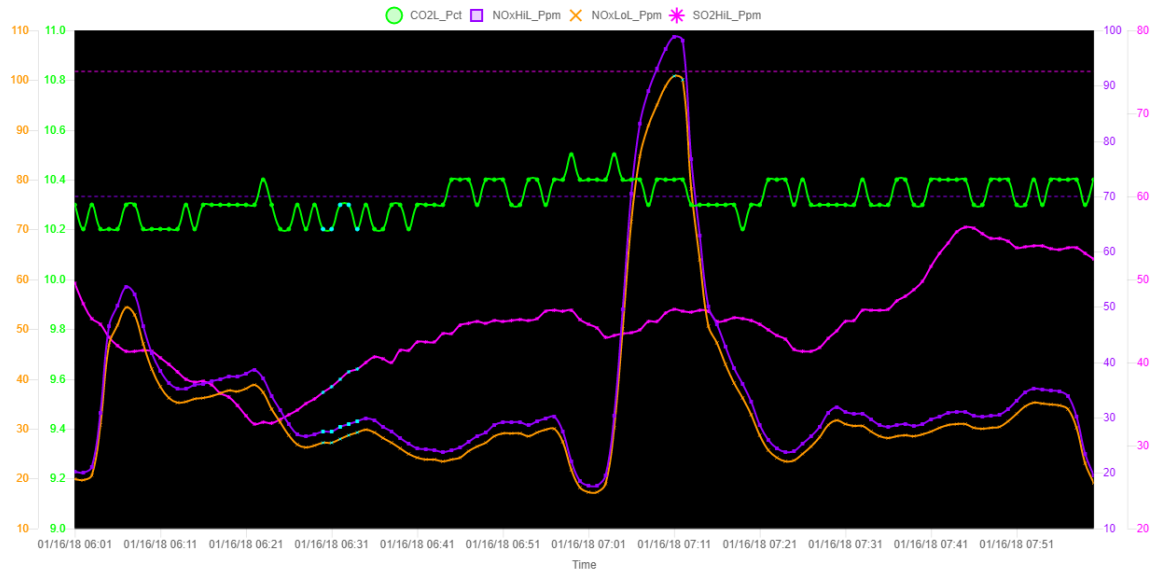
Double-clicking anywhere inside the widget switches to a time range view, as shown below. Click the quick time selection links to select frequently used time ranges.

The screenshot shows a 'Trend' widget interface. It features a header with a trend icon and the text 'Trend :'. Below the header are several quick time selection links: Today, Yesterday, Last 30 Days, Previous Month, Last 24 Hours, Last 3 Days, Last 7 Days, Current 3 Days, Current 7 Days, and Previous Quarter. Below these links is a note: 'Using the textboxes and/or date/time picker below or the quick date links above, enter a Start Time and End Time for the historical chart. Note: Depending on the tag periodicity and to control the amount of data shown, the date/time range may be adjusted.' At the bottom, there are two textboxes for 'Start Time' (12/16/2020 00:00) and 'End Time' (12/16/2020 15:25), each with a calendar icon. Below the textboxes are 'OK' and 'Cancel' buttons.

Clicking the [Cancel] button switches back to the real-time trend view. Selecting a historical time range and clicking the [OK] button opens the *Historical Trend* form displaying the trend graph for the tags configured and the time range selected. The historical trend graph supports the same features as the real-time graph, detailed in the last section.

Historical Trend

×



Close

2.11.3 Edit Mode

In edit mode, clicking the control dropdown on the header of the Trend widget and selecting Configure Widget opens the *Edit Trend Widget* form, as shown below.

The screenshot shows the 'Edit Trend Widget' configuration window. It includes a title field, graph background options, limit settings, X-axis options, and a table for configuring tags. The table has columns for Tag Name, Label, Plot Color, Point Symbol, Auto Scale, Min Scale, Max Scale, Low Limit, High Limit, and Hide Plot. There are also filter dropdowns and an 'Add' button.

Tag Name	Label	Plot Color	Point Symbol	Auto Scale	Min Scale	Max Scale	Low Limit	High Limit	Hide Plot
U2_CO2L_Pct_1M	CO2L_Pct	#00ff00	circle	No	9	11			Show [edit] [delete]
U2_NOxHil_Ppm_1M	NOxHil_Ppm	#ff00ff	rect	<input checked="" type="checkbox"/>	0	0		70	[edit] [delete]
U2_NOxLoL_Ppm_1M	NOxLoL_Ppm	#ff9900	crossRot	Yes	0	0			Show [edit] [delete]
U2_SO2Hil_Ppm_1M	SO2Hil_Ppm	#ff00ff	star	No	20	80		75	Show [edit] [delete]

The configuration screen allows the user to configure the overall look of the graph, trending styles, and the time range to be displayed. There is a default setting for each field, and the user can optionally make any changes based on their usage intention.

The configuration screen allows the user to pick up to 6 tags to be displayed. The screen also provides combo boxes for easy filtering of tag names.

To configure tags for a trend widget, click the [Add] button to create a default tag row, which will add the first available tag from the filtered list of tags. There is a default for each tag parameter initially.

Next click the blue button on the end of the row to put that tag row into an edit mode. In this row edit mode, you can change the tag using the dropdown list of tags, change the default label, and configure the plot styles for the tag. You can only select tags of the same sample interval. When auto scale is unchecked, the minimum and maximum scales need to be configured. Limit values are optional.

Once in row edit mode, clicking the black button on the end of the row will take the row out of edit mode.

Clicking the red button on the end of the row will remove the tag from the list of configured tags for the widget.

Once you have configured all the tags for the widget, clicking the [OK] button will save the configuration, close the edit form, and return the display back to the dashboard, where the newly configured trend widget will be displayed.



Note: After you have added 6 tags to the list, the [Add] button will be disabled and you will no longer be able to add tags to the list.

2.12 Matrix Widget

The Matrix widget allows you to build a matrix of text boxes, tag values, and constant values. As of Dashboards v7.1.2019.1218, the Matrix widget supports displaying instantaneous values, updated automatically in a configurable time interval, five seconds by default.

2.12.1 Run Mode

In run mode, each text, tag value, real-time tag value, or constant value consumes one tile in the matrix grid. Additionally, each tile, and the whole widget, will display different operational statuses (i.e., normal, non-fatal or warning, and fatal or error statuses).

Normal operation

Widget 1			
Header 1	Header 2	Header 3	Header 4
CO LbPerHr	NOx LbPerMBtu	WaterToFuel Ratio	Load MWe
2.70	3.20	5.20	6.20
THC	Opacity	Mercury	Temperature
2.20	3.20	1000.00	-0.10
OpacDustComp Pct 6M	OpacDustComp Pct 15M	NH3 Ppm	GasFlow scf
54.0	45.0	15.0	276000

Warning: Non-fatal status (yellow border on the tile under Load Mwe label)

Widget 2			
Header 1	Header 2	Header 3	Header 4
CO LbPerHr	NOx LbPerMBtu	WaterToFuel Ratio	Load Mwe
41.20	42.20	44.20	45.20
EmissionsLimit	NH3AlarmLimit	GasFlowAlarmLimit	SO2AlarmLimit
100.000	3000.00	500000.0000	61

Warning: Tag value is not between Lo and Hi limits, but is between LoLo and HiHi limits (yellow font color in the tile under CO LbPerHr)

Matrix : Matrix2			
Widget 2			
Header 1	Header 2	Header 3	Header4
CO LbPerHr	NOx LbPerMBtu	WaterToFuel Ratio	Load Mwe
7.10	8.10	8.20	10.20
EmissionsLimit	NH3AlarmLimit	GasFlowAlarmLimit	SO2AlarmLimit
100.000	3000.00	500000.0000	61

Error: Fatal status (red border on the tile below Opacity label)

Matrix :			
Widget 1			
Header 1	Header 2	Header 3	Header 4
CO LbPerHr	NOx LbPerMBtu	WaterToFuel Ratio	Load MWe
30.40	31.10	27.30	28.00
THC	Opacity	Mercury	Temperature
27.20	No sample	1000.00	-0.10
OpacDustComp Pct 6M	OpacDustComp Pct 15M	NH3 Ppm	GasFlow scf
18.0	0.0	14.0	276000

Error: Tag value exceeds the configured HiHi Limit or goes below the LoLo Limit (red font color in the tile under CO LbPerHr)

Matrix : Matrix2			
Widget 2			
Header 1	Header 2	Header 3	Header4
CO LbPerHr	NOx LbPerMBtu	WaterToFuel Ratio	Load Mwe
63.80	64.10	54.50	55.10
EmissionsLimit	NH3AlarmLimit	GasFlowAlarmLimit	SO2AlarmLimit
100.000	3000.00	500000.0000	61

Offline status (black borders)

Widget 1			
Header 1	Header 2	Header 3	Header 4
CO LbPerHr	NOx LbPerMBtu	WaterToFuel Ratio	Load MWe
65.00	65.30	55.40	55.90
THC	Opacity	Mercury	Temperature
58.20	No sample	1000.00	-0.10
OpacDustComp Pct 6M	OpacDustComp Pct 15M	NH3 Ppm	GasFlow scf
48.0	30.0	14.0	276000

Warning: Warning on real-time values (yellow borders)

Widget 3			
	Discrete	Channel	Float
SLC	1	3768	58.5

Error: Error retrieving real-time values (red borders)

Widget 3			
	Discrete	Channel	Float
SLC	error	error	error

The header and border colors of the widget changes based on border color and font color of the individual tiles:

- The border color is yellow for a warning (non-fatal) status.
- The border color is red for an error/fault (fatal) status.
- The border color is black for unit offline.

Status flags that cause non-fatal color:

- NonFatalFault
- InCalibration
- InZeroTest
- InLowTest
- InMidTest
- InHighTest
- OutOfService
- TooFewSamples (online only)
- ZeroCalError2x/HighCalError2x (OOC_Daily not set)

Status flags that cause fatal color:

- FatalFault
- ZeroCalError2x/HighCalError2x (OOC_Daily set)
- ZeroCalError4x/HighCalError4x (OOC_Daily set)
- FiveDayCalDrift (OOC_Daily set)
- OOC_Manual
- NotQualityAssured
- InterferenceTestFailed
- InterferenceTestNotQA
- ExceedsScale

The font color of values in tag and real-time tag tiles changes based on limits:

- The color is blue when the tag value is within the configured lo and hi limits.
- The color is yellow when the tag value is not between Lo and Hi limits, but is between LoLo and HiHi limits.
- The color is red when the tag value is not between Lo and Hi limits, but is between LoLo and HiHi limits.

The header color will be red when any of the tiles are red and yellow when any of the tiles are yellow, but none are red. And, it will be the normal blue color when there are no red/errors or yellow/warnings.

A color legend can be seen by clicking Show Legend in the action menu.

Matrix : ☰

Widge

Header 1	Header 2
CO LbPerHr	NOx LbPerMBtu
3.90	
THC	Opacity
3.20	No sample
OpacDustComp Pct 6M	OpacDustComp Pc
54.0	

Matrix Legend

Overall value alarm and tag status indicated by header and frame color

- Red** - at least one border or value is red
- Yellow** - at least one border or value is yellow, but none are red
- Blue** - no borders or values are red or yellow

Value alarm indicated by value color

- Red** - value not between LoLo and HiHi limits
- Yellow** - value not between Lo and Hi Limits, but between LoLo and HiHi limits
- Blue** - value between Lo and Hi limits

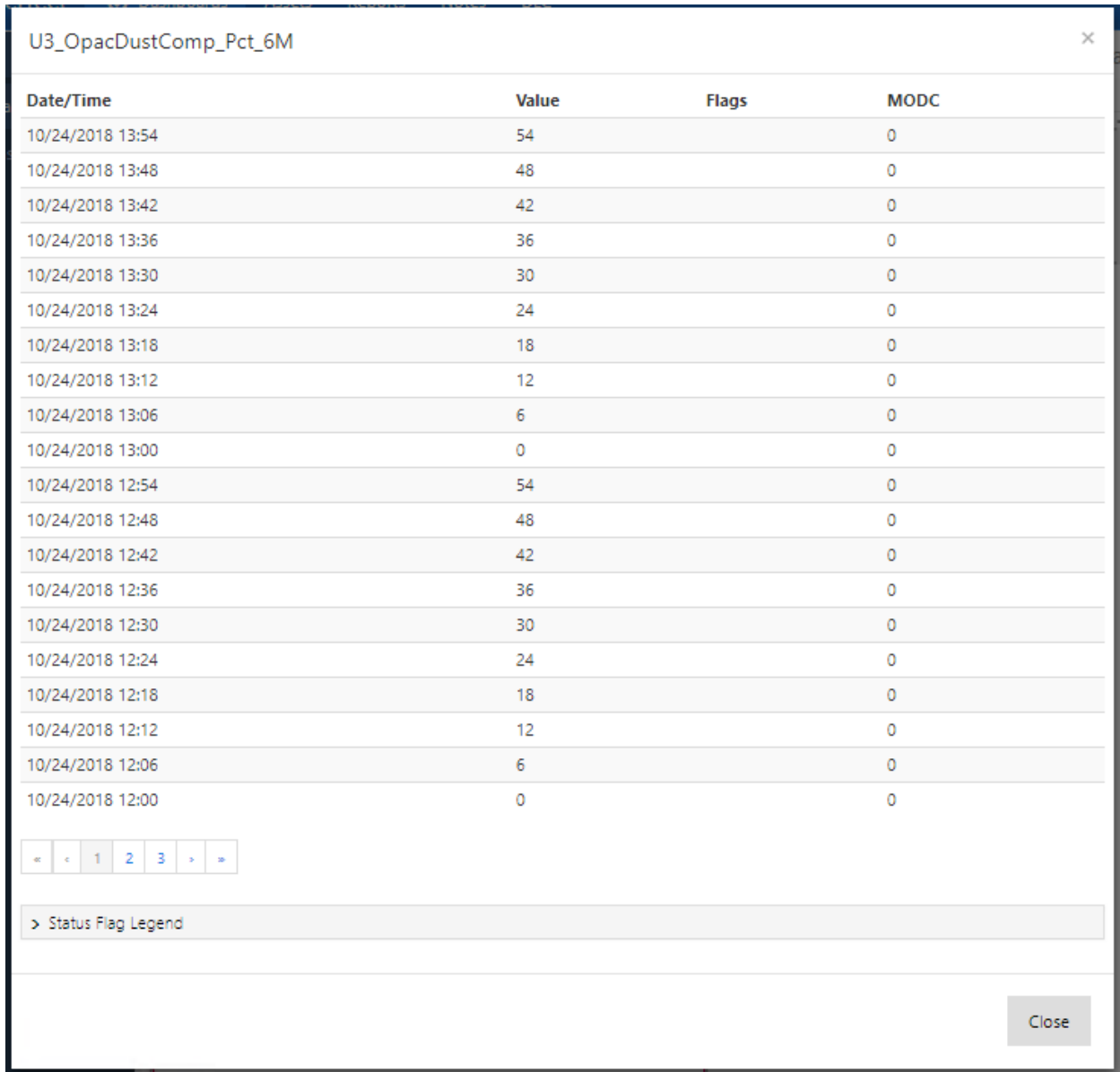
Tag status indicated by tile border color

- Red** - online with fatal fault
- Yellow** - online with nonfatal fault, but no fatal fault
- Blue** - online with no fault
- Black** - offline

2.12.2 Details View

Clicking anywhere on a tag tile inside the widget opens a details view, which contains columns for the date and time, values, flags, and MODC for the configured tag. The details screen displays samples in descending order of time and shows a maximum of 20 samples per page. The total number of samples shown varies based upon the smallest sample interval of all configured tags. It shows 24 hours of 1H data, 6 hours of 6M or 15M data, 2 hours of 1M data, and 30 days of 1D data.

If a row has no prefilled data for all of the configured tags (displayed as "No sample"), there will be no details view; i.e., nothing will happen when clicking on the row.



Date/Time	Value	Flags	MODC
10/24/2018 13:54	54		0
10/24/2018 13:48	48		0
10/24/2018 13:42	42		0
10/24/2018 13:36	36		0
10/24/2018 13:30	30		0
10/24/2018 13:24	24		0
10/24/2018 13:18	18		0
10/24/2018 13:12	12		0
10/24/2018 13:06	6		0
10/24/2018 13:00	0		0
10/24/2018 12:54	54		0
10/24/2018 12:48	48		0
10/24/2018 12:42	42		0
10/24/2018 12:36	36		0
10/24/2018 12:30	30		0
10/24/2018 12:24	24		0
10/24/2018 12:18	18		0
10/24/2018 12:12	12		0
10/24/2018 12:06	6		0
10/24/2018 12:00	0		0

< < 1 2 3 > >

> Status Flag Legend

Close

Clicking anywhere on a real-time tag tile inside the widget opens a details view, which lists all the real-time tags on this widget, their register addresses, instantaneous values, and error codes. Error code 0 indicates no error. No value is shown if an error occurred. Expand the error code legend at the bottom to view the description of each error code.

Realtime Value Details ×

Controller Name	Tag Name	Actual Address	Value	Error Code
U1_ABKris_P_Controller	TestChannel	N102:10	4088	0
U1_ABKris_P_Controller	TestDiscrete	N101:1/2	1	0
U1_ABKris_P_Controller	TestFloat	F57:1	9.5	0

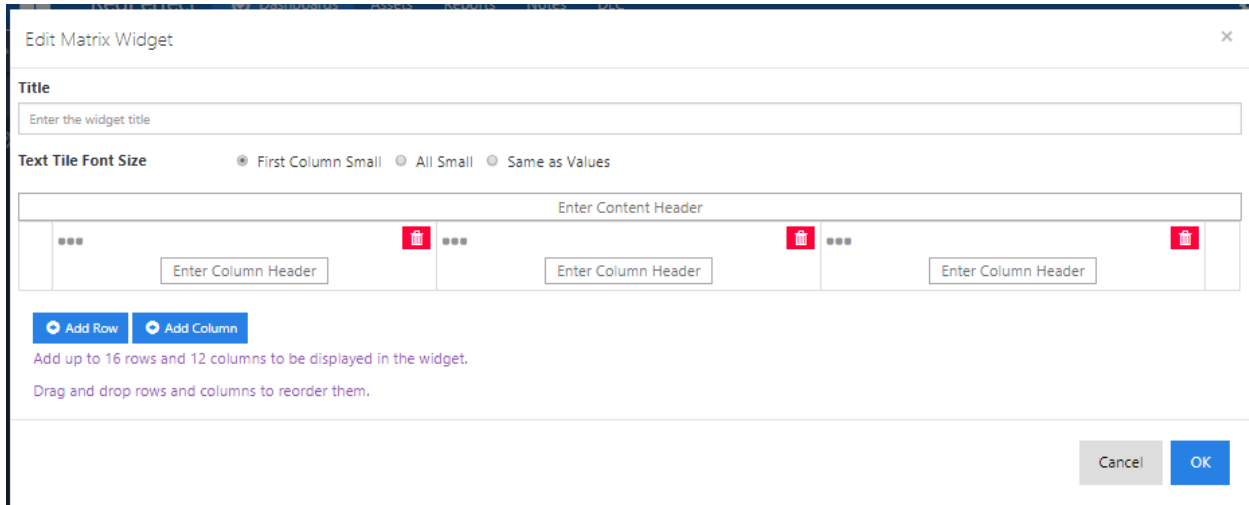
∨ Error Code Legend

Error Code	Description
0	No error
1	Data not updated for > 5 polls
2	UDC not running
3	No realtime values from UDC
4	Controller data not found
5	Tag data not found

Close

2.12.3 Edit Mode

In edit mode, clicking “Configure Widget” in the action menu opens the Edit Matrix Widget form, as shown below.



The screenshot shows the 'Edit Matrix Widget' dialog box. It includes a title input field, font size options, a content header input, and a grid of three columns. Each column has an 'Enter Column Header' input and a red delete button. There are also 'Add Row' and 'Add Column' buttons, and 'Cancel' and 'OK' buttons at the bottom.

The configuration screen allows you to select a widget title, text tile font size, and add up to 16 rows and 12 columns for display in the widget. You can pick a content header for the widget and column headers for the individual columns. You can choose to leave a cell empty or pick a tag name or constant name by clicking on the cell and going to the Configure Tile screen.

By default, when a new Matrix widget is opened in the Edit mode, it opens with a header row containing three empty column headers.

To add new rows with configurable cells, click the [Add Row] button to create a default row, which contains three columns. To add more columns, press the [Add Column] button. To delete an individual column, press the red button in the corresponding column header. To delete a given row, press the red button at the right hand corner of that row.



Note: After you have added 16 rows in the Edit screen, the [Add Row] button will be disabled and you will no longer be able to add rows to the list. Similarly, after you have added 12 columns in the Edit screen, the [Add Column] button will be disabled and you will no longer be able to add columns to the list.

The Edit screen allows the flexibility of moving columns and rows after configuration. To move a column, hover the mouse cursor anywhere in a column header until the entire column is highlighted in yellow. Using the grab bar, drag/move the entire column and drop it in a new location within the grid. Similarly, you can move rows around using the grab bar that appears on the left hand corner of each row.

An example of a configured matrix widget looks like this:

Edit Matrix Widget



Title

Enter the widget title

Text Tile Font Size

- First Column Small All Small Same as Values

Widget 1				
Header 1	Header 2	Header 3	Header 4	
CO LbPerHr	NOx LbPerMBtu	WaterToFuel Ratio	Load MWe	
U3_CO1HrRun_LbPerHr_1M	U3_NOx30DRun_LbPerMBtu_1M	U3_WaterToFuel1HrRun_Ratio_1M	U3_Load1HrRun_MWe_1M	
THC	Opacity	Mercury	Temperature	
U3_THC1HrRun_Ppm_1M	U3_Opac6MRun_Pct_1M	U3_Hg1HrRun_ugPerScm_1M	U3_Temp1HrRun_DegF_1M	
OpacDustComp Pct 6M	OpacDustComp Pct 15M	NH3 Ppm	GasFlow scf	
U3_OpacDustComp_Pct_6M	U3_OpacDustComp_Pct_15M	U3_NH3_Ppm_1H	U3_GasFlow_scf_1D	

Add Row

Add Column

Add up to 16 rows and 12 columns to be displayed in the widget.

Drag and drop rows and columns to reorder them.

Cancel

OK

Clicking on any cell under the column headers brings up the Configure Tile screen.

Configure Tile

Select and configure none (blank cell), text, constant, tag, or realtime tag

None

Text

WaterToFuelRatio

Constant

Constant Name

Decimal Precision

Site Filter

Constant Category Filter

Tag

Function	Tag Name	Inset Text	Unit Prefix	HiHi Limit	Hi Limit	Lo Limit	LoLo Limit
Get Value		Enter Text	N				

Type Filter

Time Filter

Site Filter

Parameter Filter

Realtime Tag

Data Source	Controller Name	Realtime Tag Name	Inset Text	HiHi Limit	Hi Limit	Lo Limit	LoLo Limit	Decimal Precision
PLC			Enter Text					No F

Register Type Filter

Select Alignment

Left Center Right

Cancel OK

The Configure Tile screen allows the user to configure a cell as either static text, a Constant, a Tag, a Realtime Tag, or leave the cell as empty by choosing None.

If the Text option is selected, the text box underneath gets enabled and a maximum of 22 characters can be entered. The text is aligned to Left by default.

If the Constant option is selected, all the controls underneath it get enabled. By default, only AlarmLimit and EmissionsLimit constants will be available for selection from the Constant Name dropdown. You can narrow down the available selections using the Site Filter. You can select other types of constants using the Constant Category filter. Decimal Precision dropdown allows the selection of 0 to 7 values. The constants are aligned to the right by default.

● Constant

Constant Name		Decimal Precision
<input type="text"/>		No Format
Site Filter	<input type="text"/>	
Constant Category Filter	#AlarmLimit and EmissionsLimit#	

If the Tag option is selected, all the controls underneath it get enabled. The value of the selected tag appears in the display mode per calculations in accordance with the selected function. Get Value is the function that is selected by default. This is the complete list of functions available for selection:

- ◆ `Get Value` (default)
- ◆ `Get Current 6-Minute Avg`
- ◆ `Get Current 15-Minute Avg`
- ◆ `Get Current Hour Avg`
- ◆ `Get Current 3-Hour Roll Avg`
- ◆ `Get Current Day Avg`
- ◆ `Get Current Day Sum`
- ◆ `Get Current Month Avg`
- ◆ `Get Current Month Sum`
- ◆ `Get Current Year Avg`
- ◆ `Get Current Year Sum`

Additionally, options are provided for unit prefixes and for configuring limit values.

If the Realtime Tag option is selected, all the controls underneath it get enabled. By default, PLC is selected as the data source. For the selected data source and controller, you can narrow down the Realtime Tag Name selections using the Register Type Filter. Options are provided for configuring inset text, limit values, and decimal precision.

2.13 Control Widget

The Control widget is an HMI for Allen Bradley Logix PLCs. It provides controls for daily calibrations, quarterly calibrations, valves and other system controls, OOS/RATA, integers, reals, and bits.

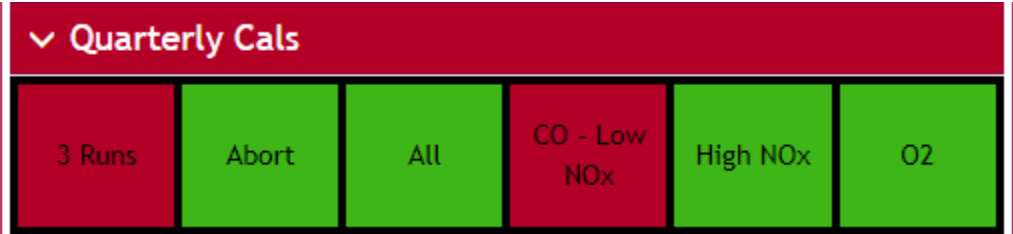
2.13.1 Run Mode

In run mode, the Control widget displays groups of controls one page at a time. Up to 16 controls can be displayed per group, up to 16 groups can be displayed per page and up to 10 pages can be configured per widget. There are eight group types: System Cal, Component Cal, CGA/Linearity, System, OOS/RATA, Integer, Real and Bit. Each group can contain up to 16 controls except for Component Cal groups which can contain up to 2 controls. Controls can be configured by two methods. The Predefined method allows selection of predefined names that correspond directly to a PLC register. The PLC Tag Name method is like SpotLight, it allows selection of PLC Tag Names that are configured in RegPerfect's Configuration Editor application. The Control widget automatically updates every five seconds by default.

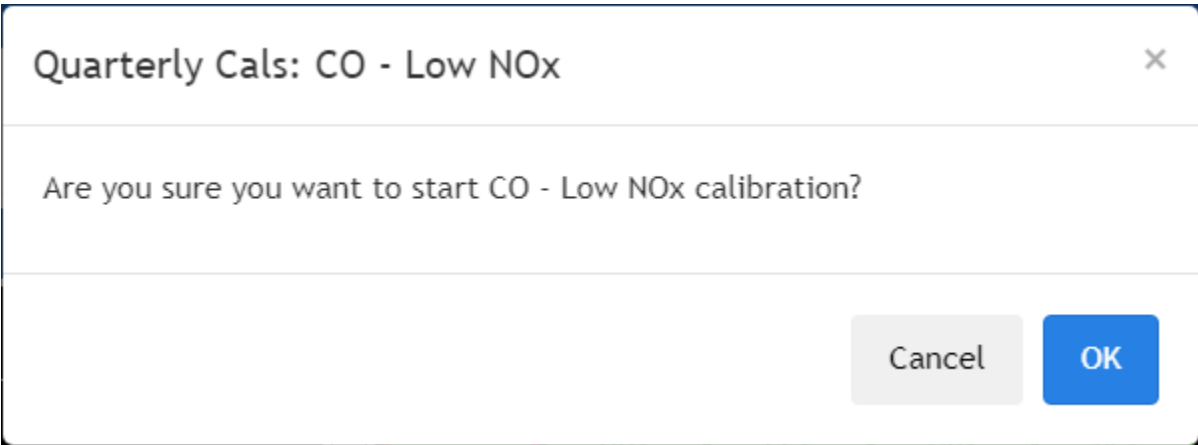
System Cal, Component Cal, CGA/Linearity, System and OOS/RATA controls are represented by colored tiles containing vertically and horizontally centered labels. The color of each control indicates its status:

- Green – control is deactivated
- Red – control is activated
- Blinking Red – control has been requested, activation is pending

Below, 3 Runs and CO - Low NOx (responsible for red header) are activated.



Click a control to activate or deactivate it. If configured, a dialog will appear to confirm the action, as shown below.



System Controls have an optional status indicator. Below, the borders of the GDV, GBV and BFV controls are red because the valves are energized but not because the controls are activated, in that case the entire control would be red.

System Controls					
Disable Pump	GDV	CPV	GBV	BFV	CV1
CV2	CV3	CV4	CV5	CV6	CV7
CV8	CV9	Cal to Cabinet			

Integer, Real and Bit controls are read only. Integer and Real controls are values contained in a white bordered box with a label below. Bit controls are represented by colored tiles containing vertically and horizontally centered labels. The color of each Bit control indicates its status:

- Green – Bit off
- Yellow – Bit on, nonfatal alarm
- Red – Bit on, fatal or no alarm

Below, the Status and Alarms group contains Bit controls, the Real-Time Values group contains Real controls, and the Elapsed Sample Time group contains Integer controls, Unit On is status only (alarm type is None), Chiller Temp is a fatal alarm (responsible for red header), and Shelter Temp is a nonfatal alarm.

Status and Alarms					
Unit On	Chiller Temp	Shelter Temp	CO OOS	NOx OOS	O2 OOS
Opacity OOS	Stack Flow OOS				
Real-Time Values					
50.0	17500.0				
Opacity	Stack Flow				
Elapsed Sample Time					
0	0				
Minutes	Seconds				

Click a group header to expand or collapse the group. Below, the Gas Cals and Gas Cal Monitoring groups are collapsed. The page feature is also shown below. The widget is configured with multiple pages as can be seen by the left and right chevrons and the Gas Calibrations page name at the top of the widget.

↶ Control : Widget 1
☰

◀
Gas Calibrations
▶

> Gas Cals

> Gas Cal Monitoring

∨ Quarterly Cals

3 Runs	Abort	All	CO - Low NOx	High NOx	O2
--------	-------	-----	-----------------	----------	----

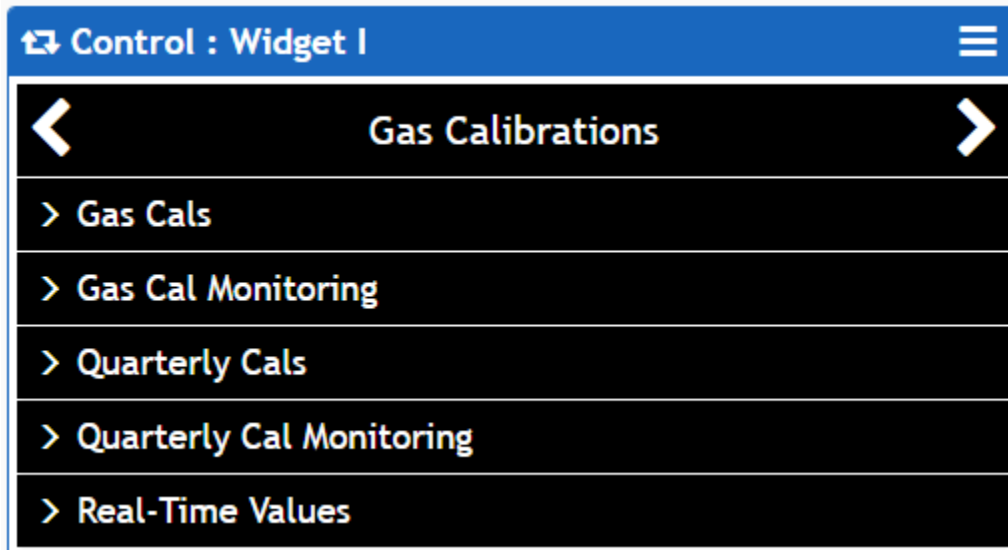
∨ Quarterly Cal Monitoring

0	0	0	0
Run	Step	Elapsed	Run Delay

∨ Real-Time Values

50.0	500.0	12.5	25.0	6.25	50.0
Low NOx	High NOx	O2	CO	Chiller Temp	Shelter Temp

Click Collapse Groups or Expand Groups in the widget's dropdown menu to collapse or expand all the groups in a widget. Below, all groups are collapsed.



Widget header, group header, and group background colors indicate status:

- Blue widget header, black group header – no control is activated, no PLC errors, no alarms
- Yellow header– no control is activated, no PLC errors, nonfatal alarm
- Red header – control is activated, PLC error or fatal alarm
- Red group background – PLC error

Below, no control is activated, no PLC errors, and no alarms.

The screenshot shows a control interface with a blue header and a black background. It is divided into several sections:

- System Controls:** A grid of green buttons for 'Disable Pump', 'GDV', 'CPV', 'GBV', 'BFV', 'CV1', 'CV2', 'CV3', 'CV4', 'CV5', 'CV6', 'CV7', 'CV8', 'CV9', and 'Cal to Cabinet'. The 'Disable Pump' button is highlighted with a red border.
- Status and Alarms:** A grid of buttons for 'Unit On' (red), 'Chiller Temp', 'Shelter Temp', 'CO OOS', 'NOx OOS', 'O2 OOS', 'Opacity OOS', and 'Stack Flow OOS'.
- Real-Time Values:** Two input fields showing '50.0' (Opacity) and '17500.0' (Stack Flow).
- Elapsed Sample Time:** Two input fields showing '7' (Minutes) and '36' (Seconds).

Below, no control is activated, no PLC errors, and Shelter Temp is a nonfatal alarm.

Control : Widget II

System Controls

Disable Pump	GDV	CPV	GBV	BFV	CV1
CV2	CV3	CV4	CV5	CV6	CV7
CV8	CV9	Cal to Cabinet			

Status and Alarms

Unit On	Chiller Temp	Shelter Temp	CO OOS	NOx OOS	O2 OOS
Opacity OOS	Stack Flow OOS				

Real-Time Values

50.0	17500.0
Opacity	Stack Flow

Elapsed Sample Time

9	12
Minutes	Seconds

Below, Cal to Cabinet is activated and Chiller Temp is a fatal alarm.

Control : Widget II

System Controls

Disable Pump	GDV	CPV	GBV	BFV	CV1
CV2	CV3	CV4	CV5	CV6	CV7
CV8	CV9	Cal to Cabinet			

Status and Alarms

Unit On	Chiller Temp	Shelter Temp	CO OOS	NOx OOS	O2 OOS
Opacity OOS	Stack Flow OOS				

Real-Time Values

50.0	17500.0
Opacity	Stack Flow

Elapsed Sample Time

0	0
Minutes	Seconds

Below, there is a PLC error.

Control : Widget II

System Controls Create Error (-6)

Disable Pump	GDV	CPV	GBV	BFV	CV1
CV2	CV3	CV4	CV5	CV6	CV7
CV8	CV9	Cal to Cabinet			

Status and Alarms Create Error (-6)

Unit On	Chiller Temp	Shelter Temp	CO OOS	NOx OOS	O2 OOS
Opacity OOS	Stack Flow OOS				

Real-Time Values Create Error (-6)

0.0	0.0				
Opacity	Stack Flow				

Elapsed Sample Time Create Error (-6)

0	0				
Minutes	Seconds				

2.13.2 Edit Mode

In edit mode, click the control dropdown on the header of the Control widget and then click Configure Widget to open the *Edit Control Widget* form, as shown below.

Edit Control Widget

Title

Enter the widget title

Confirm button clicks before performing action?

Page 1 Enter page name

Add to page: 1

Add Page Add System Cal Add Component Cal Add CGA/Linearity Add System Add OOS/RATA Add Integer Add Real Add Bit

Add up to 10 pages, drag and drop to reorder.

Add up to 16 groups per page, drag and drop to reorder.

Cancel OK

Use this screen to configure the widget.

- Enter a widget title
- Specify whether button clicks should be confirmed
- Add, delete and configure pages, groups and controls
- Drag and drop pages, groups within pages and controls within groups, look for the 4-arrow cross cursor and an object highlighted in yellow as an indication that the object can be moved
- Click the [X] near the top right corner of the screen or the [Cancel] button near the bottom right of the screen to close the screen without saving changes
- Click the [OK] button near the bottom right of the screen to save changes and close the screen

Click a button in the row of blue buttons to add pages and groups. Select a radio button to specify which page gets a group added.

Add to page: 1 2 3

Add Page Add System Cal Add Component Cal Add CGA/Linearity Add System Add OOS/RATA Add Integer Add Real Add Bit

Page colors alternate. Click the red delete button on the right side of a page to remove it.

Page 1 Enter page name

Page 2 Enter page name

Page 3 Enter page name

When a group is added, it appears in edit mode as indicated by the black close button on the right side of the group. Click the blue add button near the bottom center of a group to add controls. Click the [X] on the right side of a control to delete it. Deleting all the controls from a group will also delete the group.

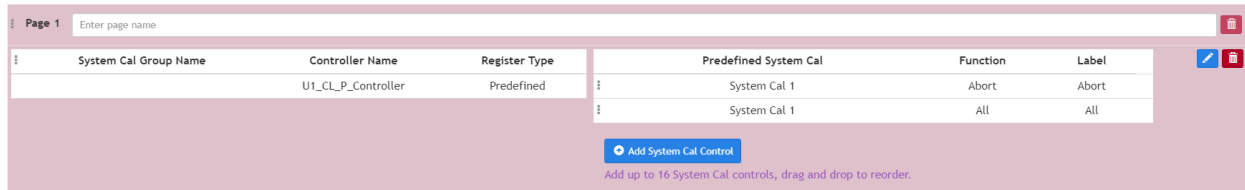
Page 1 Enter page name

System Cal Group Name	Controller Name	Register Type	Predefined System Cal	Function	Label
Enter group name	UI_CL_P_Controller	Predefined	System Cal 1	Abort	Abort
			System Cal 1	All	All

Add System Cal Control

Add up to 16 System Cal controls, drag and drop to reorder.

Click the black close button to the right of a group to take it out of edit mode. Click the blue edit on the right side of a group to put the group into edit mode or the red delete button to remove the group. Deleting all the groups from a page will also delete the page unless there is only one page.



Predefined Names

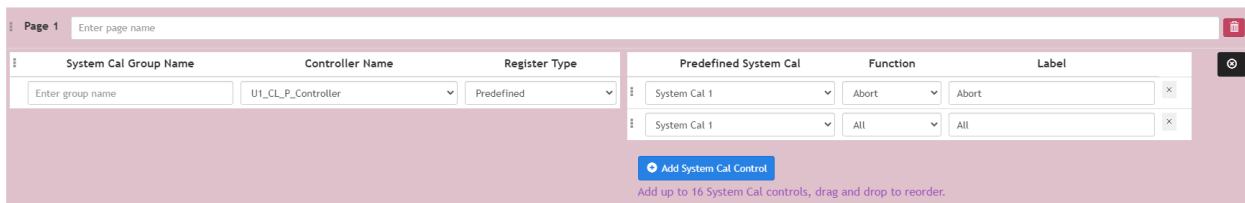
For ease of configuration, the hassle of creating PLC Registers can be skipped by using predefined names. A predefined name corresponds directly to a PLC register. Simply refer to the PLC Spec Document to determine what predefined names are available for your system and what control they represent.

A predefined name consists of a group type and a number such as System Cal 1, CGA/Linearity 5 or Bit 8. The number of names for each group type is stored in the WidgetConfig table. Defaults are shown below. If more are needed, update the table using SSMS. This number simply represents the number of choices in the dropdown menus, it does not have to exactly match how many are configured in the PLC.

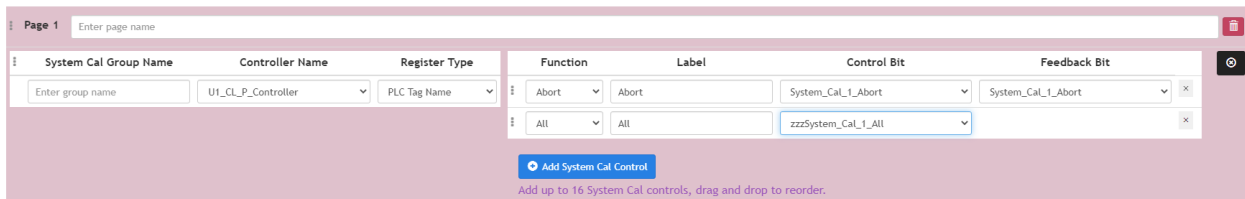
WidgetName	ParameterName	DefaultValue
Control	BitCount	16
Control	CgaLinearityCount	5
Control	ComponentCalCount	5
Control	IntegerCount	16
Control	OosRataCount	16
Control	RealCount	16
Control	SystemCalCount	5
Control	SystemCount	16

2.13.2.1 System Cal

Below is a System Cal group with Predefined selected as Register Type.



Below is a System Cal group with PLC Tag name selected as Register Type.



System Cal Group Name

Enter up to 50 characters. Displayed on group header.

Controller Name

Select from list of configured Allen Bradley Logix PLCs.

Register Type

Select Predefined or PLC Tag Name. Select Predefined for any new design. Select PLC Tag Name when system was designed for use with SpotLight.

Predefined System Cal

When Register Type is Predefined, select from System Cal 1 through System Cal XX where XX is a configurable number of choices (see **Predefined Names** section above for more information).

Function

Select from Abort, All and Gas 1 through Gas 14.

Label

Enter up to 22 characters. Displayed vertically and horizontally centered on control.

Control Bit

When Register Type is PLC Tag Name, select from list of Discrete type PLC Tag Names configured for the selected controller. A name that starts with zzz should be selected when a blinking bit exists for the control in the PLC. When one that starts with zzz is selected, the corresponding Feedback Bit field is hidden.

Feedback Bit

When Register Type is PLC Tag Name and selected Control Bit does not start with zzz, select from list of Discrete type PLC Tag Names configured for the selected controller. Abort and 3 Runs controls do not have feedback bits, for these select the same name as the corresponding Control bit.

2.13.2.2 Component Cal

Below is a Component Cal group with Predefined selected as Register Type.

The screenshot shows a configuration window for a Component Cal group. The 'Register Type' is set to 'Predefined'. The table below shows two entries:

Component Cal Group Name	Controller Name	Register Type	Predefined Component Cal	Function	Label
Enter group name	U1_CL_P_Controller	Predefined	Component Cal 1	Abort	Abort
			Component Cal 1	Start	Start

Below the table is a button 'Add Component Cal Control' and a note: 'Add up to 2 Component Cal controls, drag and drop to reorder.'

Below is a Component Cal group with PLC Tag Name selected as Register Type.

The screenshot shows a configuration window for a Component Cal group. The 'Register Type' is set to 'PLC Tag Name'. The table below shows one entry:

Component Cal Group Name	Controller Name	Register Type	Function	Label	Control Bit	Feedback Bit
Enter group name	U1_CL_P_Controller	PLC Tag Name	Start	Start	zzzComponent_Cal_1_Start	

Below the table is a button 'Add Component Cal Control' and a note: 'Add up to 2 Component Cal controls, drag and drop to reorder.'

Component Cal Group Name

Enter up to 50 characters. Displayed on group header.

Controller Name

Select from list of configured Allen Bradley Logix PLCs.

Register Type

Select Predefined or PLC Tag Name. Select Predefined for any new design. Select PLC Tag Name when system was designed for use with SpotLight.

Predefined Component Cal

When Register Type is Predefined, select from Component Cal 1 through Component Cal XX where XX is a configurable number of choices (see **Predefined Names** section above for more information).

Function

Select from Abort and Start.

Label

Enter up to 22 characters. Displayed vertically and horizontally centered on control.

Control Bit

When Register Type is PLC Tag Name, select from list of Discrete type PLC Tag Names configured for the selected controller. A name that starts with zzz should be selected when a blinking bit exists for the control in the PLC. When one that starts with zzz is selected, the corresponding Feedback Bit field is hidden.

Feedback Bit

When Register Type is PLC Tag Name and selected Control Bit does not start with zzz, select from list of Discrete type PLC Tag Names configured for the selected controller. Abort and 3 Runs controls do not have feedback bits, for these select the same name as the corresponding Control bit.

2.13.2.3 CGA/Linearity

Below is a CGA/Linearity group with Predefined selected as Register Type.

The screenshot shows a configuration window for a CGA/Linearity group. The 'Register Type' is set to 'Predefined'. The table below shows the configuration for three predefined controls:

CGA/Linearity Group Name	Controller Name	Register Type	Predefined CGA/Linearity	Function	Label
Enter group name	U1_CL_P_Controller	Predefined	CGA/Linearity 1	3 Runs	3 Runs
			CGA/Linearity 1	Abort	Abort
			CGA/Linearity 1	All	All

Buttons: Add CGA/Linearity Control, Add up to 16 CGA/Linearity controls, drag and drop to reorder.

Below is a CGA/Linearity group with PLC Tag Name selected as Register Type.

The screenshot shows the same configuration window, but with 'Register Type' set to 'PLC Tag Name'. The table below shows the configuration for three controls, including a 'Control Bit' and 'Feedback Bit' column:

CGA/Linearity Group Name	Controller Name	Register Type	Function	Label	Control Bit	Feedback Bit
Enter group name	U1_CL_P_Controller	PLC Tag Name	3 Runs	3 Runs	CGA_Linearity_1_3_Runs	CGA_Linearity_1_3_Runs
			Abort	Abort	CGA_Linearity_1_Abort	CGA_Linearity_1_Abort
			All	All	zzzCGA_Linearity_1_All	

Buttons: Add CGA/Linearity Control, Add up to 16 CGA/Linearity controls, drag and drop to reorder.

CGA/Linearity Group Name

Enter up to 50 characters. Displayed on group header.

Controller Name

Select from list of configured Allen Bradley Logix PLCs.

Register Type

Select Predefined or PLC Tag Name. Select Predefined for any new design. Select PLC Tag Name when system was designed for use with SpotLight.

Predefined CGA/Linearity

When Register Type is Predefined, select from CGA/Linearity 1 through CGA/Linearity XX where XX is a configurable number of choices (see **Predefined Names** section above for more information).

Function

Select from 3 Runs, Abort, All and Gas 1 through Gas 13.

Label

Enter up to 22 characters. Displayed vertically and horizontally centered on control.

Control Bit

When Register Type is PLC Tag Name, select from list of Discrete type PLC Tag Names configured for the selected controller. A name that starts with zzz should be selected when a blinking bit exists for the control in the PLC. When one that starts with zzz is selected, the corresponding Feedback Bit field is hidden.

Feedback Bit

When Register Type is PLC Tag Name and selected Control Bit does not start with zzz, select from list of Discrete type PLC Tag Names configured for the selected controller. Abort and 3 Runs controls do not have feedback bits, for these select the same name as the corresponding Control bit.

2.13.2.4 System

Below is a System group with Predefined selected as Register Type.

The screenshot shows a configuration form for a system group. The 'Register Type' dropdown is set to 'Predefined'. The 'Predefined System' dropdown is set to 'System 1'. The 'Label' field contains 'Enter control label'. The 'Write Behavior' dropdown is set to 'Momentary' and the 'Show Status' dropdown is set to 'True'. A blue button labeled 'Add System Control' is visible below the form. Below the button, there is a note: 'Add up to 16 System controls, drag and drop to reorder.'

Below is a System group with PLC Tag Name selected as Register Type.

The screenshot shows the same configuration form, but with 'Register Type' set to 'PLC Tag Name'. The 'Control Bit' dropdown is set to 'zzzSystem_1'. The 'Feedback Bit' field is empty. The 'Status Bit' dropdown is set to 'System_1_Status'. The 'Add System Control' button and the note below it are also present.

System Group Name

Enter up to 50 characters. Displayed on group header.

Controller Name

Select from list of configured Allen Bradley Logix PLCs.

Register Type

Select Predefined or PLC Tag Name. Select Predefined for any new design. Select PLC Tag Name when system was designed for use with SpotLight.

Predefined System

When Register Type is Predefined, select from System 1 through System XX where XX is a configurable number of choices (see **Predefined Names** section above for more information).

Label

Enter up to 22 characters. Displayed vertically and horizontally centered on control.

Write Behavior

Select from Continuous or Momentary as specified by PLC Spec Document.

Show Status

Select from False or True as specified by PLC Spec Document.

Control Bit

When Register Type is PLC Tag Name, select from list of Discrete type PLC Tag Names configured for the selected controller. A name that starts with zzz should be selected when a blinking bit exists for the control in the PLC. When one that starts with zzz is selected, the corresponding Feedback Bit field is hidden.

Feedback Bit

When Register Type is PLC Tag Name and selected Control Bit does not start with zzz, select from list of Discrete type PLC Tag Names configured for the selected controller. Abort and 3 Runs controls do not have feedback bits, for these select the same name as the corresponding Control bit.

Status Bit

Field is hidden when corresponding Show Status is False. Column is hidden when Show Status is False for every control in the group. When Register Type is PLC Tag Name, select from list of Discrete type PLC Tag Names configured for the selected controller.

2.13.2.5 OOS/RATA

Below is an OOS/RATA group with Predefined selected as Register Type.

The screenshot shows a configuration window for an OOS/RATA group. At the top, there is a 'Page 1' header with an 'Enter page name' field. Below this is a table with columns: 'OOS/RATA Group Name', 'Controller Name', 'Register Type', 'Predefined OOS/RATA', 'Label', and 'OOS or RATA'. The 'Register Type' dropdown is set to 'Predefined'. The 'Predefined OOS/RATA' dropdown is set to 'OOS/RATA 1'. The 'Label' field contains 'Enter control label'. The 'OOS or RATA' dropdown is set to 'OOS'. Below the table is a blue button labeled 'Add OOS/RATA Control' and a note: 'Add up to 16 OOS/RATA controls, drag and drop to reorder.'

Below is an OOS/RATA group with PLC Tag Name selected as Register Type.

The screenshot shows a configuration window for an OOS/RATA group. At the top, there is a 'Page 1' header with an 'Enter page name' field. Below this is a table with columns: 'OOS/RATA Group Name', 'Controller Name', 'Register Type', 'Label', 'Control Bit', 'Feedback Bit', and 'OOS or RATA'. The 'Register Type' dropdown is set to 'PLC Tag Name'. The 'Label' field contains 'Enter control label'. The 'Control Bit' dropdown is set to 'OOS_RATA_2'. The 'Feedback Bit' dropdown is set to 'OOS_RATA_2_Feedback'. The 'OOS or RATA' dropdown is set to 'OOS'. Below the table is a blue button labeled 'Add OOS/RATA Control' and a note: 'Add up to 16 OOS/RATA controls, drag and drop to reorder.'

OOS/RATA Group Name

Enter up to 50 characters. Displayed on group header.

Controller Name

Select from list of configured Allen Bradley Logix PLCs.

Register Type

Select Predefined or PLC Tag Name. Select Predefined for any new design. Select PLC Tag Name when system was designed for use with SpotLight.

Predefined OOS/RATA

When Register Type is Predefined, select from OOS/RATA 1 through OOS/RATA XX where XX is a configurable number of choices (see **Predefined Names** section above for more information).

Label

Enter up to 22 characters. Displayed vertically and horizontally centered on control.

OOS or RATA

Select from OOS or RATA as specified by PLC Spec Document.

Control Bit

When Register Type is PLC Tag Name, select from list of Discrete type PLC Tag Names configured for the selected controller. A name that starts with zzz should be selected when a blinking bit exists for the control in the PLC. When one that starts with zzz is selected, the corresponding Feedback Bit field is hidden.

Feedback Bit

When Register Type is PLC Tag Name and selected Control Bit does not start with zzz, select from list of Discrete type PLC Tag Names configured for the selected controller. Abort and 3 Runs controls do not have feedback bits, for these select the same name as the corresponding Control bit.

2.13.2.6 Integer

Below is an Integer group with Predefined selected as Register Type.

The screenshot shows a configuration window for an Integer group. At the top, there is a 'Page 1' header with an 'Enter page name' field. Below this is a table with columns: 'Integer Group Name', 'Controller Name', 'Register Type', 'Predefined Integer', and 'Label'. The 'Register Type' dropdown is set to 'Predefined'. The 'Predefined Integer' dropdown is set to 'Integer 1'. The 'Label' field contains 'Enter control label'. Below the table is a blue button labeled 'Add Integer Control' and a note: 'Add up to 16 Integer controls, drag and drop to reorder.'

Below is an Integer group with PLC Tag Name selected as Register Type.

The screenshot shows a configuration window for an Integer control. At the top, there is a header bar with 'Page 1' and 'Enter page name'. Below this is a table with columns: Integer Group Name, Controller Name, Register Type, Label, and PLC Tag Name. The 'Integer Group Name' field contains 'Enter group name'. The 'Controller Name' dropdown is set to 'UI_CL_P_Controller'. The 'Register Type' dropdown is set to 'PLC Tag Name'. The 'Label' field contains 'Enter control label'. The 'PLC Tag Name' dropdown is set to 'Integer_1'. Below the table is a blue button labeled 'Add Integer Control' and a note: 'Add up to 16 Integer controls, drag and drop to reorder.'

Integer Group Name

Enter up to 50 characters. Displayed on group header.

Controller Name

Select from list of configured Allen Bradley Logix PLCs.

Register Type

Select Predefined or PLC Tag Name. Select Predefined for any new design. Select PLC Tag Name when system was designed for use with SpotLight.

Predefined Integer

When Register Type is Predefined, select from Integer 1 through Integer XX where XX is a configurable number of choices (see **Predefined Names** section above for more information).

Label

Enter up to 22 characters. Displayed horizontally centered below value box.

PLC Tag Name

When Register Type is PLC Tag Name, select from list of Channel type PLC Tag Names configured for the selected controller.

2.13.2.7 Real

Below is a Real group with Predefined selected as Register Type.

The screenshot shows a configuration window for a Real control. At the top, there is a header bar with 'Page 1' and 'Enter page name'. Below this is a table with columns: Real Group Name, Controller Name, Register Type, Predefined Real, Label, and Decimal Precision. The 'Real Group Name' field contains 'Enter group name'. The 'Controller Name' dropdown is set to 'UI_CL_P_Controller'. The 'Register Type' dropdown is set to 'Predefined'. The 'Predefined Real' dropdown is set to 'Real 1'. The 'Label' field contains 'Enter control label'. The 'Decimal Precision' dropdown is set to '1'. Below the table is a blue button labeled 'Add Real Control' and a note: 'Add up to 16 Real controls, drag and drop to reorder.'

Below is a Real group with PLC Tag Name selected as Register Type.

The screenshot shows a configuration window for a Real control. At the top, there is a header bar with 'Page 1' and 'Enter page name'. Below this is a table with columns: Real Group Name, Controller Name, Register Type, Label, PLC Tag Name, and Decimal Precision. The 'Real Group Name' field contains 'Enter group name'. The 'Controller Name' dropdown is set to 'UI_CL_P_Controller'. The 'Register Type' dropdown is set to 'PLC Tag Name'. The 'Label' field contains 'Enter control label'. The 'PLC Tag Name' dropdown is set to 'Real_1'. The 'Decimal Precision' dropdown is set to '1'. Below the table is a blue button labeled 'Add Real Control' and a note: 'Add up to 16 Real controls, drag and drop to reorder.'

Real Group Name

Enter up to 50 characters. Displayed on group header.

Controller Name

Select from list of configured Allen Bradley Logix PLCs.

Register Type

Select Predefined or PLC Tag Name. Select Predefined for any new design. Select PLC Tag Name when system was designed for use with SpotLight.

Predefined Integer

When Register Type is Predefined, select from Real 1 through Real XX where XX is a configurable number of choices (see **Predefined Names** section above for more information).

Label

Enter up to 22 characters. Displayed horizontally centered below value box.

Decimal Precision

Select from 0 through 6 or Scientific Notation.

PLC Tag Name

When Register Type is PLC Tag Name, select from list of Float type PLC Tag Names configured for the selected controller.

2.13.2.8 Bit

Below is a Bit group with Predefined selected as Register Type.

The screenshot shows a configuration window for a Bit group. At the top, there is a text input field for 'Page 1' with the placeholder 'Enter page name'. Below this is a table with columns: Bit Group Name, Controller Name, Register Type, Predefined Bit, Label, and Alarm Type. The 'Bit Group Name' column has a text input field with the placeholder 'Enter group name'. The 'Controller Name' column has a dropdown menu with 'U1_CL_P_Controller' selected. The 'Register Type' column has a dropdown menu with 'Predefined' selected. The 'Predefined Bit' column has a dropdown menu with 'Bit 1' selected. The 'Label' column has a text input field with the placeholder 'Enter control label'. The 'Alarm Type' column has a dropdown menu with 'None' selected. Below the table is a blue button labeled 'Add Bit Control' and a note: 'Add up to 16 Bit controls, drag and drop to reorder.'

Below is a Bit group with PLC Tag Name selected as Register Type.

The screenshot shows the same configuration window as above, but with the 'Register Type' dropdown menu set to 'PLC Tag Name'. The 'Predefined Bit' column is now empty, and the 'PLC Tag Name' column has a dropdown menu with 'Bit_1' selected. The 'Label' column still has the placeholder 'Enter control label'. The 'Alarm Type' column still has 'None' selected. The 'Add Bit Control' button and the note 'Add up to 16 Bit controls, drag and drop to reorder.' are still present.

Bit Group Name

Enter up to 50 characters. Displayed on group header.

Controller Name

Select from list of configured Allen Bradley Logix PLCs.

Register Type

Select Predefined or PLC Tag Name. Select Predefined for any new design. Select PLC Tag Name when system was designed for use with SpotLight.

Predefined Integer

When Register Type is Predefined, select from Bit 1 through Bit XX where XX is a configurable number of choices (see **Predefined Names** section above for more information).

Label

Enter up to 22 characters. Displayed horizontally centered below value box.

Alarm Type

- Fatal – control, group header and widget header are red when bit is set
- None – status only, control is red when bit is set
- Nonfatal – control is yellow when bit is set, group header and widget header are also yellow when bit is set and not red for another reason

PLC Tag Name

When Register Type is PLC Tag Name, select from list of Discrete type PLC Tag Names configured for the selected controller.

2.14 Reminders Widget

Reminders widget allows you to get notifications of Q/A tests that need to be performed. It checks test completion status and updates the display automatically in a configurable time interval, one hour by default. Currently, seven test types are supported: Part 60 CGA, Part 60 RATA, Part 75 Linearity, Part 75 RATA, Flow-to-Load Checks, Fuel Flowmeter QA Tests and Fuel Flow-to-Load Tests. Optionally, email notifications can be delivered for tests with an alert, warning or overdue status. Each reminder being emailed will continue to be emailed at every interval until acknowledged by checking the reminder's Email received checkbox in the display.

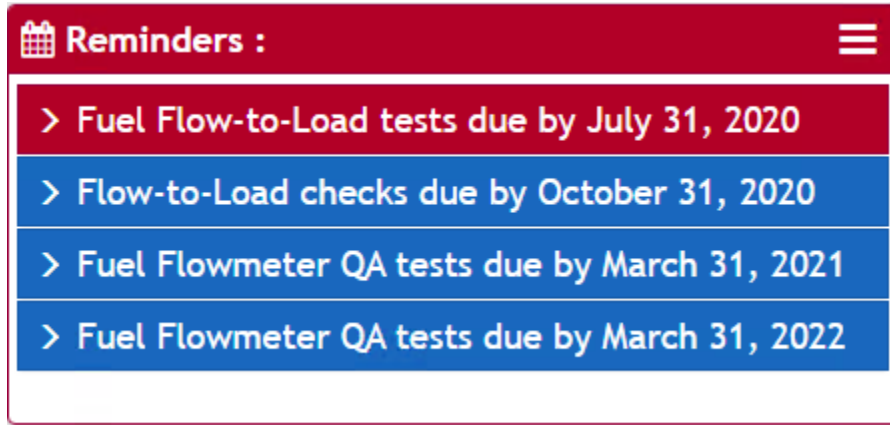
2.14.1 Run Mode

In run mode, the Reminders widget displays a list of reminders for the upcoming Q/A tests with the most urgent/critical on top and grouped by test type and date due. Clicking the control dropdown on the header of the widget and selecting Refresh Widget refreshes the widget display by checking Q/A tests for the selected test definitions and retrieving latest statuses from the RegPerfect database. Otherwise, the widget receives latest test completion statuses and updates its display every hour by default.

Click each reminder group header to show/hide detailed description and the list of test components/systems belonged to the group.

The screenshot shows a widget titled "Reminders" with a calendar icon and a menu icon. It contains two expandable sections:

- Part 75 linearity tests due by December 31, 2019**
 - Last passing linearity: 08/02/2019. Note: Linearity must be performed while the source is operating.
 - Unit 1 quarterly operating hours: 169 hours
 - U1_SO2RDualRg_B_Instrument - High (with an 'x' icon)
 - U1_SO2RDualRg_B_Instrument - Low (with an 'x' icon)
- Part 60 cylinder gas audits due by December 31, 2019**
 - Last passing CGA: 02/02/2019. 2 months have passed since the last CGA. CGA can be performed whether the source is operating or not.
 - Unit 1 quarterly operating hours: 169 hours
 - U1_CO2L_P_Instrument - High (with an 'x' icon)

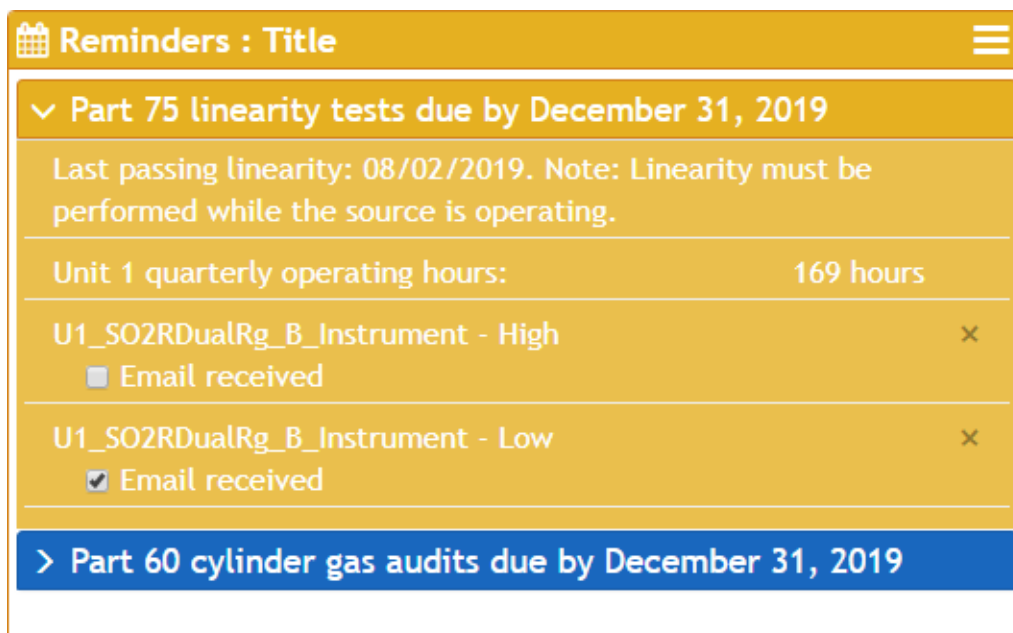


The color of each reminder group indicates urgency of the tests in the group:

- Red – overdue and within configurable alert timeframe
- Yellow – within configurable warning timeframe
- Blue – prior to warning timeframe

The widget frame color indicates the overall status of all the reminders on the widget:

- Red – at least one red/alert reminder
- Yellow – at least one yellow/warning reminder and no red/alert reminders
- Blue – no red/alert reminders or yellow/warning reminders



Reminders :

- Part 75 RATAs OVERDUE as of June 30, 2019**
 - Grace period over. Last passing RATA: 08/02/2018. Frequency Code: 4QTRS. It was a grace period RATA.
 - Unit 2 quarterly operating hours: 0 hours
 - Unit 2 - NOX - P ✕
 - Email not configured
- > Part 75 linearity tests due by December 31, 2019
- > Part 60 cylinder gas audits due by December 31, 2019
- > Part 75 RATAs due by June 30, 2020

You may manually mark a test complete and remove it from the reminders list. To mark a test complete, click the [x] at the end of the component/system row. A dialog will appear to confirm the action, as shown below.

Close Part 75 RATA Unit 2 - NOX - P ✕

Are you sure you want to mark this test complete?

Clicking the [OK] button marks the test complete with the current server time and removes it from the reminders list on the display.

2.14.2 Edit Mode

In edit mode, clicking the control dropdown on the header of the Reminders widget and selecting Configure Widget opens the *Edit Reminders Widget* form, as shown below.

Edit Reminders Widget
✕

Title

My Reminders Widget

Enable E-mail

To:

Use a semicolon (;) to separate multiple e-mail addresses.

Part 60 CGAs

All

Instrument	Days Before for Alert	Days Before for Warning	Unit Operating Tag
<input checked="" type="checkbox"/> U1_CO2L_P_Instrument	<input type="text" value="14"/>	<input type="text" value="28"/>	<input type="text" value="U1_StackOn_TF_1H"/>

Part 60 RATAs

Part 75 Linearities

All

Unit 1

Unit 2

Part 75 RATAs

All

Unit 1

Unit 2

System Type Code	EDR Site ID	Monitoring System ID	System Designation Code	Days Before for Alert	Days Before for Warning
<input type="checkbox"/> CO2	2	5LC	P	<input type="text" value="14"/>	<input type="text" value="28"/>
<input type="checkbox"/> CO2	2	5RC	RB	<input type="text" value="14"/>	<input type="text" value="28"/>
<input type="checkbox"/> FLOW	2	5LF	P	<input type="text" value="14"/>	<input type="text" value="28"/>
<input type="checkbox"/> FLOW	2	5RF	RB	<input type="text" value="14"/>	<input type="text" value="28"/>
<input checked="" type="checkbox"/> NOX	2	5LN	P	<input type="text" value="14"/>	<input type="text" value="28"/>
<input type="checkbox"/> NOX	2	5RN	RB	<input type="text" value="14"/>	<input type="text" value="28"/>
<input type="checkbox"/> SO2	2	5LS	P	<input type="text" value="14"/>	<input type="text" value="28"/>
<input type="checkbox"/> SO2	2	5RS	RB	<input type="text" value="14"/>	<input type="text" value="28"/>

Edit Reminders Widget

Title

Enter the widget title

Enable E-mail

To

Use a semicolon (;) to separate multiple e-mail addresses.

Part 60 CGAs

Part 60 RATAs

Part 75 Linearities

Part 75 RATAs

Flow-to-Load checks

All

Unit 1

System Type Code	EDR Site ID	Monitoring System ID	System Designation Code	Days Before for Alert	Days Before for Warning
<input checked="" type="checkbox"/> FLOW	1	5LF	P	14	28
<input type="checkbox"/> FLOW	1	5RF	RB	14	28

Unit 2

Fuel Flowmeter QA tests

All

Aux 12

Unit 1

Component Type Code	EDR Site ID	Component ID	Sample Acquisition Method	Days Before for Alert	Days Before for Warning
<input checked="" type="checkbox"/> GFFM	1	CFF	NOZ	14	28

Fuel Flow-to-Load tests

All

Unit 1

System Type Code	EDR Site ID	Monitoring System ID	System Designation Code	Days Before for Alert	Days Before for Warning
<input checked="" type="checkbox"/> GAS	1	MFF	P	14	28

Cancel

OK

The configuration screen allows the user to configure email delivery and select Q/A test definitions for which reminders will be provided. Test definitions for each test type are grouped by the monitoring site.

- Provide a title to display on the header of the widget.
- Enable email delivery and provide a semicolon delimited list of email addresses.
- Select a test type to view its configuration section.
- Expand a monitoring site to view the list of components/systems.
- Click the *All* checkbox to select/unselect all the test definitions for that test type.

- Click the checkbox at the front of each test definition row to select/unselect an individual component/system.
- For part 60 CGAs and RATAs, select a unit operating tag from the dropdown.
- Optionally change the default days before for alert and warning.
- To save all the configuration changes and close the edit form, click the [OK] button.
- To discard changes and close the edit form, click the [Cancel] button or click the [x] at the top-right of the form.

3.0 Appendix A

3.1 System Requirements

At the time of writing, the minimum system requirements are as follows:

- Server Platform
 - Windows Server 2016/SQL Server 2016
 - or
 - Windows Server 2012 R2/SQL Server 2012
 - .NET Framework v4.7.2+
- Workstation/Client Platform
 - Windows 7 and above
- Browser(s)
 - Servers
 - Internet Explorer v11 and above (default on Windows Server 2016/2012 R2)
 - Workstations/Clients
 - Internet Explorer v11
 - Assumption: Users do not disable JavaScript in the browser settings and have cookies enabled.



Note: Chrome and Firefox browsers can also be used with Dashboards. In fact, they are recommended over Internet Explorer 11.

4.0 Appendix B

4.1 Definitions

- Application Suite: The container program that has multiple applications bundled together in a common system or user interface; e.g., RegPerfect is an application suite which contains multiple, individual applications.
- Application: A complete and individual program contained in the application suite; e.g., Dashboards, Reports, HMI, etc.
- Dashboards (application): A specific type of application that is configurable with multiple dashboard containers and widgets on each dashboard container.
- Dashboard: A container for one to many widgets.
- Widget: A self-contained, reusable, and specific piece of functionality that is placed on and used from a dashboard.
 - A widget will contain two sections: header and details.
- Widget Frame: The header and border around the widget that changes colors based on statuses.
 - Not all widgets will have widget frames that change color (indicate some status).
- Authentication: The process of identifying who users are when they visit a web site. Authentication is used in combination with authorization.
- Authorization: The process of determining whether a user has permissions to access a particular resource or to perform some action.
- Web API: ASP.NET Web API is a framework that helps build web services over HTTP. ASP.NET Web API is a framework that makes it easy to build HTTP services that reach a broad range of clients, including browsers and mobile devices.
- SignalR: SignalR is an async signaling library. In a nutshell, it allows you to pass data between client and server in real-time and provides facilities for a server to push data to all connected clients.



TELEDYNE MONITOR LABS

A Teledyne Technologies Company

RegPerfect® Assets

User Manual and Help Documentation

Updated: August 2020

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5.0 Assets

5.1 Overview

The Asset Management (or "Assets") application allows users to configure, update, and view data regarding various components of a CEMS system. These components (i.e., assets) could include such things as calibration gas valves and cylinders, probes, fuel flow meters, etc.

5.2 General Assets Information

Due to the important nature of calibrations in RegPerfect – and calibration valves and cylinders – the Assets application restricts functions to only higher privileged users. That is, certain functionality is only available for RP_ADMINS, RP_MANAGERS, and RP_REPORTERS users.

RP_ADMINS, RP_MANAGERS, and RP_REPORTERS users can access all the features of the Assets application, including adding, editing, and deleting calibration gas valves, adding, editing, and deleting calibration gas cylinders, putting cylinders in service on a valve, taking cylinders out of service, returning cylinders, and, of course, viewing all the data regarding calibration valves and cylinders.

All other users not in RP_ADMINS, RP_MANAGERS, and RP_REPORTERS groups have a limited scope of the Assets application. These users can view data about the cylinders in the system, cylinder inventory levels, and information about which cylinder is currently connected to which valve.

5.3 Running the Assets Application

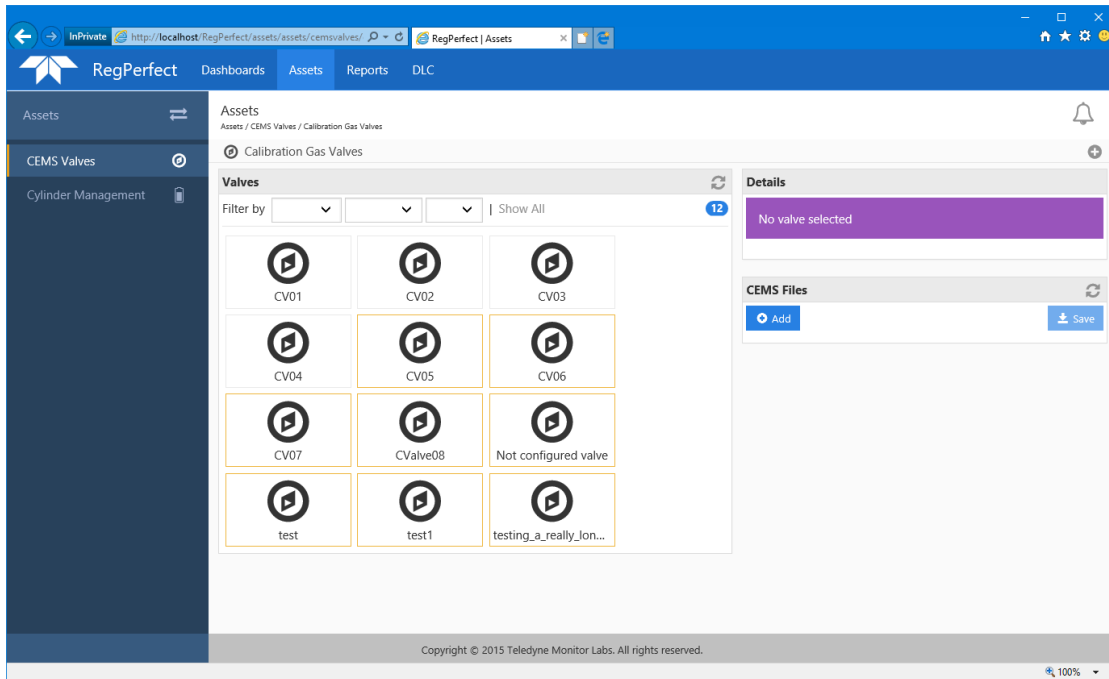
The Assets application is another application in the browser-based suite of RegPerfect applications, along with Dashboards. Navigating to the same URL as Dashboards:

`http://{localhost or servername}/RegPerfect/`

in a browser will provide an option to navigate to the Assets application. Using this URL, you will be directed to the Dashboards application by default. However, if you would rather go directly to the Assets application, you can enter the following URL into the browser:

`http://{localhost or servername}/RegPerfect/Assets`

which will take you directly to the Assets application.



Note: The view above shows a system where calibration gas valves have already been configured. What you see on your screen may be slightly different.

By default, the CEMS Valves section (or “asset type”) is the default view when opening the Assets application.

5.4 Available Asset Types

At the time of this writing, the available asset types are:

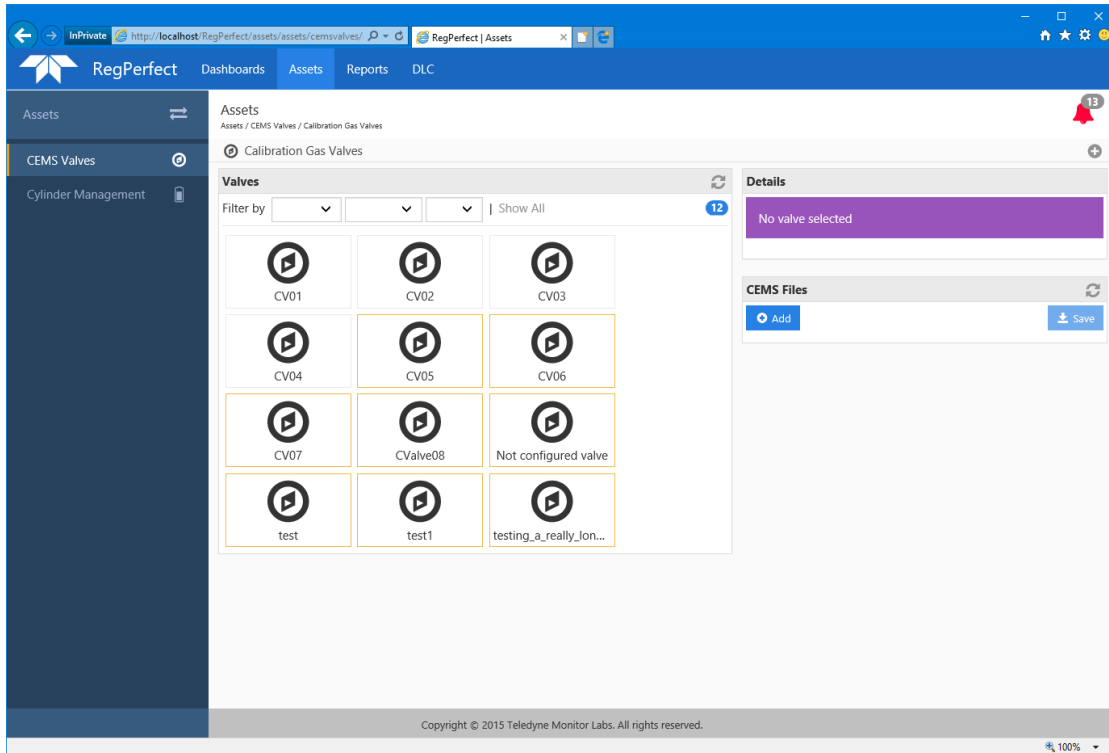
- Calibration Gas Valves (Currently, calibration gas valves are the only type of CEMS valves.)
- Calibration Gas Cylinders

Using the sidebar of the Assets application, getting to calibration gas valves is accomplished by clicking on the CEMS Valves section link, while clicking on Cylinder Management takes you to the calibration gas cylinder area.

6.0 CEMS Valves

6.1 Calibration Gas Valves

Navigating to the Assets application and the CEMS Valves section, brings up the Calibration Gas Valves view.



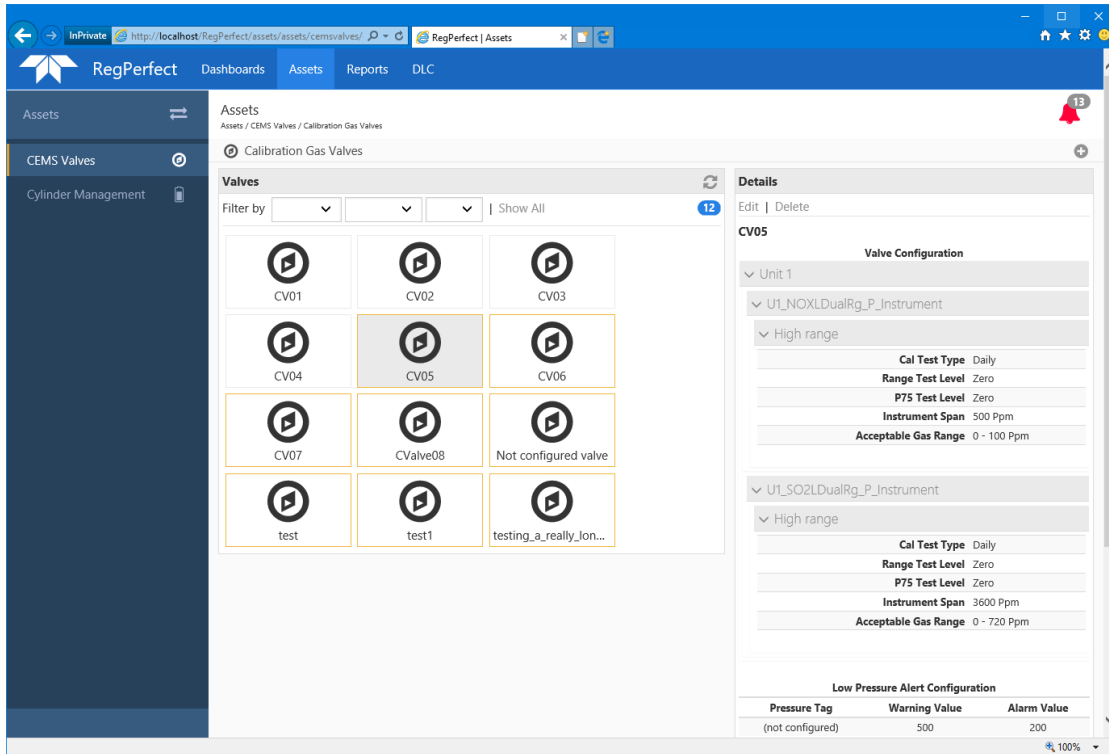
From this view, you can manage your calibration gas valves – add valves, edit valves, delete valves, and view current information for valves. Additionally, you can add, delete, and view any CEMS Files that you have uploaded to the system (.pdf format only).



Note: The view above shows a system where calibration gas valves have already been configured. What you see on your screen may be slightly different.

A typical scenario would be that you get PDF file drawings of your system and the valves and which instruments are being calibrated through which valves. You then model your system here by adding and configuring valves that match the drawings. You can then upload the drawing files so they are available for review right within the asset management system.

6.1.1 Explanation of the Calibration Gas Valves View



The Valves panel shows all the valves configured in the system. You can filter the valves by monitoring site and/or calibration type to see a more focused list of valves. A valve with a yellow border is indicating that no cylinder is attached to this valve. No yellow border – a cylinder is attached to the valve.

Clicking on a valve populates the Details panel. The Details panel shows you how the valve has been configured (i.e., which instrument(s), range(s), and calibration type(s) are using that valve for calibrations). Also, shown are the Edit and Delete links to edit or delete an existing valve, as well as the pressure tag and warning/alarm values configured for the valve.



Note: If your site has pressure transducers to measure the pressure in the calibration gas cylinders, and you are bringing those values into RegPerfect via a tag, you can configure your calibration gas valves with pressure tags so that the values are displayed within the application. And, based on the warning and alarm values, you can get alerts indicating when the cylinder(s) are almost empty.

The valves details view also show a history of the valve transactions (i.e., when the valve was added or edited, and when and which cylinder was put in service on the valve or taken out of service).

Assets
Assets / CEMS Valves / Calibration Gas Valves

Calibration Gas Valves

Valves

Filter by [] [] [] | Show All

CV01

CV02

CV03

CV04

CV05

CV06

CV07

CValve08

Not configured val...

Details

Edit | Delete

CV01

Cylinder CCC109 connected.

Valve Configuration

> Unit 1

Low Pressure Alert Configuration

Pressure Tag	Warning Value	Alarm Value
(not configured)	500	200

History

Transaction	Transaction Time
Added	01/01/2016 00:00
CCC109 12/01/2015 00:00 Put In-Service	06/01/2016 00:00

The details pane will also show which cylinder is connect to or on which valve, if any, or give a warning if the valve does not have a cylinder connect, or if the valve is not configured.

Assets
Assets / CEMS Valves / Calibration Gas Valves

Calibration Gas Valves

Valves

Filter by [] [] [] | Show All

CV01

CV02

CV03

CV04

CV05

CV06

CV07

CValve08

Not configured val...

Details

Edit | Delete

CV01

Cylinder CCC109 connected.

Valve Configuration

> Unit 1

Low Pressure Alert Configuration

Pressure Tag	Warning Value	Alarm Value
(not configured)	500	200

History

Transaction	Transaction Time
Added	01/01/2016 00:00
CCC109 12/01/2015 00:00 Put In-Service	06/01/2016 00:00

Valves

Filter by | Show All 9

CV01

CV02

CV03

CV04

CV05

CV06

CV07

CValve08

Not configured val...

Details

Edit | Delete

Not configured valve

ⓘ No cylinder connected.

⚠ No valve configuration found.

Low Pressure Alert Configuration		
Pressure Tag	Warning Value	Alarm Value
(not configured)	500	200

History	
Transaction	Transaction Time
Added	01/01/2016 00:00

If there are any Assets alerts, the bell icon in the upper right will change color (yellow for warning alerts only, no error alerts, or red for at least one error alert) and display the number of alerts currently in the system.



These alerts will be explained a little further later in this document.

Clicking the + icon in the upper right corner of the calibration gas valves view takes you to the Add Calibration Gas Valve view to create new valves.

6.1.2 Adding a Calibration Gas Valve

On the Add Calibration Gas Valve view, enter all the necessary configuration items for creating a new valve.

Every valve needs a unique name.

Using the tag filters, find and select a pressure tag to be associated with the valve. Configuring a pressure tag is optional. If your site doesn't use pressure transducers, you don't need to configure a pressure tag.

For the Valve Configuration section, click the Add button to add a new configuration row. Each valve can be configured with one or more different valve configurations. After adding a new valve configuration row, select a monitoring site from the dropdown. Selecting a monitoring site will populate the instrument dropdown with the list of instruments configured for the monitoring site. Select an instrument from the instrument dropdown.



Note: If the instrument is a dual range instrument, use the Instrument Range dropdown to select which instrument range you need. If the instrument has a single range, that range will be selected for you.

After selecting the instrument (and instrument range), use the checkboxes under the instrument to indicate which calibrations and range tests will calibrate through the valve.

Once the valve is configured as needed, click the Save button to save the valve configuration to the database. Saving a new valve will then take you back to the Calibration Gas Valves view. Clicking Cancel button will take you back to the Calibration Gas Valves view and lose any changes you have made.

6.1.3 Editing a Calibration Gas Valve

From the Calibration Gas Valves view, select a valve to be edited.



Note: You can only edit valves that do not already have calibration gas cylinders connected to them (i.e., the valve has a yellow border).

After selecting a valve, click the Edit link in the Details panel. This will bring up the Edit Calibration Gas Valve view with all the data populated for the selected valve.

Similar to the Add Calibration Gas Valve view, enter or change the desired valve information or configuration, and click the Save button to save the changes.



Note: To delete a valve configuration row, use the X to the right of the row.

Clicking Save or Cancel navigate you back to the Calibration Gas Valves view.

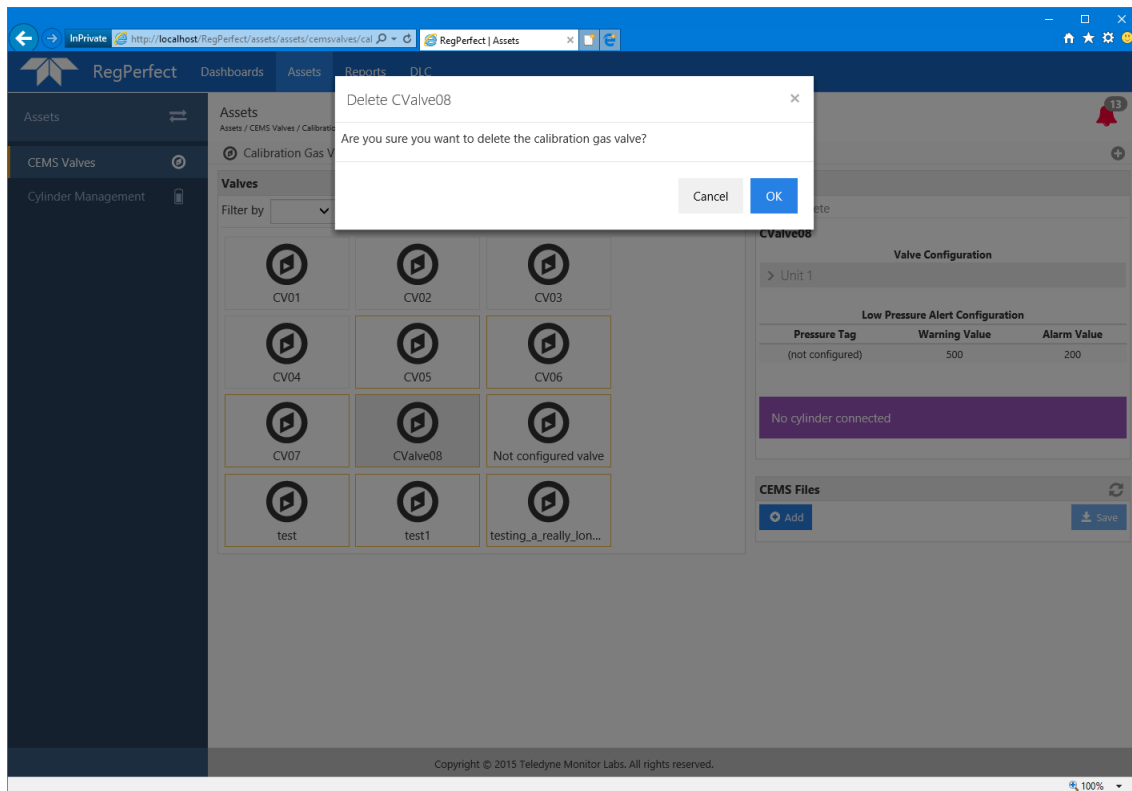
6.1.4 Deleting a Calibration Gas Valve

From the Calibration Gas Valves view, select a valve to be deleted.



Note: You can only delete valves that do not already have calibration gas cylinders connected to them (i.e., the valve has a yellow border).

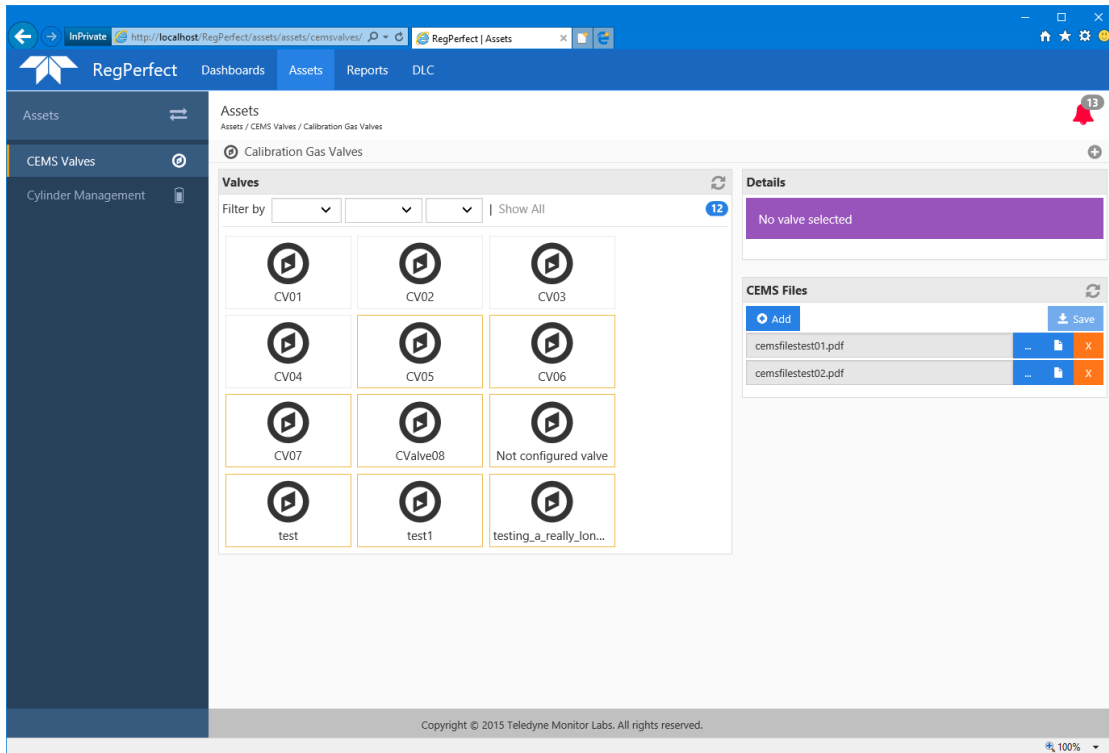
After selecting a valve, click the Delete link in the Details panel. This will bring up the confirmation of deletion dialog.




Click OK to delete the valve. Click Cancel to keep the valve.

6.1.5 CEMS Files

As explained above, PDF files (i.e., “CEMS Files” or any .pdf file associated with your CEMS) can be uploaded to the Calibration Gas Valves view. The CEMS Files panel allows you to manage these files; add, delete, and display the files.



6.1.5.1 Adding a CEMS File

Clicking the Add button in the CEMS Files panel will create a new row for a new CEMS file. Then clicking the find file button  will open a standard Windows file picker dialog. Use this dialog to find and select the file you want to upload.



Note: The application only supports saving PDF files. A validation error will be displayed if you select a different file type, and the Save button will not be enabled.

Once selected, the display file button will be disabled and the Save button will be enabled. Click Save to upload the file.





Note: You cannot view a file until it has been saved and uploaded to the system.

Once the file has been saved, you can view it or delete it.

6.1.5.2 Viewing a CEMS File

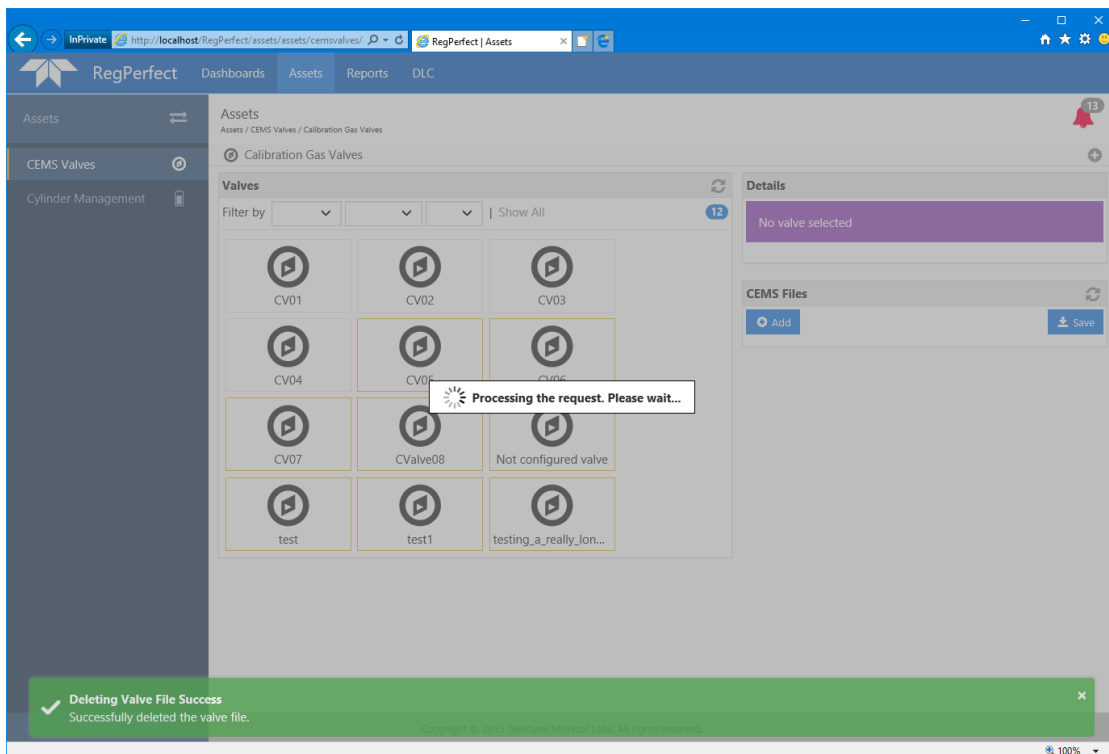


From the CEMS Files panel, click the view file button to display the file. Depending on your browser, the file will either be displayed on a new browser tab or in Adobe Reader.

6.1.5.3 Deleting a CEMS File



From the CEMS Files panel, click the delete file button for the file you want to remove. Successfully, deleting a CEMS file will be seen in the application.



7.0 Cylinder Management

7.1 Main Cylinders View

Clicking on Cylinder Management in the Assets application sidebar will navigate you to the Cylinder Management section, and the main Cylinders view.

Cyl No.	Gas Code	Cert Date	Exp Date	Vendor ID	Vendor Na...	Sites	Instruments...	Ranges	Q/A Tests	Status	Cert
CCC101	BALN, CO, S...	02/01/2015	03/07/2019	B52013	Airgas (NI)			TBD	Quarterly	Error Empty	
CCC1010	BALN, CO2,...	01/01/2015	03/07/2021	B52015	Airgas (NI)	Unit 1	U1_CO2L_P_1...	High	Daily, Quarte...	Good	
CCC1011	BALN, CO	12/01/2015	03/07/2021	A52015	Air Liquide (...)	Unit 1B	U1B_COInlet...	High	Daily	Pressure Cal...	
CCC1012	BALN, CO	12/01/2015	03/07/2021	A52015	Air Liquide (...)	Unit 1	U1_CO2L_P_1...	High, Zero	Daily	Pressure Cal...	
CCC1013	BALN, CO	02/01/2016	03/07/2021	A52016	Air Liquide (...)			TBD	TBD	Empty	
CCC1014	BALN, CO, NO	02/01/2016	03/06/2018	A52016	Air Liquide (...)			TBD	TBD	Expired	
CCC102	BALN, CO2,...	01/14/2014	03/07/2019	B52014	Airgas (NI)			High, Mid	Daily, Quarte...	Warning Em...	
CCC103	BALA, CO2,...	01/15/2015	03/07/2019	B52013	Airgas (NI)			Low	Quarterly	Warning Em...	
CCC104	BALN, SO2	01/01/2016	03/07/2021	B52015	Airgas (NI)			High, Zero	Daily	Good	
CCC105		01/01/2016	03/06/2018	B52015	Airgas (NI)			Zero	Daily	Error Expired	
CCC106	BALA, CO	01/01/2015	03/07/2021	B52012	Airgas (NI)			High	TBD	Good	
CCC107	BALA, NO, N...	12/01/2015	03/07/2019	A52015	Air Liquide (...)			High	Daily	Good	
CCC108	BALN, CO2,...	03/01/2015	03/07/2019	B52013	Airgas (NI)			TBD	TBD	Good	
CCC108.1	BALN, SO2	01/01/2016	04/06/2018	B52015	Airgas (NI)			High, Zero	Daily	Warning Exp...	
CCC109	BALN, CO2,...	12/01/2015	04/06/2018	A52015	Air Liquide (...)	Unit 1	U1_CO2L_P_1...	High	Daily	Warning Exp...	
CCC201	BALN, CO	03/14/2017	03/07/2021	A52015	Air Liquide (...)					Good	
CCC2010	BALN, CO	03/14/2017	03/07/2021	A52015	Air Liquide (...)					Good	
CCC2011	BALN, CO	03/14/2017	03/07/2021	A52015	Air Liquide (...)					Good	
CCC2012	BALN, CO	03/14/2017	03/07/2021	A52015	Air Liquide (...)					Good	
CCC2013	BALN, CO	03/14/2017	03/07/2021	A52015	Air Liquide (...)					Good	

Cylinder Inventory Levels			
> Daily	High	Total: 4	Target: 0
> Daily	Mid	Total: 1	Target: 3

Valve - Cylinder In-Service	
> CV01 - CCC109	
> CV02 - CCC1010	

The main Cylinders view is a read-only, high-level view of all the cylinders you have in your system, as well as inventory levels and a view of which valve has which cylinder connected.

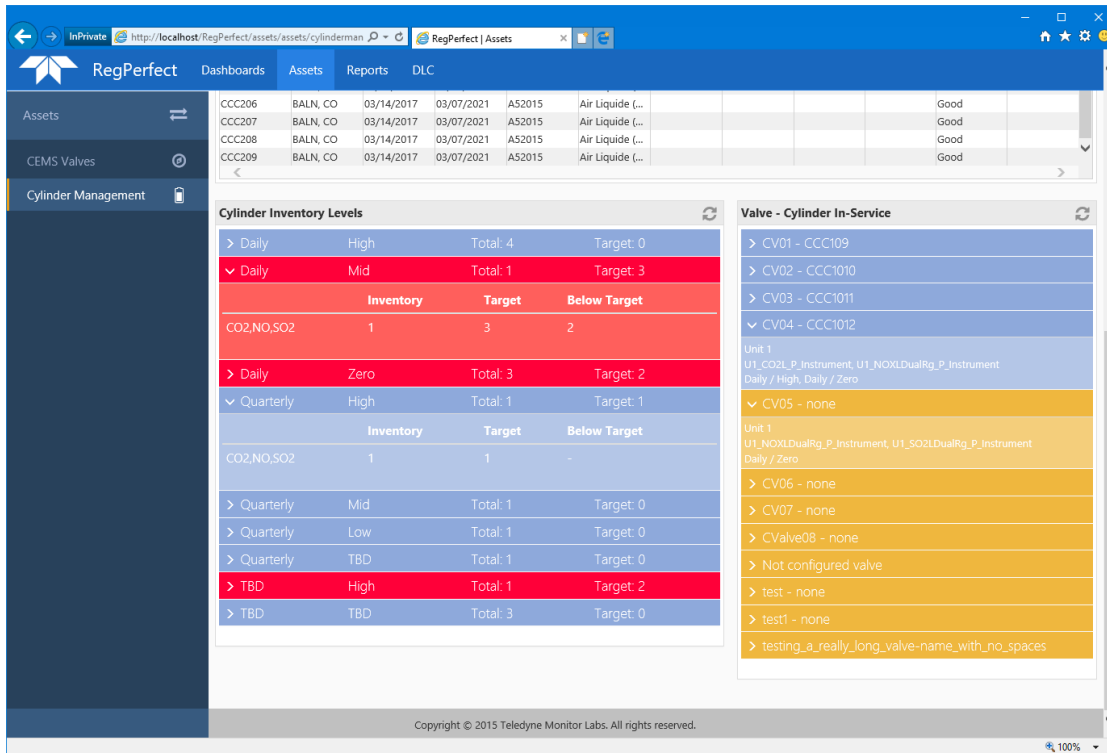
The Cylinders panel displays all the cylinders in your system. If a cylinder is in an error status the row will be red. If the cylinder is in a warning status, the row will be yellow. You can group the list of cylinders by clicking one of the "Group by ..." links above the grid. You can view cylinders that have been returned to the vendor by clicking the Returned link above the grid.



Note: Cylinders are not deleted from the system. If the cylinder is empty or unusable for some reason and it is returned, you update the cylinder to returned. If a cylinder is marked as returned, it will not appear in any of the 'normal' displays, except for the Returned grouping on the main Cylinders view.

You can also sort the grid by clicking the column headers and filter the list by entering text in the provided textboxes in the column headers. Finally, if a cylinder has a validation certificate PDF file saved with it, you can view the certification document by clicking the file icon for the row.

Scrolling down, you will see the Cylinder Inventory Levels and Valve-Cylinder In-Service panels.



The Cylinder Inventory Levels panel shows the inventory levels for each cylinder type, as well as notifications if the inventory level drops below your configured target.



Note: Configuring inventory target levels is explained later.

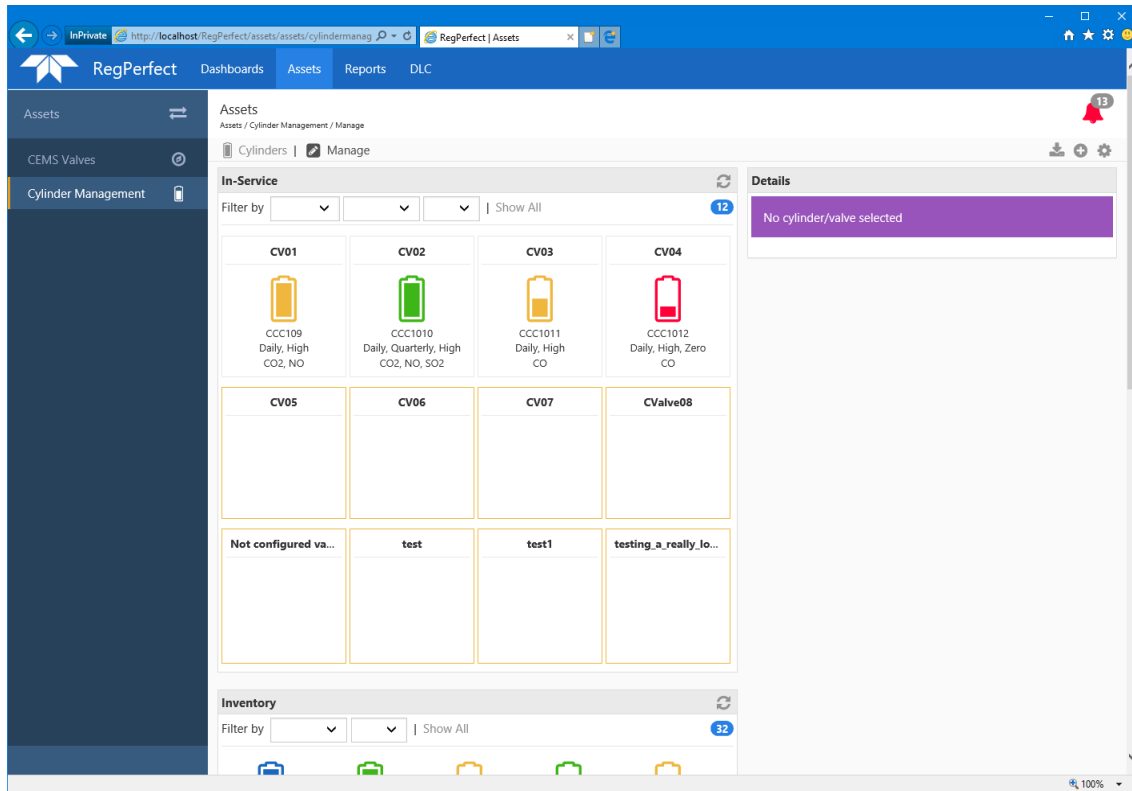
As an example from the screenshot above, to attempt to explain the cylinder inventory levels:

The system has been configured to indicate that 3 daily-mid type cylinders are always wanted to be on hand (i.e., daily-mid has a target of 3). However, there is only 1 daily-mid type cylinder in inventory (the cylinder has CO₂, NO, and SO₂ gases in it). The inventory level row is red because the actual inventory level is lower than the configured/target inventory level. On the other hand, the quarterly-high cylinder type has a target of 1 and the actual inventory level is 1 (the CO₂, NO, SO₂ cylinder listed in the inventory row details), so there is no alert indicator.

The Valve-Cylinder In-Service panel shows which cylinder is on which valve. If the row is yellow, this means that the valve does not have a cylinder associated with it.

7.2 Manage Cylinders View

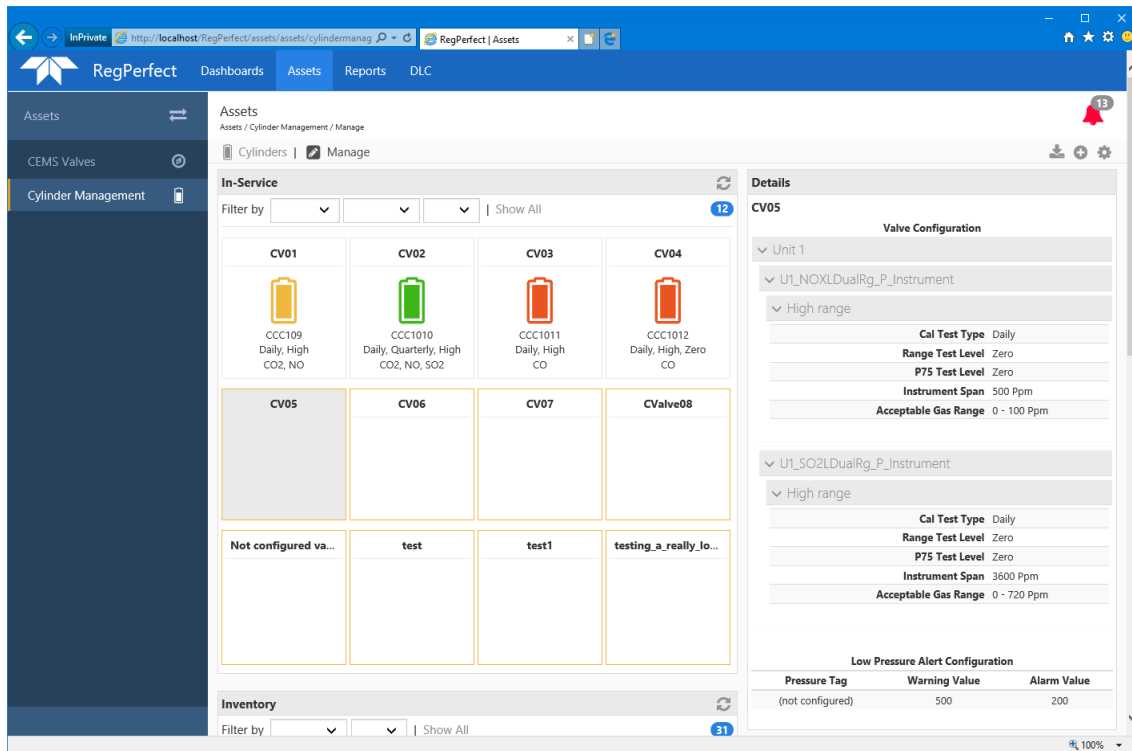
Clicking the Manage link on the Cylinder Management section opens the Manage cylinders view.



The Manage cylinders view is an interactive view that shows all the valves and cylinders configured in the system. It shows which cylinders are in inventory and which ones are connected to which valves. This view allows you to add and edit cylinders, as well as return cylinders. You can also put a cylinder in service by dragging a cylinder from inventory and dropping it on an open valve. Finally, lot of different data is shown – details for valves and cylinders, colors indicating status, and cylinder fill levels.

7.2.1 Viewing Details of Valves and Cylinders

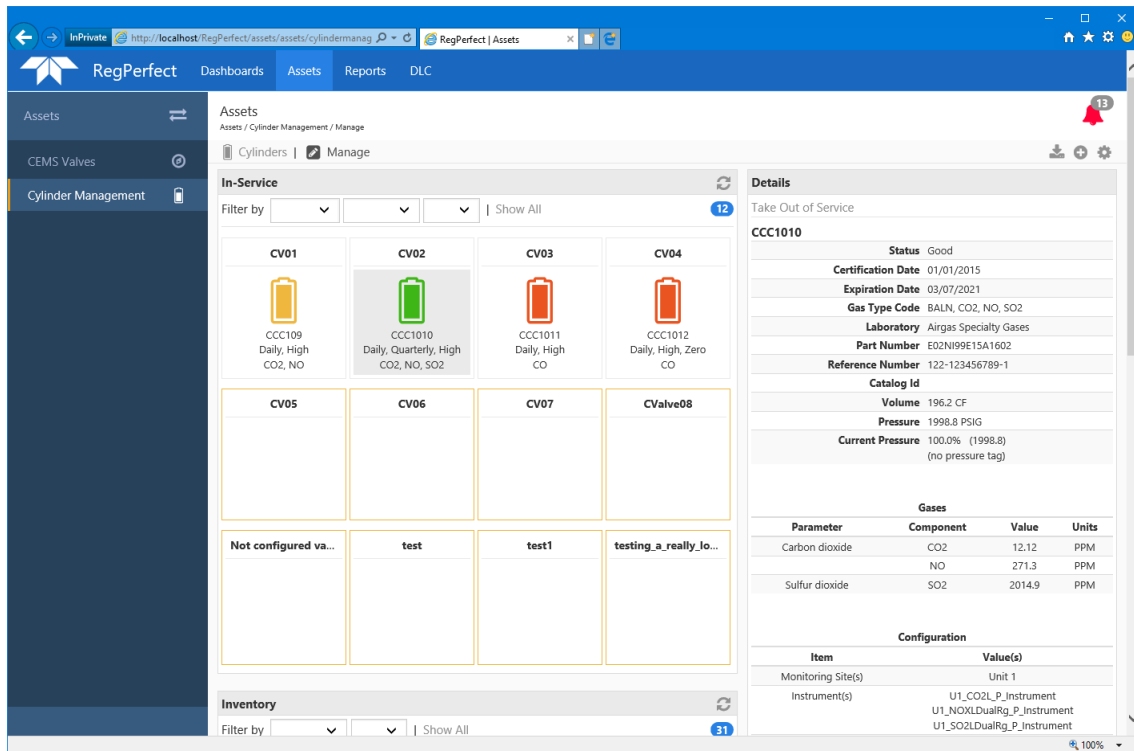
Clicking on a valve populates the Details panel with the details of the valve configuration. This information is the same as in the Calibration Gas Valves view.



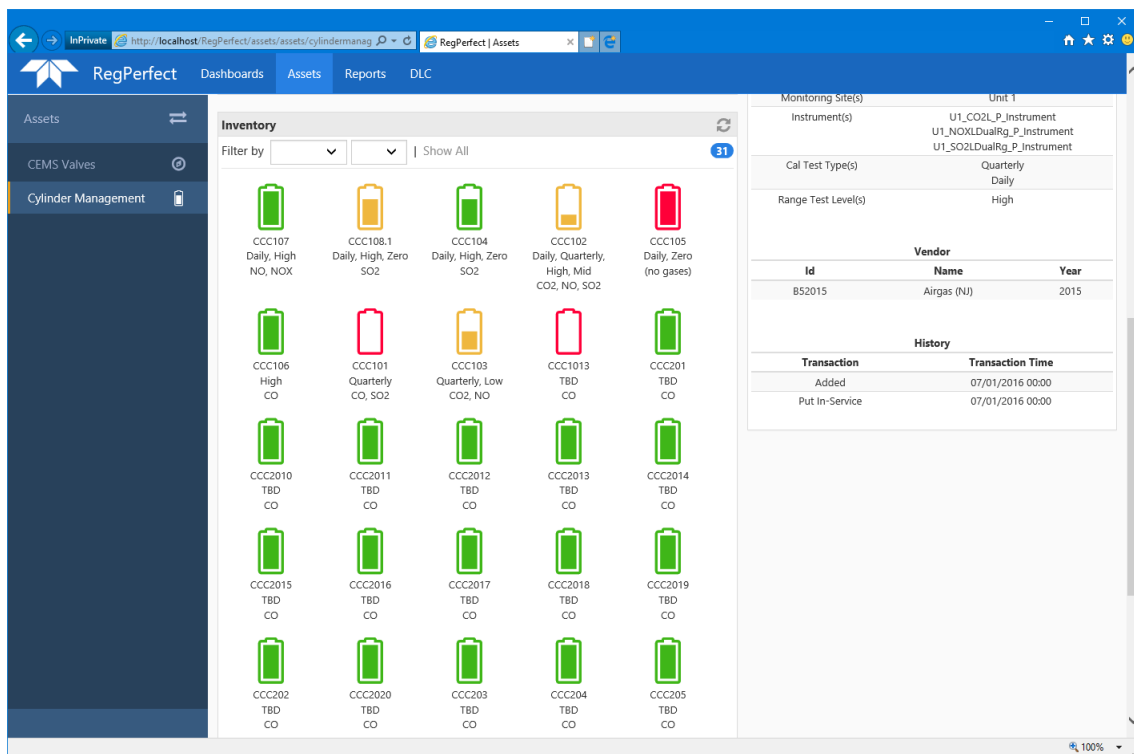
Clicking on a cylinder populates the Details panel with the configured details of the cylinder.



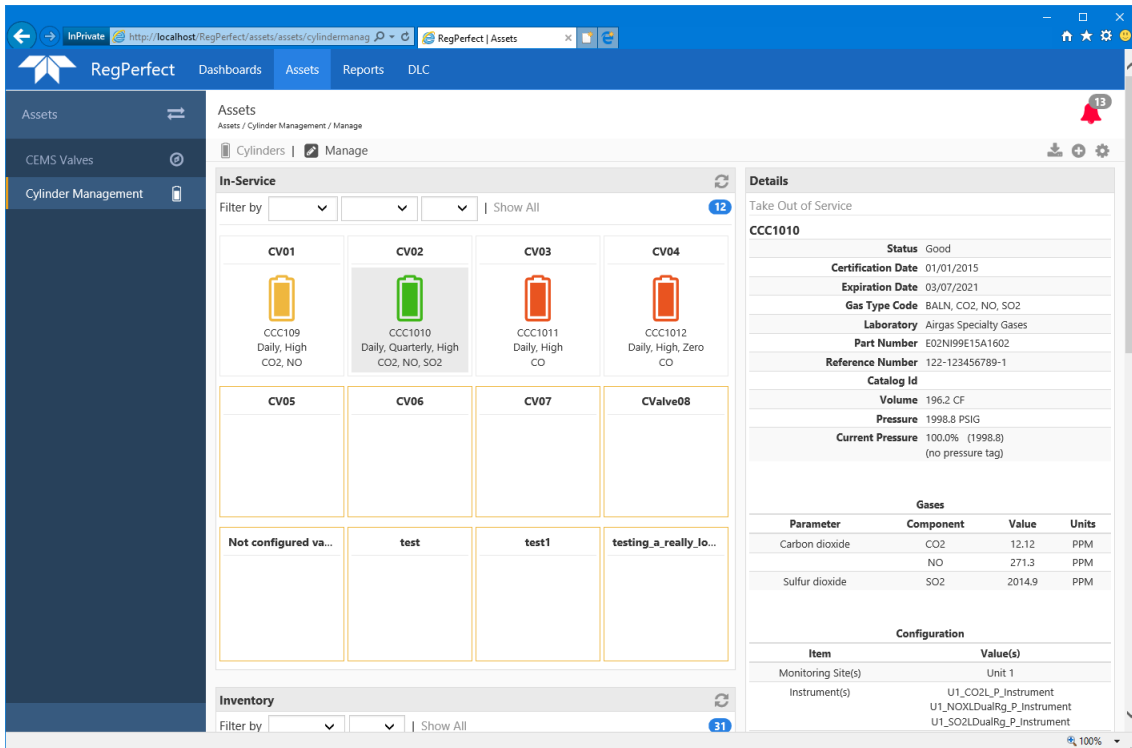
Note: Clicking on a cylinder that is on a valve or clicking on a cylinder that is in inventory produces the same information in the Details panel.



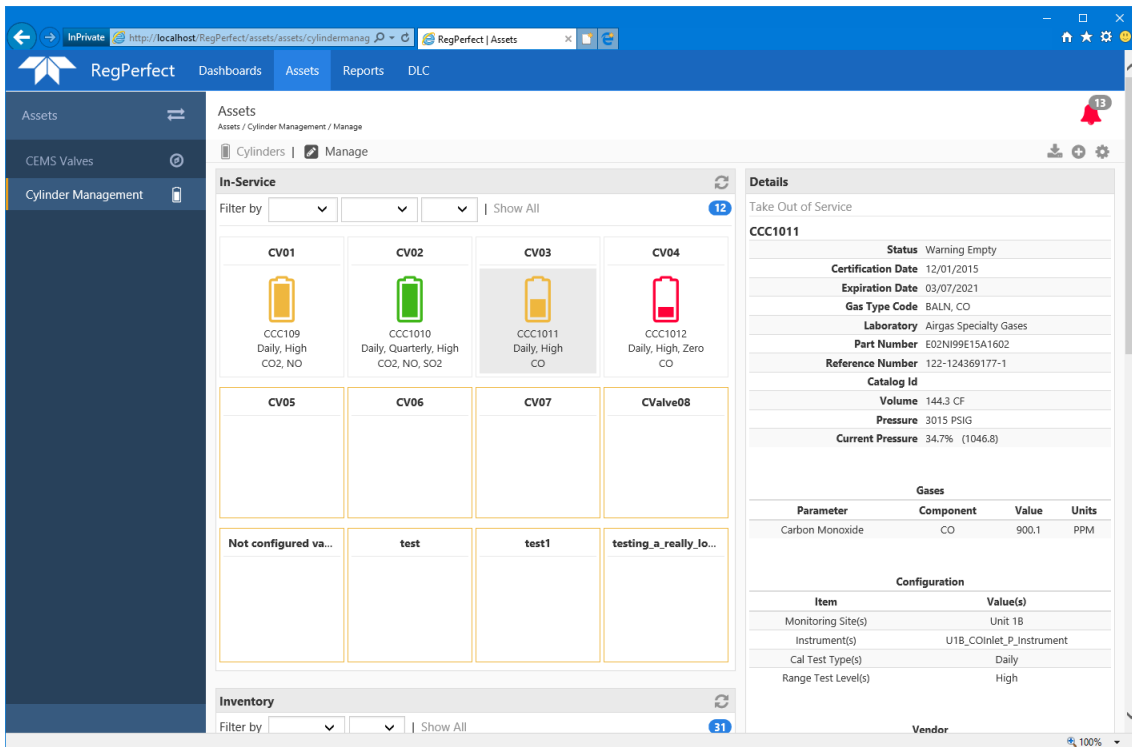
Scrolling down reveals all the cylinders in inventory.



If a valve has not been configured with a pressure tag (reference the valve configuration section above), and you select the cylinder on that valve, the Details panel will indicate the current pressure based on the initial configuration of the cylinder (and show "(no pressure tag)").

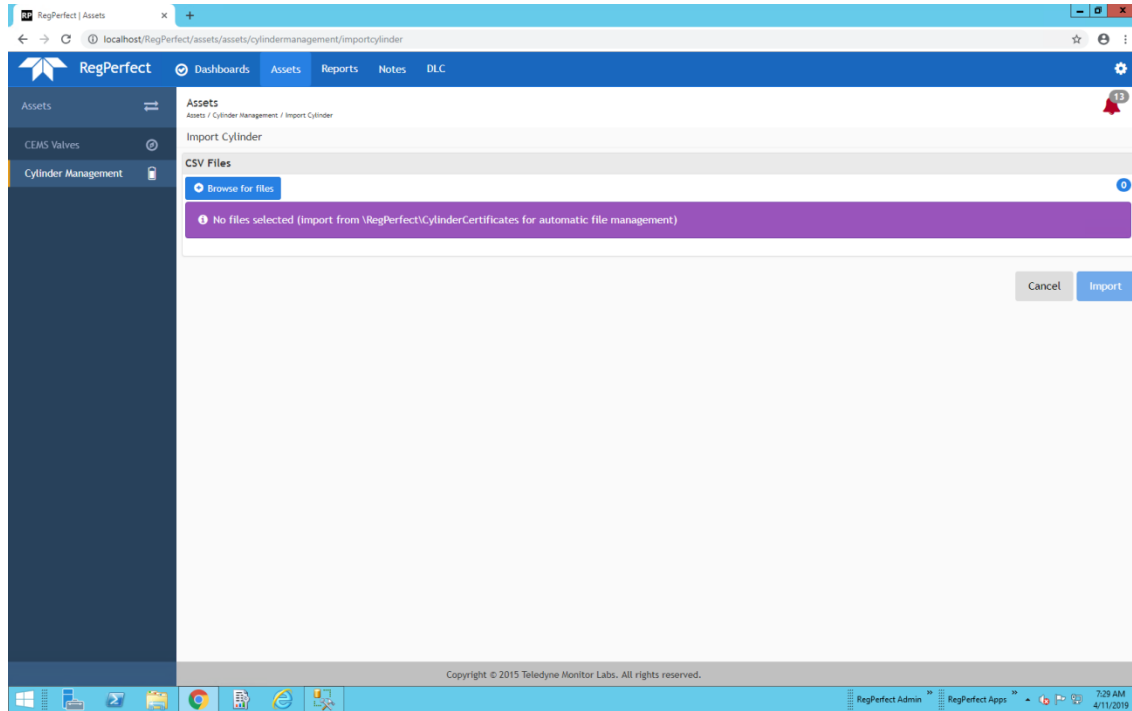


If, however, a valve has been configured with a pressure tag (reference the valve configuration section above), and you select the cylinder on that valve, the Details panel will automatically update the current pressure (based on the sample data for the pressure tag) display, the values, the color of the cylinder, and the image to reflect a partially filled cylinder.



7.2.2 Importing a Cylinder

Clicking the download button in the upper right corner of the Manage cylinders view will open the Import Cylinder form.



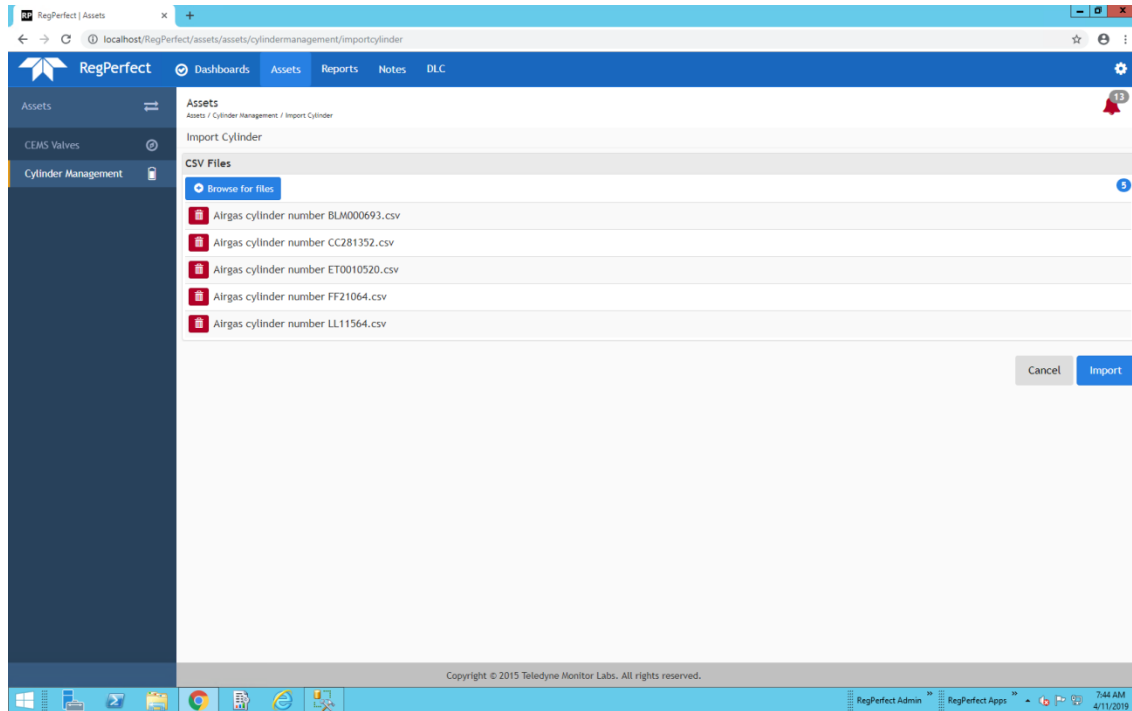
Click the Browse for files button to open a file picker dialog. Click, Ctrl-click or Shift-click to select one or more csv files. Click the Open button when done selecting files.



Note: Selected files must be in one of two known Airgas csv formats and should be obtained from the Airgas SRVS smart phone app. From the app, scan the QR code on a cylinder certificate and then export it in csv format. Unfortunately, there is no official standard format, but the scans are supposed to always produce one of the two known formats.



Note: Any selected file that is in the RegPerfect installation folder in a subfolder named CylinderCertificates (e.g., D:\RegPerfect\CylinderCertificates) and whose cylinder is saved to the database will automatically be moved to a Processed subfolder. The Processed folder is created automatically if it does not exist. File management only works when the files are on the RegPerfect server. If you want this feature and you are using a RegPerfect workstation, put the files on the server, share the folder and map it as a drive on the workstation.



A table of file names will be displayed providing a chance to review the files. More files can be added by clicking the Browse for files button. Files can be deleted one at a time by clicking the red trash icon at the beginning of its row. Once the desired files are in the table, click the Import button to begin file processing.

The first file's contents will be displayed in the Add Cylinder form (see section 7.2.3). Review and edit the data as necessary, add a Certificate Doc if desired and select the expected usage. Click the Save button to save the cylinder to the database or click the Cancel button to not save the cylinder. Either way, the next file's contents will be displayed and so on until the last file has been processed at which point you will be redirected back to the Manage cylinders view, where your new cylinder(s) will appear in the Inventory panel.

7.2.3 Adding a New Cylinder

Clicking the + button in the upper right corner of the Manage cylinders view will open the Add Cylinder form.

The screenshot shows the 'Add Cylinder' form in the RegPerfect application. The form is titled 'Add Cylinder' and is located under the 'Assets / Cylinder Management / Add Cylinder' path. The form includes the following fields and sections:

- Instrument Air
- Cylinder Number:** New Cylinder
- Vendor Id:** B12018 - Airgas (IL) - 2018
- Gas Type Code:** BALN,CO2,NO2,SO2 (with a 'Select' button)
- Laboratory:** (optional) Enter laboratory
- Volume/Units:** 400 (with a 'CF' unit selector)
- Pressure/Units:** 2000 (with a 'PSIG' unit selector)
- Certification Date:** 01/01/2018
- Expiration Date:** 01/01/2028
- Part Number:** (optional) Enter part number
- Reference Number:** (optional) Enter reference number
- Catalog Id:** (optional) Enter catalog id
- Certificate Doc:** (with 'Browse' and 'Remove' buttons)

Gases in the Cylinder

Parameter	Component	Value	Units
(optional) Enter parameter	CO2	15	Pct (Percent)
(optional) Enter parameter	NO2	250	Ppm (Parts per Million)
(optional) Enter parameter	SO2	420	Ppm (Parts per Million)

Expected usage of the cylinder:

Calibration Type(s)

- Daily
- Quarterly

Range Test Type(s)

- High
- Mid
- Low
- Zero

Fill in all the appropriate data for the cylinder and click the Save button to save the new cylinder. Click the Cancel button to close the form without saving.

Every cylinder needs a unique cylinder number and certification date.



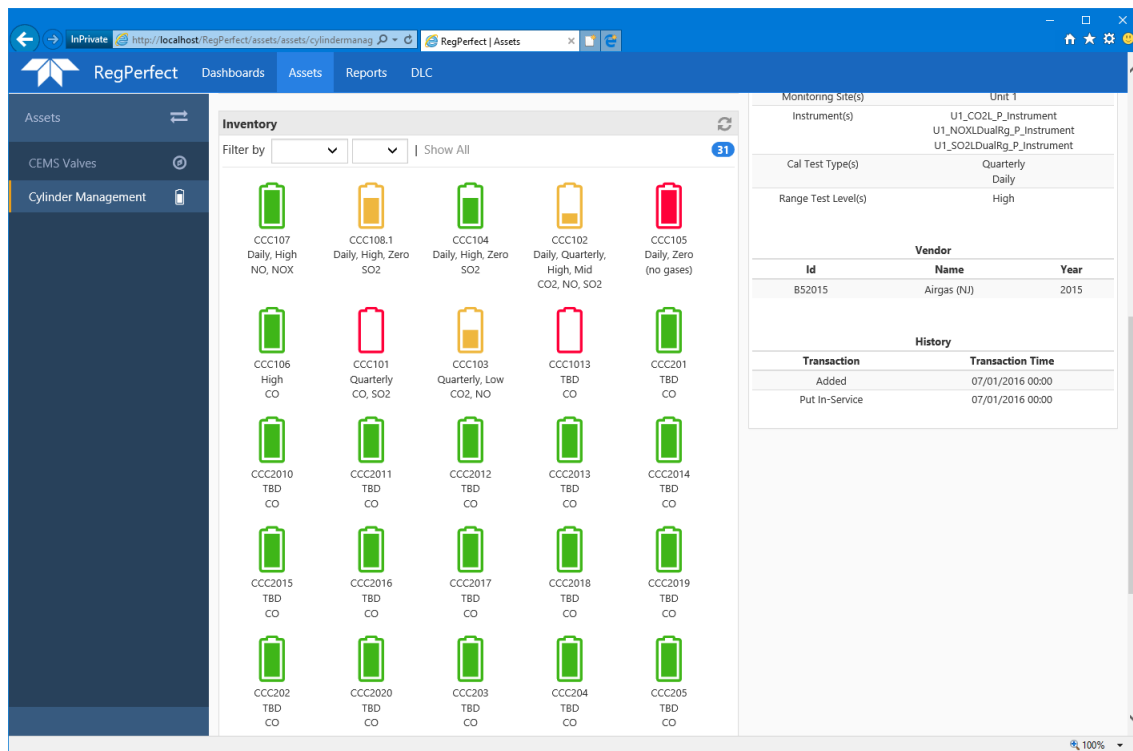
Note: You should use your cylinder certification form from the gas vendor to input the data in the Add Cylinder form.



Note: The Expected usage of the cylinder section is for inventory purposes only. That is, for example, if the new cylinder is intended to be in the Daily-High and Quarterly-High inventory buckets, select those checkboxes (as is shown in the screenshot above).

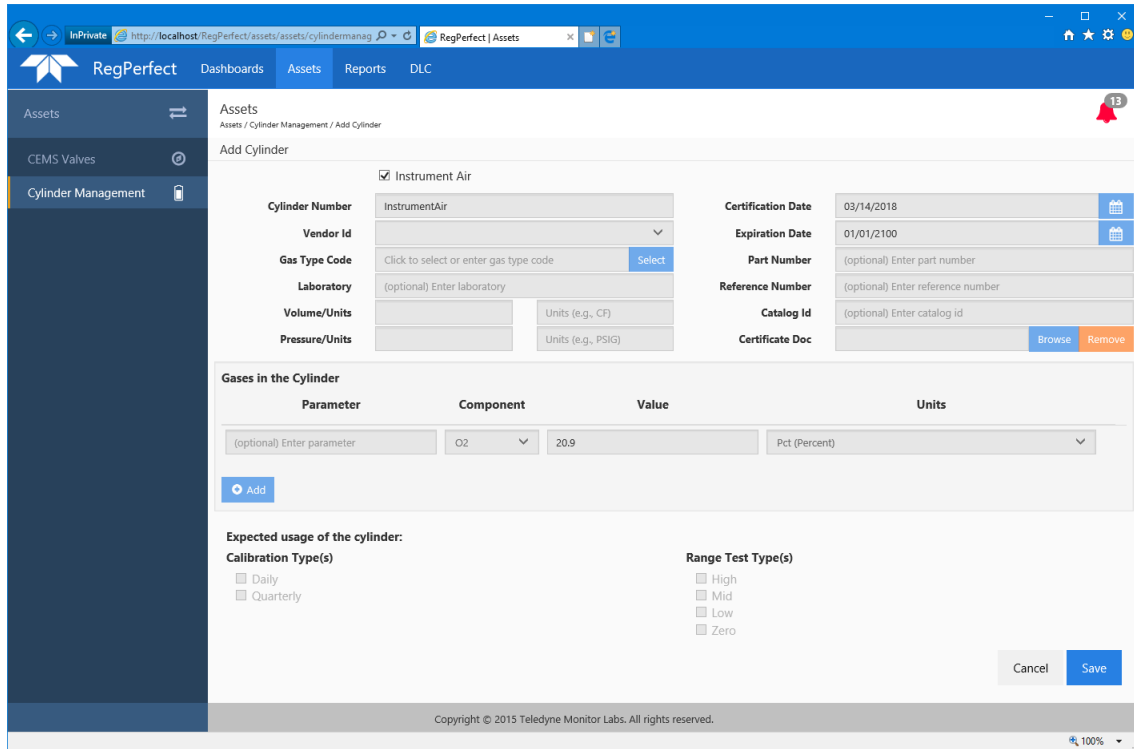
You can also upload the cylinder certificate so that it is saved with the cylinder configuration. Simply use the Browse and Remove buttons as needed to selected the PDF file from the file system. It must be in .pdf file format.

After entering all the cylinder information and clicking Save, the cylinder data will be saved to the database and you will be redirected back to the Manage cylinders view, where your new cylinder will appear in the Inventory panel.



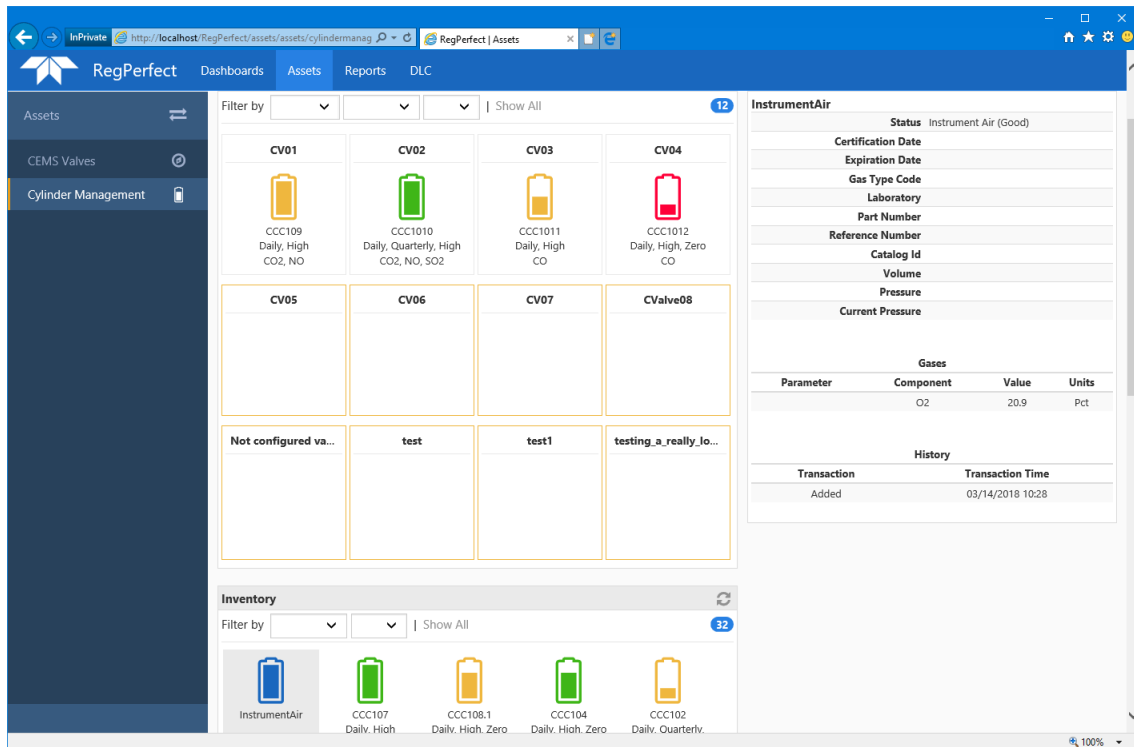
7.2.4 Adding Instrument Air

If you and your system use instrument air to calibrate your zero levels for your instruments, you can model instrument air as a cylinder in the Cylinder Management application. Simply go to the Add Cylinder form, as if you were adding new cylinder.



Then click the Instrument Air checkbox, which will fill in the pertinent information and disable the fields. Then click the Save button.

Once you create an Instrument Air "cylinder," it will appear in inventory (and then can be put in service on a valve that calibrates zero instrument levels).



7.2.5 Editing a Cylinder

From the Manage cylinders view, click on the cylinder to be edited. Then click the Edit link at the top of the Details panel. Doing these steps will open the Edit Cylinder view. The view will be populated with all the configured data for the cylinder.

RegPerfect Assets / Cylinder Management / Edit Cylinder

Edit Cylinder

Cylinder Number	CCC107	Certification Date	12/01/2015
Vendor Id	A52015 - Air Liquide (CA) - 2015	Expiration Date	03/07/2019
Gas Type Code	BALA, NO, NOX	Part Number	E02NI99E15A1602
Laboratory	Airgas Specialty Gases	Reference Number	122-124369177-1
Volume/Units	144.3 CF	Catalog Id	Catalog 1
Pressure/Units	2015 PSIG	Certificate Doc	CCC101Cert.pdf

Gases in the Cylinder

Parameter	Component	Value	Units
Nitric Oxide	NO	5.43	Ppm (Parts per Million)
Oxides of Nitrogen	NOX	278.9	Ppm (Parts per Million)

Expected usage of the cylinder:

Calibration Type(s)

- Daily
- Quarterly

Range Test Type(s)

- High
- Mid
- Low
- Zero

Cancel Save

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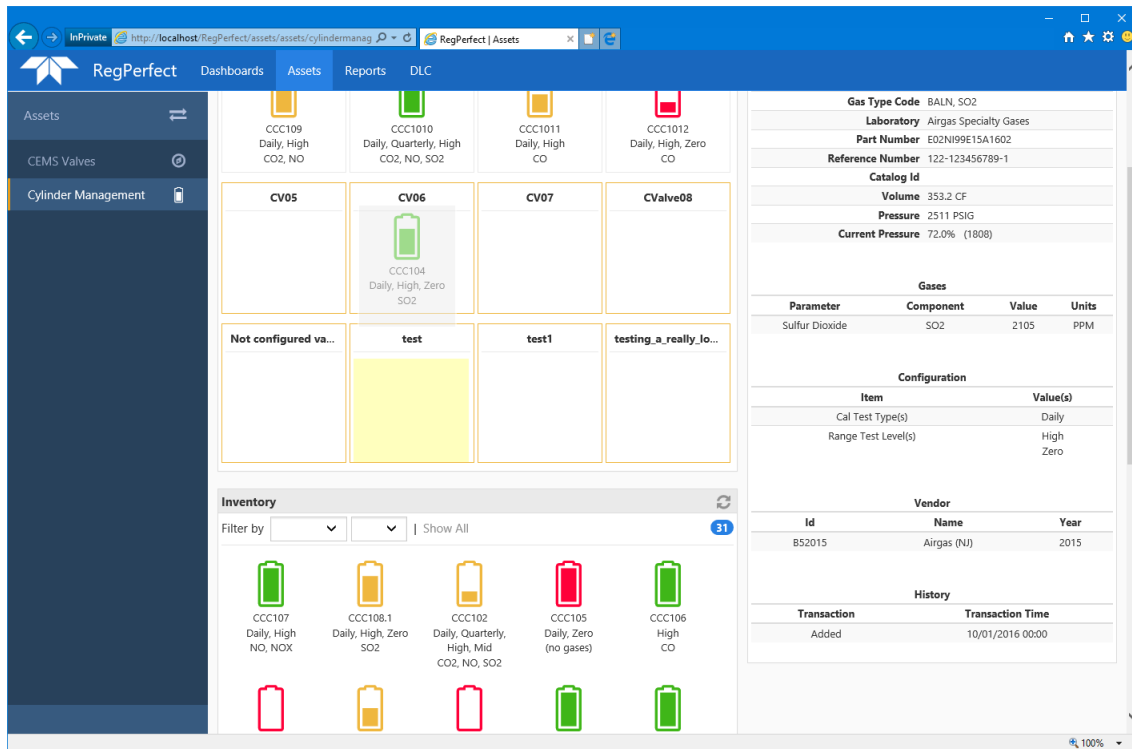
Make any/all edits needed and click the Save button to save your changes.



Note: You can only edit a cylinder that is in inventory. You cannot edit a cylinder that is in service and connected to a valve.

7.2.6 Put a Cylinder in Service

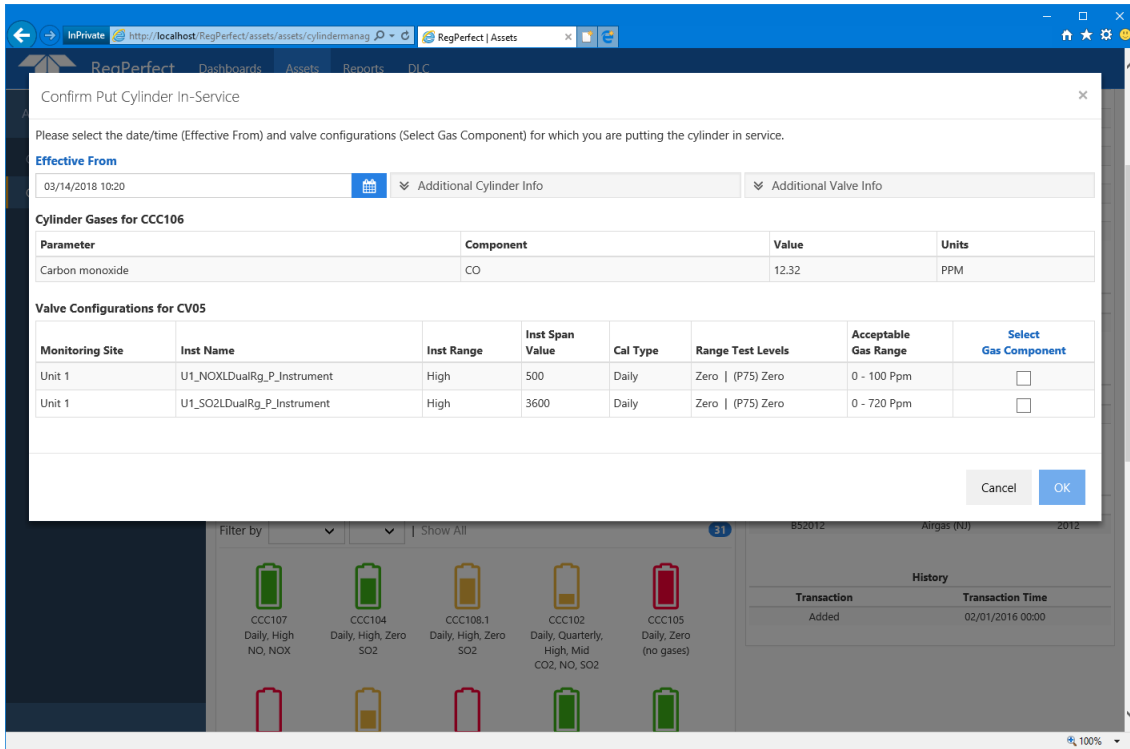
Once you get all your valves and cylinders configured, you can put a cylinder in service by dragging the cylinder from the Inventory panel and dropping it on an open valve.



The yellow highlighted valve indicates which valve the cylinder will be placed.

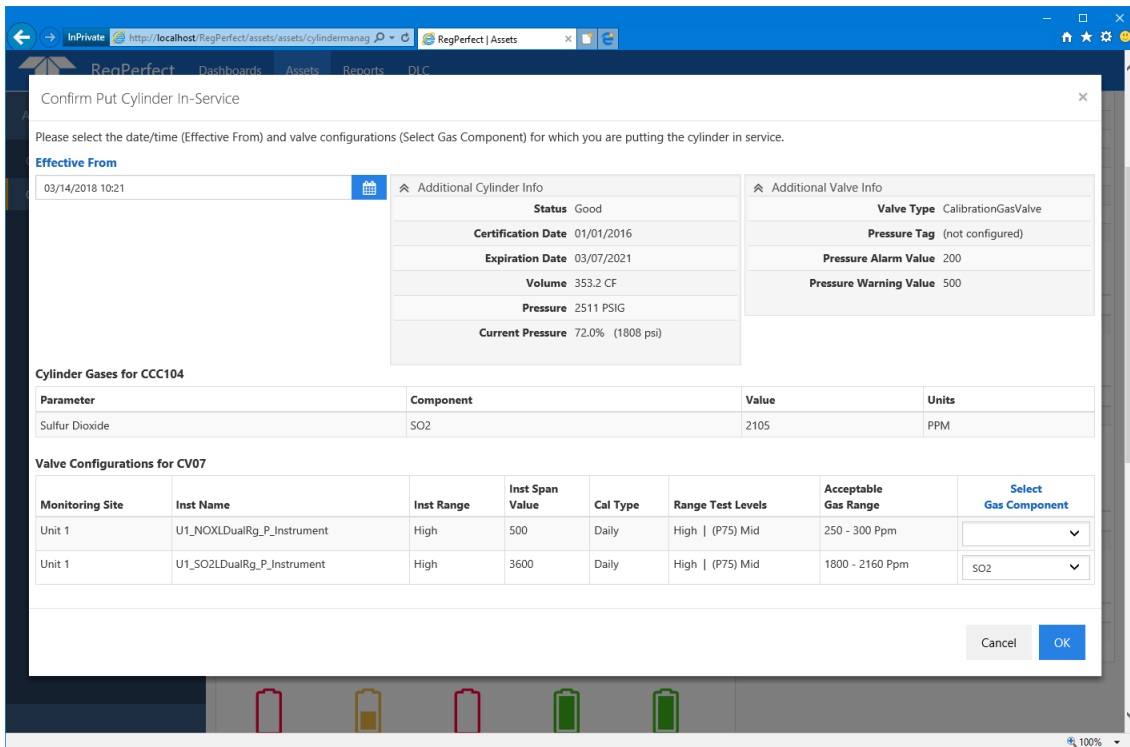
Once you drop the cylinder on the valve, a confirmation dialog will appear so that you can match the correct valve configuration with the correct gas concentration(s) in the cylinder.

If you are putting a cylinder (or instrument air "cylinder") in service for zero level calibrations, the confirmation dialog will ask you to enter an Effective From date and time and pick which valve configuration(s) will use the selected cylinder for zero level calibrations.



Clicking OK will put the cylinder on the valve for the calibrations selected.

If you are putting a cylinder on a valve for non-zero calibrations, the Confirm Put Cylinder In-Service dialog will ask you to enter an Effective From date and time and pick which gas in the cylinder will be used to calibrate which valve configuration (i.e., which instrument and calibration definition).

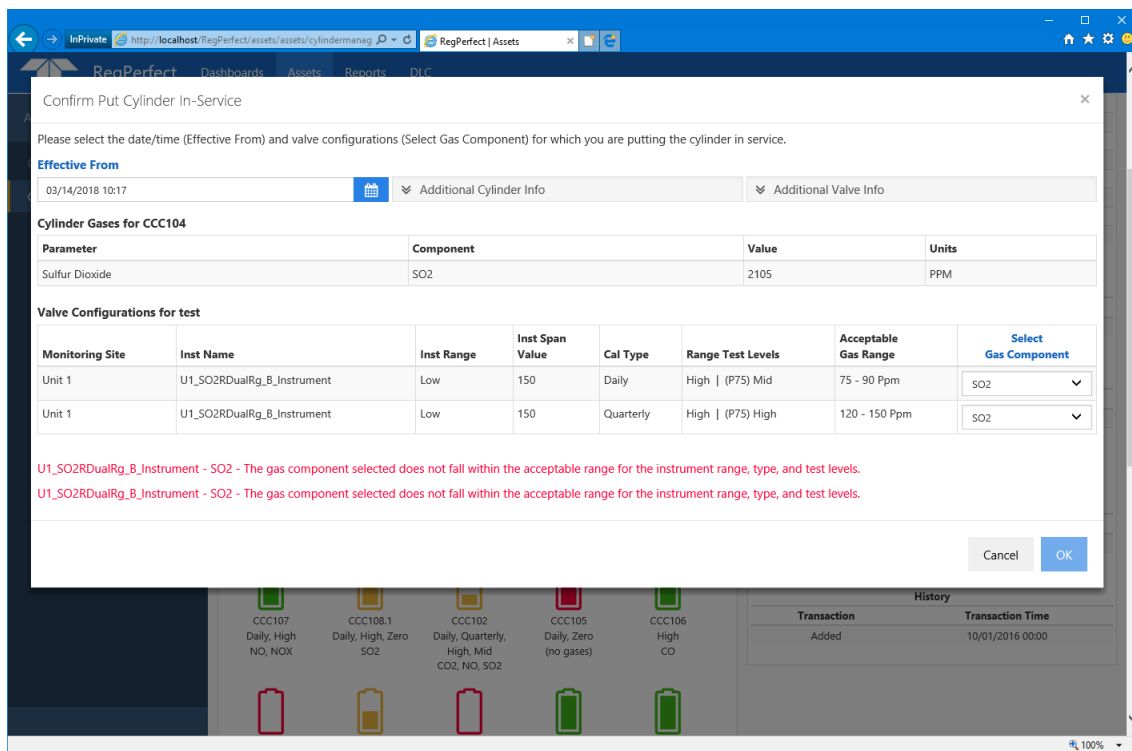


Once the dialog is filled out correctly, click OK to put the cylinder in service.



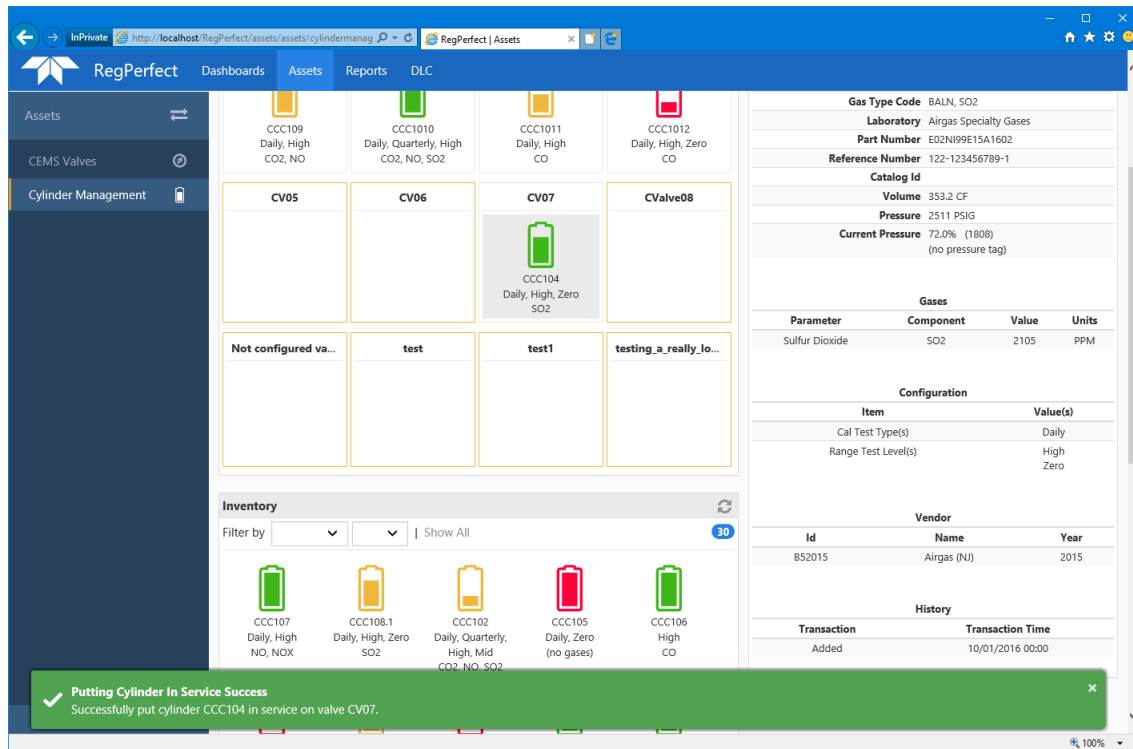
IMPORTANT: Once you put a cylinder in service on a valve, the Asset Management application will update RegPerfect's calibration reference value constants behind the scenes based on the valve configurations selected (i.e., the calibration/range test definitions) and the gas concentration values in the cylinder, as selected on the dialog in the screenshot above. After this action, calibrations in RegPerfect will use these values for future instrument calibrations.

A number of validations are performed to make sure you are putting a valid cylinder on a valid valve. If the application detects a problem with the valve/cylinder combination selected, the Confirm Put Cylinder In-Server dialog will present validation error describing any problems found.



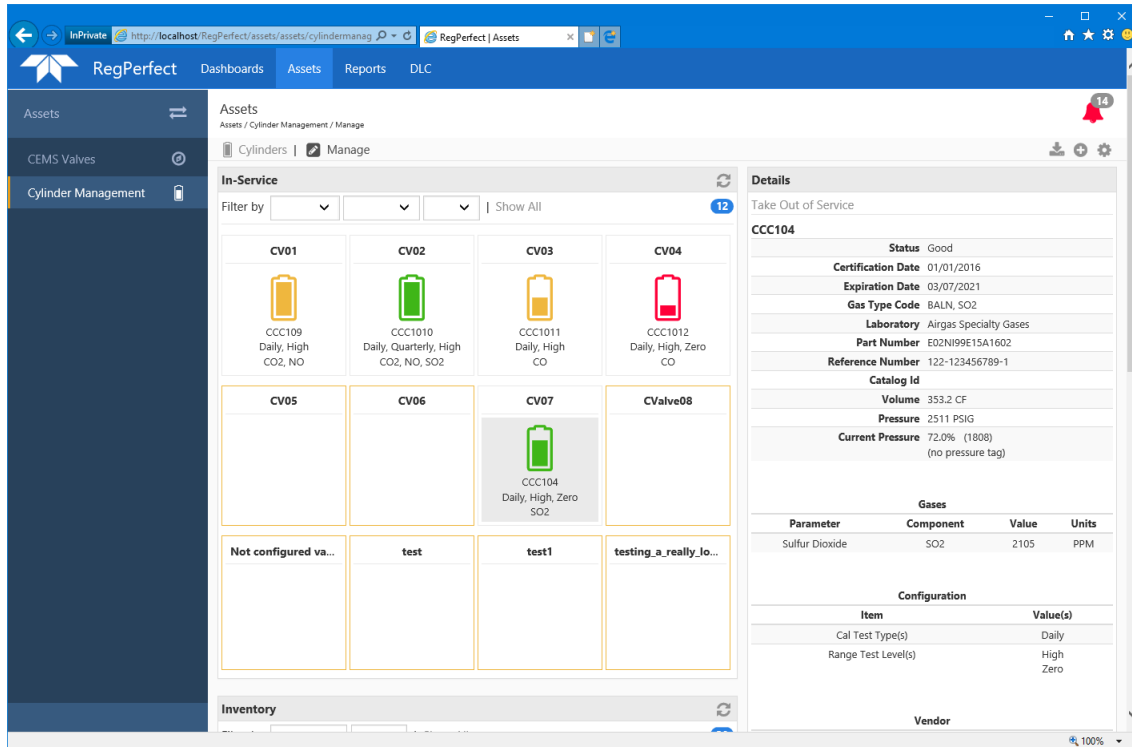
For example, you must be using a correct type of gas for the instrument, you must be using a gas concentration that falls in the acceptable gas range for the calibration definition, etc.

If you successfully configured you valves and cylinders and selected the proper cylinder to be put in service on a valve, you will see a successful confirmation message on the Manage cylinders view, and the cylinder will be on the valve.

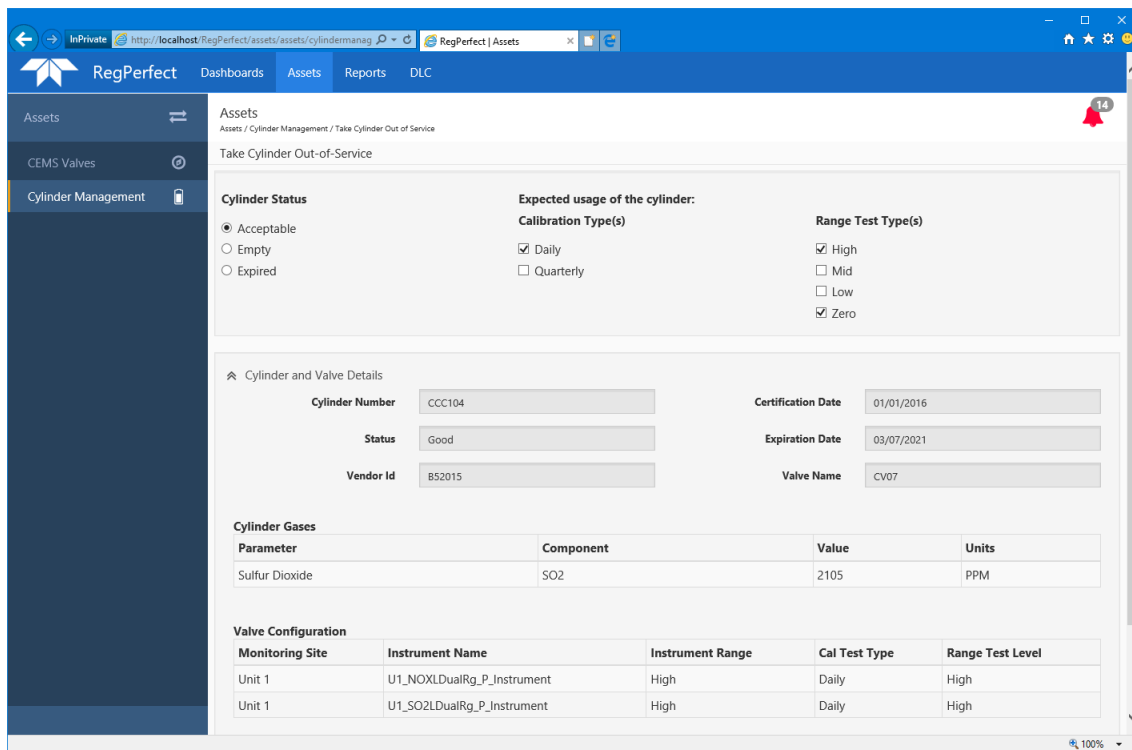


7.2.7 Take a Cylinder Out of Service

If you change out the cylinder and need to take it out of service, from the Manage cylinders view, select the cylinder to be taken out of service, and either drag it from the valve and drop it back into the Inventory panel or click the Take Out of Service link in the Details panel.



Either action will open the Take Cylinder Out of Service view.



From this view, tell the application why you are taking the cylinder out of service.

Acceptable – the cylinder is still good, just putting back in inventory and can be used again

Empty – the cylinder is empty and cannot be used again
Expired – the cylinder is expired and cannot be used again

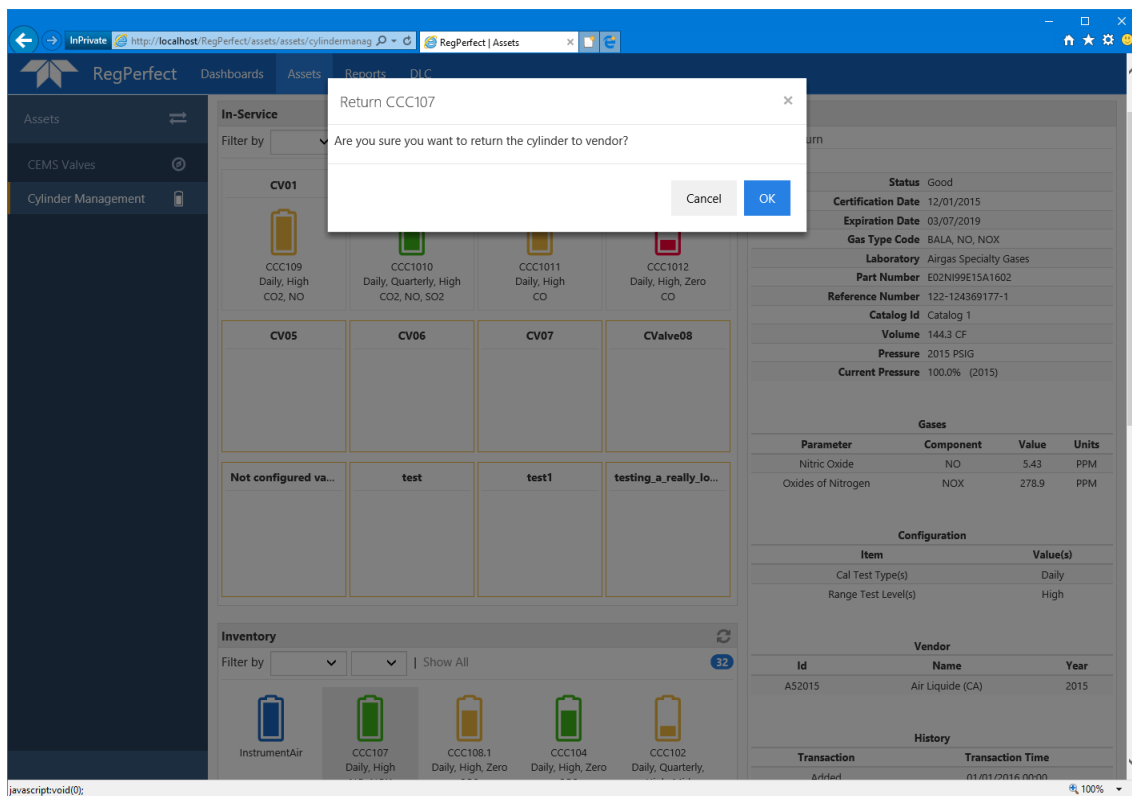


Note: Like adding a new cylinder, the Expected usage of the cylinder section is for inventory purposes only. That is, for example, if the cylinder is intended to be in the Daily-High and Daily-Low inventory buckets, select those checkboxes (as is shown in the screenshot above). These values should be pre-selected for you based on how you configured the cylinder when adding it.

7.2.8 Returning a Cylinder

If the cylinder is empty or expired and you need to return it to the vendor, you can update the application to know that the cylinder has been or is going to be returned. From the Manage cylinders view, select the cylinder to be returned and click the Return link in the Details panel.

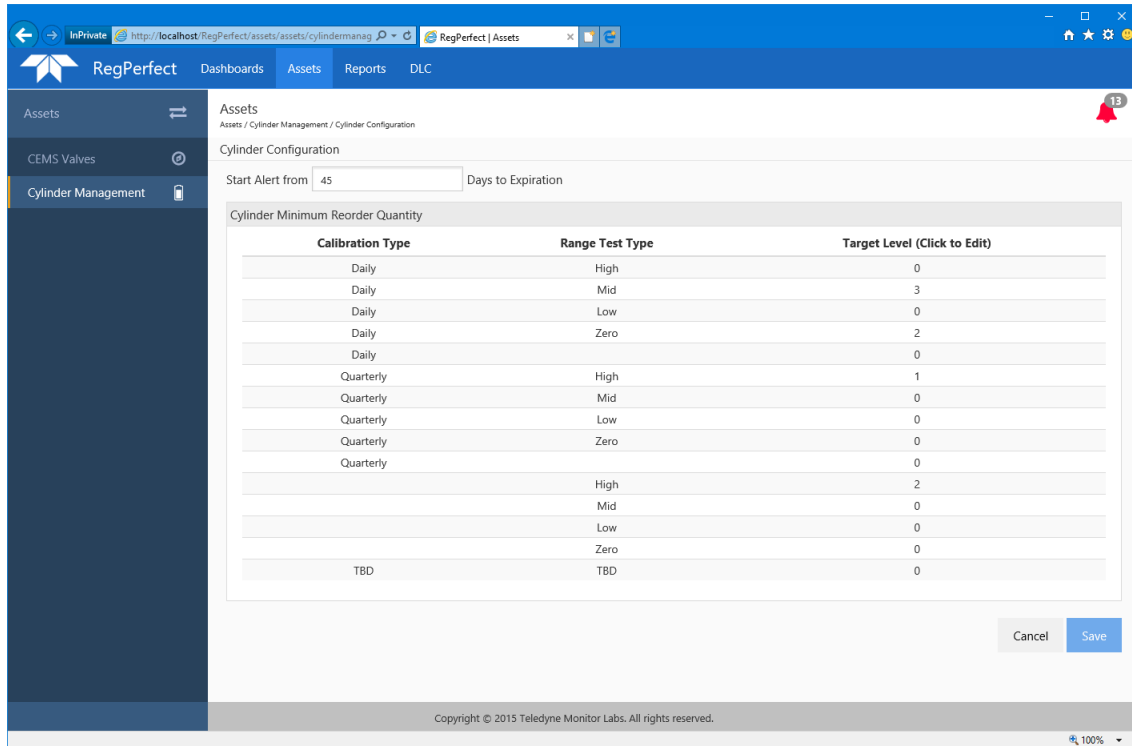
A confirmation dialog will appear.



Note: A cylinder that is returned will not show in the application (except in the Returned filter in the grid on the main Cylinders view, as described above), but its data will not be deleted from the database.

7.2.9 Cylinder Configuration

To configure some Cylinder Management parameters, click the gear icon in the upper right of the Manage cylinders view. This will open the Cylinder Configuration view.



From this view, you can configure the number of days before cylinder expiration that you will start seeing warnings that the cylinder is about to expire. The default is 45 days.

And, you can configure the target inventory levels for each inventory bucket.

Click Save to save any changes.

8.0 Assets Alerts

The Assets application will monitor and display any alert conditions found.

The screenshot displays the RegPerfect Assets application interface. The main view shows a grid of calibration gas valves (CV01-CV08) with battery icons indicating their status. A red alert icon with the number 13 is visible in the top right corner. A details pane on the right side is open, showing a list of alerts for various cylinders, including their status, current pressure, and certification dates.

Alert ID	Cylinder	Cert Date	Status	Current Press	Press %
1	CCC101	02/01/2015	Error Empty	2098.4	2.00
2	CCC1011	12/01/2015	Warning Empty	3015	34.1
3	CCC1012	12/01/2015	Error Empty	3500	18.5
4	CCC1013	02/01/2016	Empty	1999	0.00
5	CCC1014	02/01/2016	Expired	2019	19.81
6	CCC102	01/14/2014	Warning Empty	1015	21.67
7	CCC103	01/15/2015	Warning Empty	995	42.21
8	CCC105	01/01/2016	Error Expired	null	N/A
9	CCC108.1	01/01/2016	Warning Expired	-1	N/A



Note: The screenshot above shows the alert notifications details on the Calibration Gas Valves view, but the alert icon is visible on all asset types.

The alert icon will be red if there is at least one error alert. It will be yellow if there is at least one warning alert and not error alerts. And, the alert icon will show the total number of alerts.

Clicking the alert icon will open the alerts details pane to give more information regarding each alert.



RegPerfect® Editor

User Manual and Help Documentation

Updated: August 2020

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1. Introduction

This manual describes the RegPerfect® Editor application.

1.1 Overview

Editor provides the ability to view, edit and recalculate real-time data such as samples, calibration tests, reasons/actions, sorbent traps and QA/QC tests. Editor also contains screens for editing constants and certain DAS settings. The application's main window contains several tabs:

Edit Samples

View/edit the sample data of selected tags or tag groups

Recalculate

Recalculate selected tags or tag groups over an interval of time

Edit Constants

View/edit constant values such as calibration gas bottle values or bias factors

Calibrations

View/edit calibrations, interference tests and integrity checks and reassess data validity

Part 60 QA/QC

Add or view/edit Part 60 Cylinder Gas Audits and RATAs

Part 75 QA/QC

Add or view/edit Part 75 Linearity tests and RATAs

Sorbent Trap App K

Enter/analyze sorbent trap results for state reporting (applicable/visible to only a few facilities)

Sorbent Trap

Enter/analyze sorbent trap results for PS-12B or MATS reporting (visible at sites with P75 sorbent trap systems)

PI Data

Configure data transfer from RegPerfect to Plant Interface (visible at sites with a PI interface)

PM Correlation

Enter PM correlation test results (visible only at sites with Part 75 PM systems)

Editor stores settings and preferences separately for each logon user and remembers many of your previous entries such as editing start times and filters for tag and instrument lists.

1.2 Key Terms and Concepts

This section describes some RegPerfect® terms and concepts that are referred to throughout this manual.

Tag

A tag is a named parameter such as U1_SO2_Ppm_1H for which RegPerfect® records data. The name of each tag is prefixed with a mnemonic to indicate the monitoring site (*U1* for unit 1) followed by the parameter (*SO2*), the units (*Ppm*) and the periodicity at which data is recorded (*1H* for 1 hour). Tags have many properties, but a key property is the origin of data. For *Measured* tags, data values are calculated by an external controller such as a PLC, logger or DCS. For *Calculated* tags, data values are calculated by RegPerfect's Calculation Engine.

Tip: In most cases, manual edits should be applied to Measured tags. Direct edits to Calculated tags can be dangerous because the edits may be overwritten by an inadvertent recalculation.

Sample

The data stored for tags are called Samples. Each Sample consists of a timestamp, a value, status flags and an optional Method of Determination Code (MODC). The timestamp represents the *start time* of the value: a 6-minute average from 9:00 to 9:05:59 has a time stamp of 09:00, not 09:06.

Status flags further describe or qualify each Sample by noting special conditions. Some of those, such as InCalibration, denote invalidity. Others such as NonFatalFault, do not.

MODCs are used only for EDR reporting. All source of data codes required by the EDR are stored as a Sample MODC in RegPerfect®.

Reasons and Actions

Reasons and Actions for downtime and excess emissions are not part of a RegPerfect® Sample but are related to the Sample. Because of this, more than one reason and action may be associated with each Sample. For example, you may assign both a CEMS Failure reason and a Part 75 Missing data reason to the same Sample.

Constants

In RegPerfect®, the term “Constants” refers to parameters that are not constant at all but that change value infrequently. This includes calibration reference (bottle) values, bias factors, alarm limits and more. Each Constant may have many different values over the course of time – each of which has its own period of effectivity.

Daily QA Test

Daily QA tests include both daily calibration error tests and stack flow interference checks. The two are treated very similarly by Editor and other RegPerfect® applications. Despite their obvious differences, the Part 75 data invalidation rules are identical for the two. Both are required daily, and they have similar properties such as end time and status (pass vs. fail).

Calculation Engine or Calc Engine

Calc Engine is the RegPerfect® application that performs all calculations and calibration/interference test assessment. When *Measured* samples are manually edited, a request must be sent to the Calculation Engine to recalculate calculated tags that use the measured data in their calculations.

Tip: If you manually edit a Measured Tag's samples, the easiest way to be sure all needed recalculations are performed is to select that Measured Tag on Editor's Recalculate property sheet. This forces the recalculation type to be set to "Recalc Dependencies of Selected Tags." This recalculation type ensures that every downstream Calculated tag that may be affected by your edits is recalculated.

Reassess Daily QA Test

When calibrations or interference tests fail, and when Part 75 grace periods expire, Samples are invalidated in real time by the Calculation Engine until a subsequent passing test. Sometimes, it becomes clear that the invalidated data should really be valid. Perhaps the operator forgot to enter a new reference (bottle) value which caused a passing calibration test to be interpreted as a failed test. Or perhaps the unit was incorrectly assumed to be online when it was really offline because of a pulled wire or stuck relay.

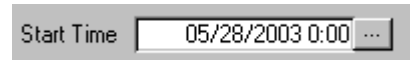
In such cases, the invalidated Samples can be corrected by *reassessing* calibration/interference test results. After fixing the underlying cause (entering the new reference value or editing the UnitOn tag), a request can manually be sent to Calc Engine to reassess the calibration results and grace periods.

1.3 Date Entry in Editor

Date entry in the Editor application can be accomplished three ways.


Manual Entry

All date input boxes in Editor consist of a box for manual entry and a button that opens the *Enter Date and Time* form.



When manually entering dates, the format is flexible. The Editor application will reformat your date/time after you enter it, but you do not have to exactly match the format as you type your date/time. You can type 4 digit years or 2 digit years. The delimiter between month, day and year can be backslash or dash. You do not need to type leading zeros. You may enter only the date when the desired time is 00:00.

Enter Date and Time Form

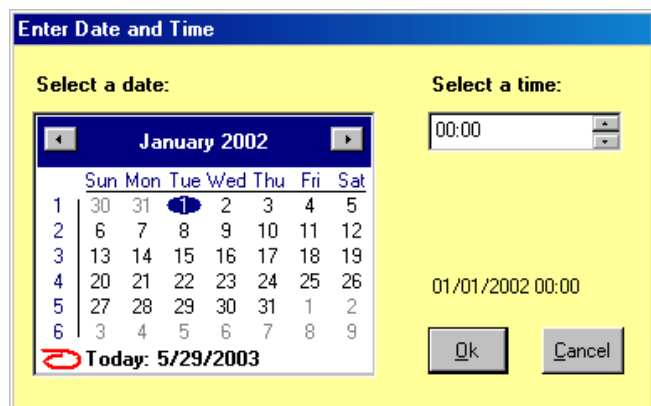
If you prefer to select the date with your mouse, click the button to the right of the date box to  open the *Enter Date and Time* form.

Select a date by clicking the desired day on the calendar. You can scroll the months using the buttons at top left and top right of the calendar. To change the year, click the year at the top of the calendar— this causes scroll buttons to appear.



Manually enter the time or click the up/down scroll buttons.

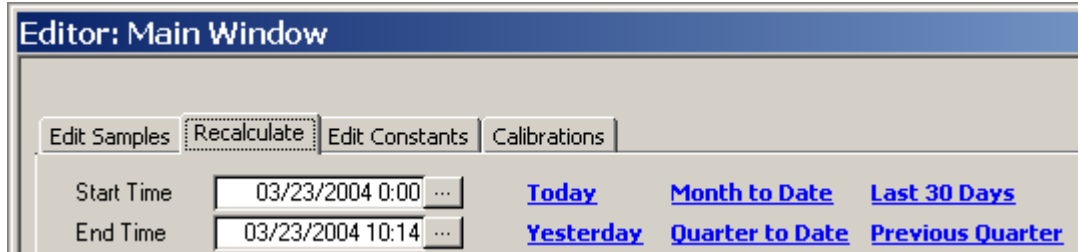
Click *Ok* to close the form and select the date/time, or *Cancel* to close the form without selecting the date/time.



	Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	30	31	1	2	3	4	5
2	6	7	8	9	10	11	12
3	13	14	15	16	17	18	19
4	20	21	22	23	24	25	26
5	27	28	29	30	31	1	2
6	3	4	5	6	7	8	9

Quick-Date Shortcuts

Quick-date shortcuts are available on most windows that require date entry. As in the example below, the shortcuts are always shown in bold blue, underlined font.



When you left-click a shortcut, the Start and/or End Times are automatically updated. Different windows may have different quick-date shortcuts. The entire list of available shortcuts is described in the table below. For the sake of the examples in the table, assume the current server clock date/time is March 23, 2004 at 10:15:00am.

Quick-Date Shortcut	Start Date/Time	End Date/Time	Comment
Today	3/23/04 00:00	3/23/04 10:14	
Yesterday	3/22/04 00:00	3/22/04 23:59	
Last 24 Hours	3/22/04 10:00	3/23/04 09:59	
Week to Date	3/21/04 00:00	3/23/04 10:04	Sunday at 00:00 through current time
Previous Week	3/14/04 00:00	3/20/04 23:59	Sunday at 00:00 through Saturday
Last 30 Days	2/22/04 00:00	3/22/04 23:59	
Month to Date	3/01/04 00:00	3/23/04 10:14	
Previous Month	2/01/04 00:00	2/29/04 10:14	
Start of Quarter	1/01/04 00:00	N/A	
Quarter to Date	1/01/04 00:00	3/23/04 10:14	
Previous Quarter	10/01/03 00:00	12/31/03 23:59	
Ozone Season	5/1/11 00:00	9/30/11 23:59	Prior to May shows previous year
Find Invalid Data	N/A	N/A	Opens a form to search for invalid data

For more information on the *Find Invalid Data* shortcut, see [Finding Invalid Data](#).

1.4 New Features for Version 7

Enhanced Data Export

The [Export Samples] button/function on the Edit Samples tab has been enhanced. Exports now include both valid and invalid samples, up to 26 tags, and options for which status flags to include.

Status Flag Tool Tips Added

Status flag descriptions are now shown as tool tips of flag labels on the Block Edit, Edit Sample, Sample Editor Filter and Sample Log forms.

Ability to Assign Alternate Names to Status Flags

You may now assign aliases and descriptions (for tool tips) to status flags 38 to 48. Once configured, the aliases are shown throughout the Editor application (though not yet on reports). Access this feature via the file menu *Tools* -> *Preferences* -> [Assign Alternate Names to Customizable Status Flags].

Limited Editing of Daily Cals, Interference Tests and Integrity Checks

Users in the RP_ADMINS and RP_MANAGERS groups may now [edit the results of existing tests](#) and [manually insert new tests](#).

PM Correlation Tests for PM Calculations

A new tab has been added for the entry of PM correlation tests. This new interface allows you to keep a historical record of the tests and correlation curve equations with from/through effectivity dates.

Note: The PM correlation records can and should be used in conjunction with a new tag script function so that both real-time and historical calculations use the appropriate correlation equation. This new method allows users to be in complete control of the calculation without changing any tag scripts or constants, and to view/edit all the equations, coefficients and their effectivity dates from a single interface.

Sorbent Trap Analysis for PS12B/MATS

A new tab has been added for the entry and analysis of HG sorbent trap results.

MATS Support

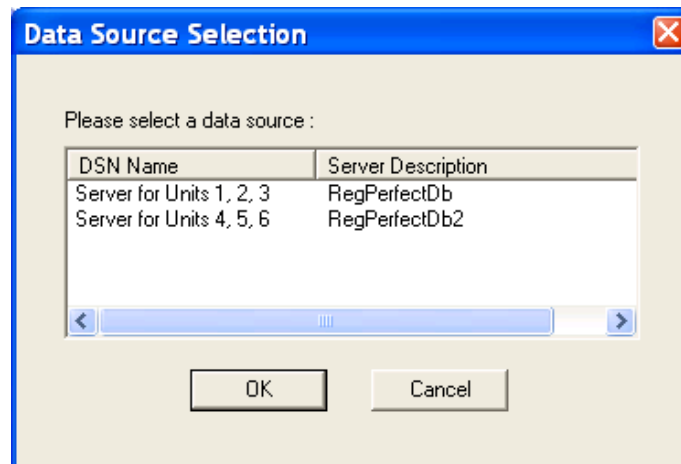
Support for MATS has been added in many other small ways on multiple forms. For example, weekly HG integrity tests may now be viewed/edited on the Calibrations / Daily QA Tests tab.

2. Launching Editor

Launch Editor by double clicking the Editor shortcut in the RegPerfect® folder on your desktop.

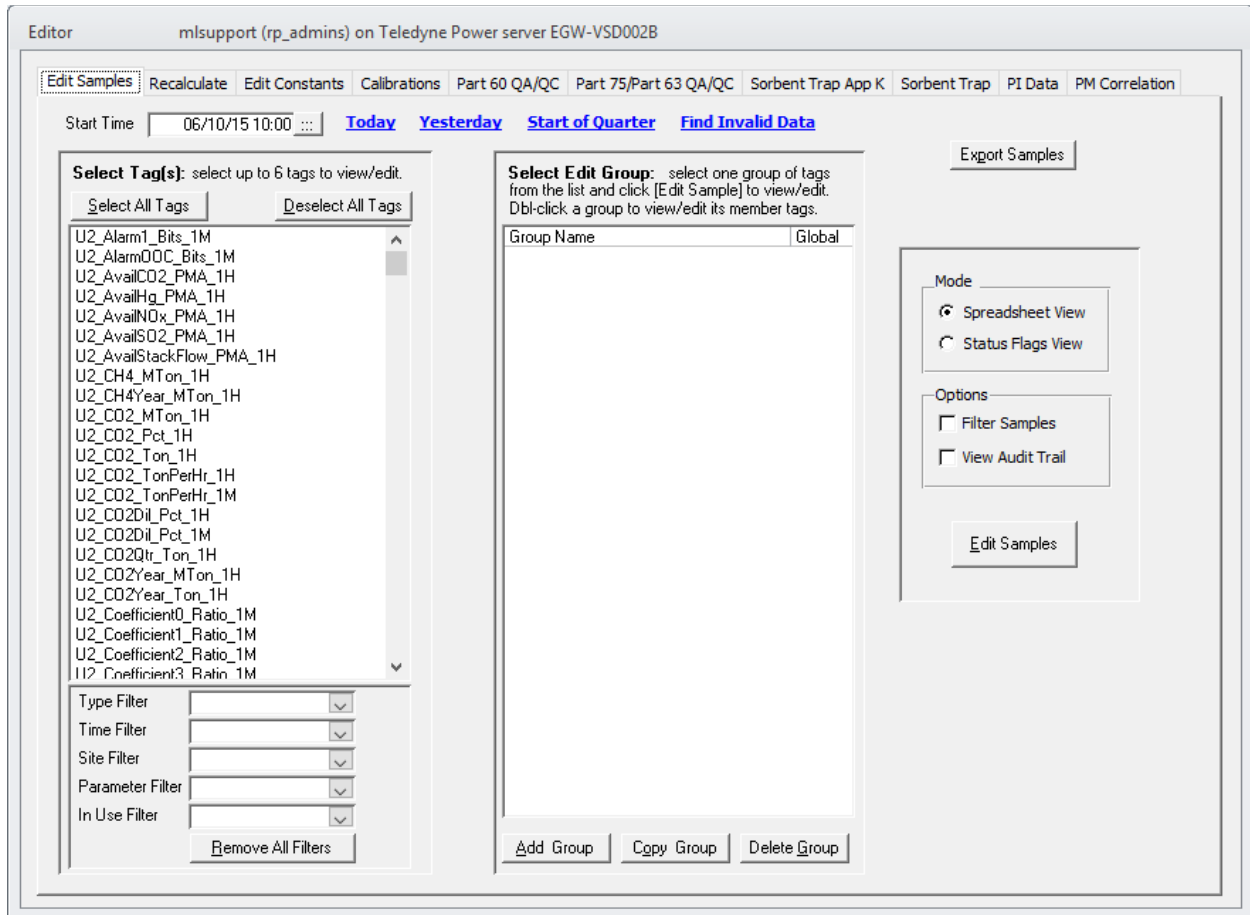
2.1 *Select a Data Source*

At sites with multiple RegPerfect® servers, you are prompted to select a server when Editor is launched. Your selection determines which server's data you work with during your session with Editor. You may later select a different server from the [Tools / Change Server](#) option on the Menu Bar. Click to select the desired Data Source and click OK to continue. At sites with only one RegPerfect® server, this window does not appear.



2.2 Editor Main Window

After the Data Source has been selected, Editor's Main Window opens. From here, you can access all the major functions of the application (each is on a separate tab): Edit Samples, Recalculate, Edit Constants, Calibrations, Part 60 QA/QC, Part 75 QA/QC, Sorbent Trap AppK, Sorbent Trap, PI Data and PM Correlation.



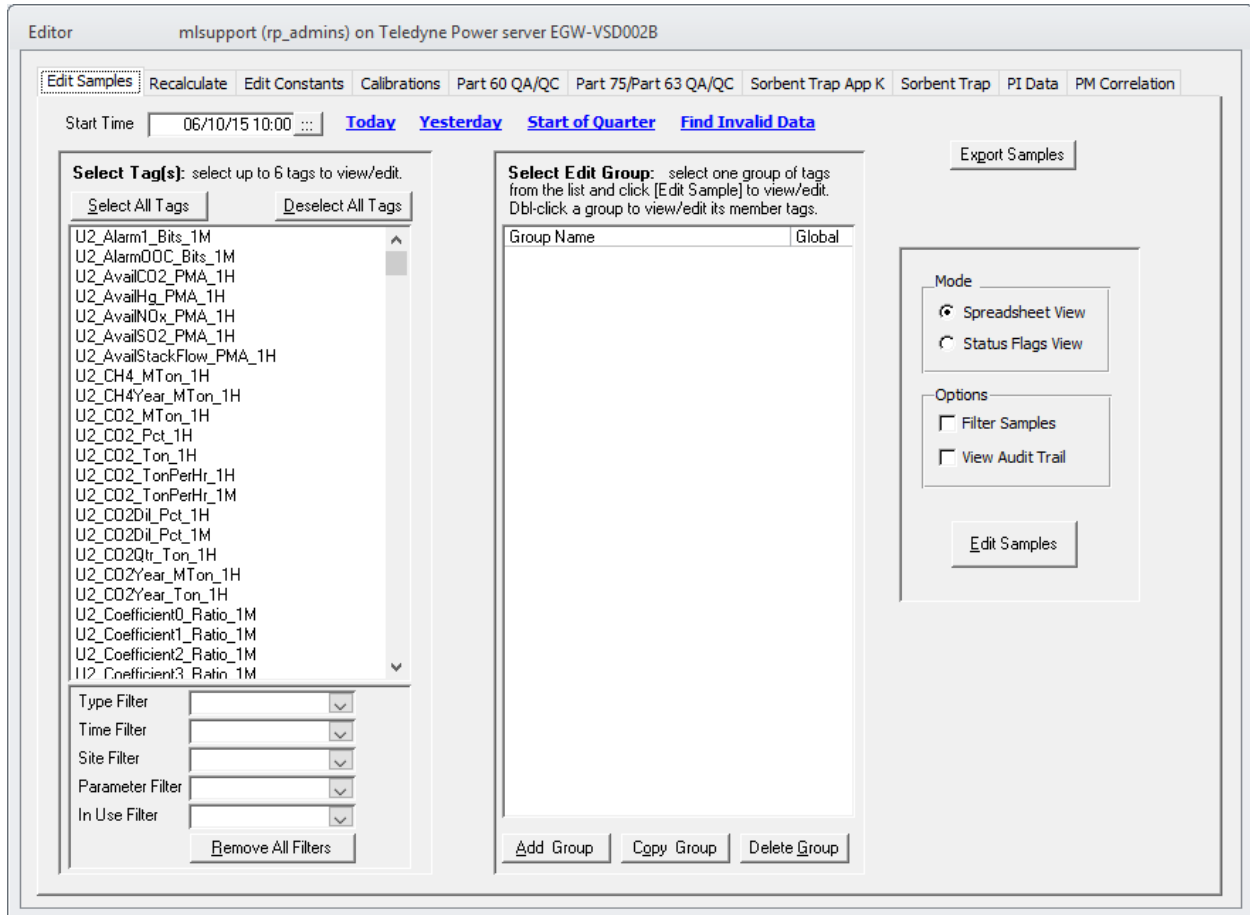
Note: the rightmost tabs, beginning with Part 60 QA/QC, are only visible at sites where they are applicable.

3. Edit Samples

The *Edit Samples* tab of the Main Window provides a convenient way of selecting tags and a time frame for viewing/editing samples (value, status and MODC), reasons and actions.

3.1 Select Tags and Time Interval

To edit or view samples, select 1 to 6 tags or an Edit group, supply the start time and click the *Edit Samples* button.



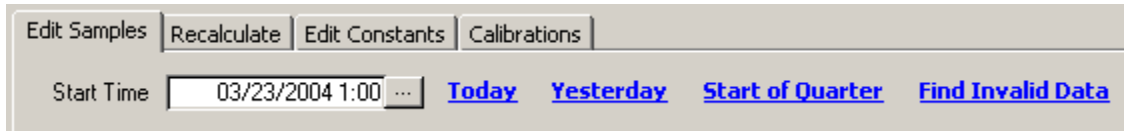
Specify Start and End Times

When you enter a start time, Editor automatically calculates the end time. Editor uses the tag(s) you've selected and the start time you entered to calculate the *maximum* interval of sample data you can view/edit and still have fast response. There are two advantages to this design. First, you never have to manually type an end time. Second, you are prevented from selecting an interval of time so large that the Editor application slows down to the point of being unusable.

You can control the way Editor calculates the end time by modifying your [preferences](#). By default, Editor shows 24 hours of 1-minute, 6-minute, 15-minute or 1-hour samples, and 30 days of 1-day samples.

Finding Invalid Data

The *Find Invalid Data* quick-date shortcut on the Edit Samples tab operates differently than the other quick-date shortcuts.

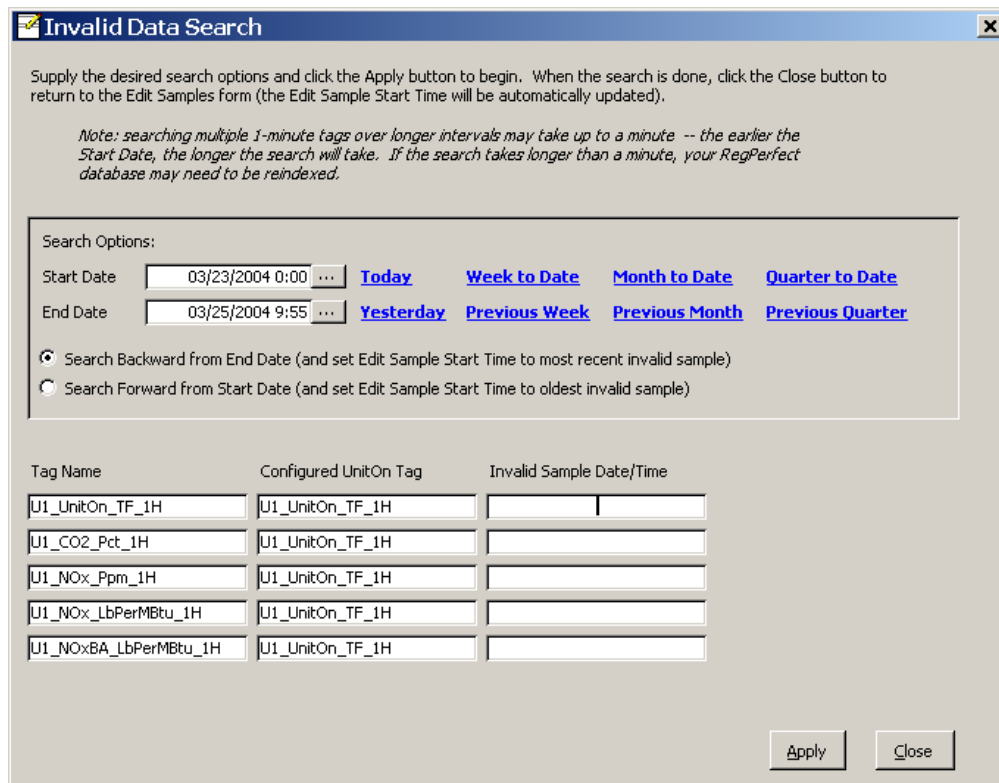


The screenshot shows the 'Edit Samples' tab with several buttons: 'Recalculate', 'Edit Constants', and 'Calibrations'. Below these is a 'Start Time' field containing '03/23/2004 1:00' and a dropdown menu. To the right of the dropdown are four quick-date shortcuts: 'Today', 'Yesterday', 'Start of Quarter', and 'Find Invalid Data'.

First, you must select at least 1 tag or Edit Group before using *Find Invalid Data*. Second, the Start Time is not immediately filled in when you click the shortcut. Instead, the Invalid Data Search form is opened.

The bottom area of the Invalid Data Search form shows the selected tags in the Tag Name column and the configured UnitOn tag for each in the Configured UnitOn Tag column. The final column is filled in only after you click *Apply* to conduct a search for invalid data.

You specify your search criterion in the center of the form. Supply a Start and End date manually or by using the quick-date shortcuts, and select whether to search the interval forward or backward using the radio buttons. Click *Apply* to begin the search.



The 'Invalid Data Search' dialog box contains the following elements:

- Instructions:** 'Supply the desired search options and click the Apply button to begin. When the search is done, click the Close button to return to the Edit Samples form (the Edit Sample Start Time will be automatically updated).'
Note: searching multiple 1-minute tags over longer intervals may take up to a minute -- the earlier the Start Date, the longer the search will take. If the search takes longer than a minute, your RegPerfect database may need to be reindexed.
- Search Options:**
 - Start Date: 03/23/2004 0:00 (dropdown) with shortcuts: Today, Week to Date, Month to Date, Quarter to Date
 - End Date: 03/25/2004 9:55 (dropdown) with shortcuts: Yesterday, Previous Week, Previous Month, Previous Quarter
 - Radio buttons: Search Backward from End Date (and set Edit Sample Start Time to most recent invalid sample) and Search Forward from Start Date (and set Edit Sample Start Time to oldest invalid sample)
- Table:**

Tag Name	Configured UnitOn Tag	Invalid Sample Date/Time
U1_UnitOn_TF_1H	U1_UnitOn_TF_1H	
U1_CO2_Pct_1H	U1_UnitOn_TF_1H	
U1_NOx_Ppm_1H	U1_UnitOn_TF_1H	
U1_NOx_LbPerMBtu_1H	U1_UnitOn_TF_1H	
U1_NOxBA_LbPerMBtu_1H	U1_UnitOn_TF_1H	

Buttons: Apply, Close

Tip: This form does not close when you click the Apply button, so you can repeat and refine your search by changing the search criterion until you have located the invalid data you want to view/edit.

Searching Backward

When the *Search Backward from End Date* option is selected, the samples of each tag in the list are inspected beginning at *End Date* and continuing backward in time to *Start Date*. The date/time of the most recent invalid sample found is written to the *LAST Invalid Sample in Search Period* column, and the latest date/time for all the searched tags is written to the *Start Time* on the Edit Samples tab of the Main Window.

Search Options:

Start Date ... [Today](#) [Week to Date](#) [Month to Date](#) [Quarter to Date](#)

End Date ... [Yesterday](#) [Previous Week](#) [Previous Month](#) [Previous Quarter](#)

Search Backward from End Date (and set Edit Sample Start Time to most recent invalid sample)

Search Forward from Start Date (and set Edit Sample Start Time to oldest invalid sample)

Tag Name	Configured UnitOn Tag	LAST Invalid Sample in Search Period (while unit is online)
<input type="text" value="U1_UnitOn_TF_1H"/>	<input type="text" value="U1_UnitOn_TF_1H"/>	<input type="text" value="No invalid samples found"/>
<input type="text" value="U1_CO2_Pct_1H"/>	<input type="text" value="U1_UnitOn_TF_1H"/>	<input type="text" value="03/23/2004 10:00"/>
<input type="text" value="U1_NOx_Ppm_1H"/>	<input type="text" value="U1_UnitOn_TF_1H"/>	<input type="text" value="03/23/2004 09:00"/>
<input type="text" value="U1_NOx_LbPerMBtu_1H"/>	<input type="text" value="U1_UnitOn_TF_1H"/>	<input type="text" value="03/23/2004 08:00"/>
<input type="text" value="U1_NOxBA_LbPerMBtu_1H"/>	<input type="text" value="U1_UnitOn_TF_1H"/>	<input type="text" value="03/23/2004 07:00"/>

Searching Forward

When the *Search Forward from Start Date* option is selected, the samples of each tag in the list are inspected beginning at *Start Date* and continuing forward in time to *End Date*. The date/time of the oldest invalid sample found is written into the *FIRST Invalid Sample in Search Period* column, and the oldest date/time for all the searched tags is written to the *Start Time* on the Edit Samples tab of the Main Window.

Search Options:

Start Date ... [Today](#) [Week to Date](#) [Month to Date](#) [Quarter to Date](#)

End Date ... [Yesterday](#) [Previous Week](#) [Previous Month](#) [Previous Quarter](#)

Search Backward from End Date (and set Edit Sample Start Time to most recent invalid sample)

Search Forward from Start Date (and set Edit Sample Start Time to oldest invalid sample)

Tag Name	Configured UnitOn Tag	FIRST Invalid Sample in Search Period (while unit is online)
<input type="text" value="U1_UnitOn_TF_1H"/>	<input type="text" value="U1_UnitOn_TF_1H"/>	<input type="text" value="No invalid samples found"/>
<input type="text" value="U1_CO2_Pct_1H"/>	<input type="text" value="U1_UnitOn_TF_1H"/>	<input type="text" value="03/23/2004 01:00"/>
<input type="text" value="U1_NOx_Ppm_1H"/>	<input type="text" value="U1_UnitOn_TF_1H"/>	<input type="text" value="03/23/2004 02:00"/>
<input type="text" value="U1_NOx_LbPerMBtu_1H"/>	<input type="text" value="U1_UnitOn_TF_1H"/>	<input type="text" value="03/23/2004 03:00"/>
<input type="text" value="U1_NOxBA_LbPerMBtu_1H"/>	<input type="text" value="U1_UnitOn_TF_1H"/>	<input type="text" value="03/23/2004 04:00"/>

Tip: The search ignores periods in which the unit was offline. However, if the Configured UnitOn Tag is blank for any of the search tags, the search will not attempt to restrict results to operating periods.

Select Tags

Type Filter

Time Filter

Site Filter

Parameter Filter

In Use Filter

1 Minute(s)

5 Minute(s)

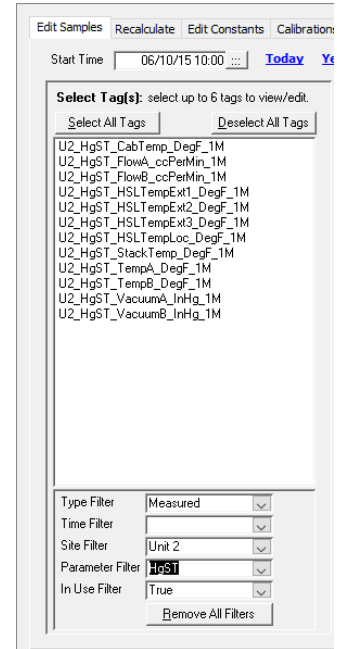
1 Hour(s)

1 Day(s)

Select one to six tags by single clicking the desired tag name(s) in the large list on the left side of the form. Since the list of tags may be quite long, filters are provided (just below the tag list) to help you come up with a shorter, more manageable tag list. The first entry in the drop down list for each filter is a blank row as shown in the example at right. To disable this filter, click the blank row. To apply the filter, select any non-blank row – *1 Minute(s)* or *1 Hours(s)* in this case.

Each time you select a filter from the drop down lists, the tag list is immediately updated. In the example at right, the Time Filter has been set to *1 Minute(s)* and the Site Filter to *Unit 1*. Note the shorter list of tags that resulted from applying these filters.

To remove filters, select the blank row from the filter drop down list, or click *Remove All Filters*.



Using Tag Edit Groups

Although the filters make it easier to select the individual tag(s) you want to edit, it can still be a cumbersome process to filter your tag list and select the tags. *Edit Groups* allow you to name and save a selected group of tags so that you only have to select the tags once. After creating the group, you can select those tags for editing with a single click. Edit Groups are shown in the list on the right side of the form.

Tip: To view/edit sample data for the tags in an Edit Group, click to select the group in the Edit Group list, then click the *Edit Samples* button.

Create Tag Edit Groups

There are two ways to create Edit Groups. First, you can choose the tags that will comprise the group in the tag list (on the left side of the form) by clicking/selecting from one to six tags. Then click the *Add Group* button.

The screenshot shows a software interface for creating tag edit groups. It is divided into two main panels.

Select Tag(s): select up to 6 tags to view/edit.
Buttons: Select All Tags, Deselect All Tags
List of tags (U2_AvailCO2_PMA_1H is selected):
U2_AvailCO2_PMA_1H
U2_AvailHg_PMA_1H
U2_AvailNOx_PMA_1H
U2_AvailSO2_PMA_1H
U2_AvailStackFlow_PMA_1H
U2_CH4_MTon_1H
U2_CH4Year_MTon_1H
U2_CO2_MTon_1H
U2_CO2_Pct_1H
U2_CO2_Ton_1H
U2_CO2_TonPerHr_1H
U2_CO2Dil_Pct_1H
U2_CO2Qtr_Ton_1H
U2_CO2Year_MTon_1H
U2_CO2Year_Ton_1H
U2_DeltaP_InH2O_1H
U2_Exempt_TF_1H
U2_Fc_sciPerMBtu_1H
U2_FlueGas_Coeff_Ratio_1H
U2_GHGYear_MTon_1H
U2_HgST_FlowA_ccPerMin_1H
U2_HgST_FlowA_dscm_1H
U2_HnST_FlnwR_ccPerMin_1H
Filters:
Type Filter: []
Time Filter: 1 Hour(s)
Site Filter: Unit 2
Parameter Filter: []
In Use Filter: True
Remove All Filters

Select Edit Group: select one group of tags from the list and click [Edit Sample] to view/edit. Dbl-click a group to view/edit its member tags.
Table:
Group Name | Global
[] | []
Buttons: Add Group, Copy Group, Delete Group

After selecting the tags and clicking *Add Group*, you are prompted to supply a name for the group and if you want this group to be a "Global" group (visible by all users):

The screenshot shows a dialog box titled "Editor" with a close button (X) in the top right corner. It contains the following elements:

- Text: "Enter a name for the group:"
- Text input field: "Unit 2 Availability"
- Checked checkbox: "Make this group a Global group (visible by all users)"
- Buttons: "Ok" and "Cancel"

Click *OK* to add the Edit Group. The group is added to the list and is displayed on the right side of the form.

The second way to add an Edit Group is to click the *Add Group* button with no tags selected. This opens the Tag Group form.

Enter a name for your group and select the desired tag(s) from the drop down lists. You can delete a tag from the group by single clicking on the record selector box (left of the tag name) and pressing the *Delete* button on your keyboard.

You may also specify the order (from left to right) that the tags will appear in the Sample Editor Spreadsheet form by modifying the *Order* column. In the example at right, elemental Hg is ordered first followed by Oxidized and Total.

The Sample Editor Spreadsheet displays the tags in corresponding order:

Sample Editor Spreadsheet										
Go To		HqElemental			HqOxidized			HqTotal		
		U2_HgElemental_UgPerScm_1M			U2_HgOxidized_UgPerScm_1M			U2_HgTotal_UgPerScm_1M		
Date	Time	Value	Invalid	MODC	Value	Invalid	MODC	Value	Invalid	MODC
06/10/15	10:00	0.0	<input type="checkbox"/>		0.0	<input type="checkbox"/>		0.0	<input type="checkbox"/>	
06/10/15	10:01	0.0	<input type="checkbox"/>		0.0	<input type="checkbox"/>		0.0	<input type="checkbox"/>	

Modify and Delete Tag Edit Groups

To change the tags which comprise an existing Edit Group, or to modify their display order, double click the Edit Group Name to open the Tag Group form (discussed in the previous section). To delete, click the desired Edit Group(s) to select them, then click the *Delete Group* button.

Select Edit Group: select one group of tags from the list and click [Edit Sample] to view/edit. Dbl-click a group to view/edit its member tags.

Group Name	Global
1 Hr Measured	Y
1 Min Measured	
6 Min Opacity	Y
AuditTrail	
P75 Nox System	
Unit 1 Nox Emission Rate System	Y

< [] >

Copy an Edit Group to a Recalc Group

An Edit Group and its tags may be copied to the list of Recalc groups. The Recalc groups are viewed on the Recalculate tab. For more information on Recalc groups, see [Using Tag Recalc Groups](#).

To copy an Edit group, click to select the desired group and click the *Copy Group* button. Enter a name for the Recalc group when prompted, and click *Ok* to add the new Recalc group.

Tip: Two Edit groups may not have the same name, and two Recalc groups may not have the same name. However, an Edit group may have the same name as a Recalc group.

3.2 View and Edit Samples

The Editor application provides two modes (views) for editing samples. The Sample Editor Spreadsheet shows data in a spreadsheet format, but it displays only the SI (Sample Invalid) status flag for each tag. The Status Flags Editor shows all the status flags for each parameter. These different views are each useful depending on your needs – the Sample Editor Spreadsheet is most useful for viewing multiple tags, while the Status Flags Editor is most useful for viewing all information for a single tag.

Use the radio buttons (under “Mode” in the screenshot below) to select which view you wish to use.

The screenshot shows the 'Edit Samples' application window. At the top, there are tabs for 'Recalculate', 'Edit Constants', 'Calibrations', 'Part 60 QA/QC', 'Part 75 QA/QC', and 'PI Data'. Below the tabs, the 'Start Time' is set to '03/24/05 0:00' with buttons for 'Today', 'Yesterday', 'Start of Quarter', and 'Find Invalid Data'. The main area is divided into three sections:

- Select Tag(s):** select up to 6 tags to view/edit. It includes 'Select All Tags' and 'Deselect All Tags' buttons and a list of tags such as 'U1_CO2_Pct_1H', 'U1_NOx_LbPerMBtu_1H', etc.
- Select Edit Group:** select one group of tags from the list and click [Edit Sample] to view/edit. Dbl-click a group to view/edit its member tags. It contains a table with the following data:

Group Name	Global
1 Hr Measured	Y
1 Min Measured	
6 Min Opacity	Y
AuditTrail	
P75 Nox System	

- Mode:** Radio buttons for 'Spreadsheet View' (selected) and 'Status Flags View'.
- Options:** Checkboxes for 'Filter Samples' and 'View Audit Trail'.
- An 'Edit Samples' button at the bottom.

Select *Spreadsheet View* to open the [Sample Editor Spreadsheet](#) form, or *Status Flags View* to open the [Status Flags Editor](#) form. You may optionally check one of *Filter Samples* or *View Audit Trail* – these options are covered later in [Filtering Samples](#) and [Audit Trail](#).

3.3 Sample Editor Spreadsheet

The Sample Editor Spreadsheet form is pictured below.

Go To		UnitOn			O2			NOx			NOx			NOx BA			Avail Nox		
Date	Time	Value	Invalid	MODC	Value	Invalid	MODC	Value	Invalid	MODC	Value	Invalid	MODC	Value	Invalid	MODC	Value	Invalid	MODC
05/22/10	00:00	0	✓		0.0	✓		3.0	✓		0.000	✓	0	0.000	✓	0	0.0	✓	
05/22/10	01:00	0	✓		0.0	✓		0.0	✓		0.000	✓	0	0.000	✓	0	0.0	✓	
05/22/10	02:00	0	✓		0.0	✓		0.0	✓		0.000	✓	0	0.000	✓	0	0.0	✓	
05/22/10	03:00	0	✓		0.0	✓		0.0	✓		0.000	✓	0	0.000	✓	0	0.0	✓	
05/22/10	04:00	0	✓		0.0	✓		0.0	✓		0.000	✓	0	0.000	✓	0	0.0	✓	
05/22/10	05:00	0	✓		0.0	✓		0.0	✓		0.000	✓	0	0.000	✓	0	0.0	✓	
05/22/10	06:00	0	✓		0.0	✓		0.0	✓		0.000	✓	0	0.000	✓	0	0.0	✓	
05/22/10	07:00	0	✓		0.0	✓		0.0	✓		0.000	✓	0	0.000	✓	0	0.0	✓	
05/22/10	08:00	0	✓		0.0	✓		0.0	✓		0.000	✓	0	0.000	✓	0	0.0	✓	
05/22/10	09:00	0	✓		0.0	✓		0.0	✓		0.000	✓	0	0.000	✓	0	0.0	✓	
05/22/10	10:00	0	✓		0.0	✓		0.0	✓		0.000	✓	0	0.000	✓	0	0.0	✓	
05/22/10	11:00	0	✓		0.0	✓		0.0	✓		0.000	✓	0	0.000	✓	0	0.0	✓	
05/22/10	12:00	0	✓		0.0	✓		0.0	✓		0.000	✓	0	0.000	✓	0	0.0	✓	
05/22/10	13:00	0	✓		0.0	✓		0.0	✓		0.000	✓	0	0.000	✓	0	0.0	✓	
05/22/10	14:00	0	✓		0.0	✓		0.0	✓		0.000	✓	0	0.000	✓	0	0.0	✓	
05/22/10	15:00	0	✓		0.0	✓		0.0	✓		0.000	✓	0	0.000	✓	0	0.0	✓	
05/22/10	16:00	0	✓		0.0	✓		0.0	✓		0.000	✓	0	0.000	✓	0	0.0	✓	
05/22/10	17:00	0	✓		0.0	✓		0.0	✓		0.000	✓	0	0.000	✓	0	0.0	✓	
05/22/10	18:00	0	✓		0.0	✓		0.0	✓		0.000	✓	0	0.000	✓	0	0.0	✓	
05/22/10	19:00	0	✓		0.0	✓		0.0	✓		0.000	✓	0	0.000	✓	0	0.0	✓	

The features of the Sample Editor Spreadsheet will be illustrated with small portions of the screen for the remainder of this section. Please refer back to the above screen shot for reference.

Alternative Sample Editor Spreadsheet with Status Flags

If you check *Spreadsheet Flags Enabled* in [Preferences](#), a Flags column is added to the right of the Invalid column for each selected tag. This column contains the symbols of all applicable status flags for each sample, though only the first four or so symbols show because of limited real estate. The Flags field is not editable. Other than the Flags columns, this form is identical to the standard Sample Editor Spreadsheet and ensuing sections apply to both versions.

Go To		UnitOn				O2				NOx				NOx			
		U1_UnitOn_TF_1H				U1_O2_Pct_1H				U1_NOx_Ppm_1H				U1_NOx_LbPerMBtu_1H			
Date	Time	Value	Invalid	Flags	MODC	Value	Invalid	Flags	MODC	Value	Invalid	Flags	MODC	Value	Invalid	Flags	MODC
05/06/10	00:00		<input type="checkbox"/>	EV·ES		14.2	<input checked="" type="checkbox"/>	M·C<<ES		7.1	<input checked="" type="checkbox"/>	M·C<<ES	0	10.000	<input checked="" type="checkbox"/>	C·EV	0
05/06/10	01:00	1	<input type="checkbox"/>	EV·ES		14.2	<input checked="" type="checkbox"/>	M·C<<ES		7.1	<input checked="" type="checkbox"/>	M·C<<ES	0	0.000	<input checked="" type="checkbox"/>	M·C<<EC	1
05/06/10	02:00	1	<input type="checkbox"/>	EV·ES		14.2	<input checked="" type="checkbox"/>	M·C<<ES		7.1	<input checked="" type="checkbox"/>	M·C<<ES	0	0.000	<input checked="" type="checkbox"/>	M·C·ES	0
05/06/10	03:00	1	<input type="checkbox"/>	EV·ES		14.2	<input checked="" type="checkbox"/>	M·C<<ES		7.1	<input checked="" type="checkbox"/>	M·C<<ES	0	0.000	<input checked="" type="checkbox"/>	M·C<<I·E!	0

In cases where not all flags can fit in the available space, as at the bottom right of the above example, you can click on the Flags field and use Home/End or arrow keys to see all the flags.

NOx			
U1_NOx_LbPerMBtu_1H			
Value	Invalid	Flags	MODC
10.000	<input checked="" type="checkbox"/>	C·EV	0
0.000	<input checked="" type="checkbox"/>	M·C<<EC	1
0.000	<input checked="" type="checkbox"/>	M·C·ES	0
0.000	<input checked="" type="checkbox"/>	C<<I·E!	0

The order of the flags is based on a priority that shows the most important flags at the beginning and less important flags on the right:

- ! – the Data Approved flag (at sites that use this flag)
- M,C,OS, FF,OD and other flags that denote invalid data
- Z1, Z2, >S and other flags that don't denote invalid data
- 38 to 62 – the unnamed, customizable flags
- EV, ES, EC – the flags that indicate edited value, status and MODC

Sample Editor Spreadsheet Overview

Each row of the spreadsheet shows the sample values and status for one time interval for each of the selected tags. The Start and End Times you previously selected on the Main Window control how many rows of data are displayed.

Date		UnitOn			CO2			NOx		
03/21/04 00:00		U1_UnitOn_TF_1H			U1_CO2_Pct_1H			U1_NOx_Ppm_1H		
Date	Time	Value	Invalid	MODC	Value	Invalid	MODC	Value	Invalid	MODC
03/21/04	00:00		<input type="checkbox"/>		8.0	<input type="checkbox"/>		235.0	<input type="checkbox"/>	

Each row consists of the following columns:

- Date** The date of the sample (not editable)
- Time** The *start* time of the sample (not editable). An hourly sample with a start time of 09:00 represents the hourly average from 09:00 to 09:59.
- Value** The sample value. The value may be directly edited. Your changes are saved the moment you click on anything outside the value box (or press the down/up arrow or tab key).
- Invalid** A check mark in this column indicates the sample is invalid (not directly editable). You may double click this column or the value column to open the [Edit Sample form](#) on which the status flags may be edited.
- MODC** The method of determination code or data source code. This column is not applicable to all tags. The MODC may be directly edited, and changes are saved the moment you click on anything outside the MODC box (or press the down/up arrow or tab key).

NOx		
U1_NOx_Ppm_1H		
Value	Invalid	MODC
235.0	<input type="checkbox"/>	

Above each set of Value/Invalid/MODC columns, the parameter name is shown in large bold font. Below the parameter, the full tag name is shown in a select box.

Tip: You may change any of the tags being displayed at any time by clicking on the tag name and selecting a different tag from the drop down list.

NOx	NOx	
U1_NOx_Ppm_1H	U1_NOx_LbPerMBtu_1H	U1_NOx_Ppm_1H
U1_NOx_Ppm_1M		
U1_NOxBA_LbPerMBtu_1H		
U1_NOxBA_Ppm_1H		
U1_NOxQtr_LbPerMBtu_1H		
U1_O2Dry_Pct_1H		

Sample Editor Spreadsheet View Mode and Edit Mode

Each time the Sample Editor Spreadsheet form is opened, it defaults to "view mode"; this is indicated by the *View Mode* button at the top left of the toolbar.



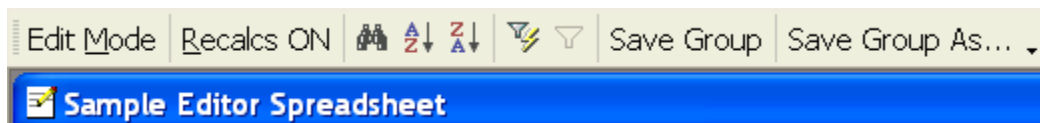
The Sample data on the spreadsheet may not be edited while in view mode. To change to edit mode, click the *View Mode* toolbar button. This changes the button caption to indicate you are now in edit mode.



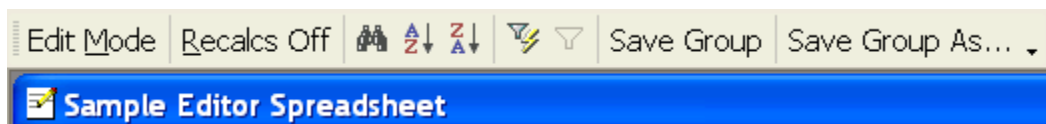
Each time you click the button, you toggle from View Mode to Edit Mode or the reverse.

Automatic Recalculations

The second button in the toolbar shows you whether automatic recalculations are enabled/on or disabled/off. In this screen shot, automatic recalculations are on as indicated by the button caption [Recalcs ON].

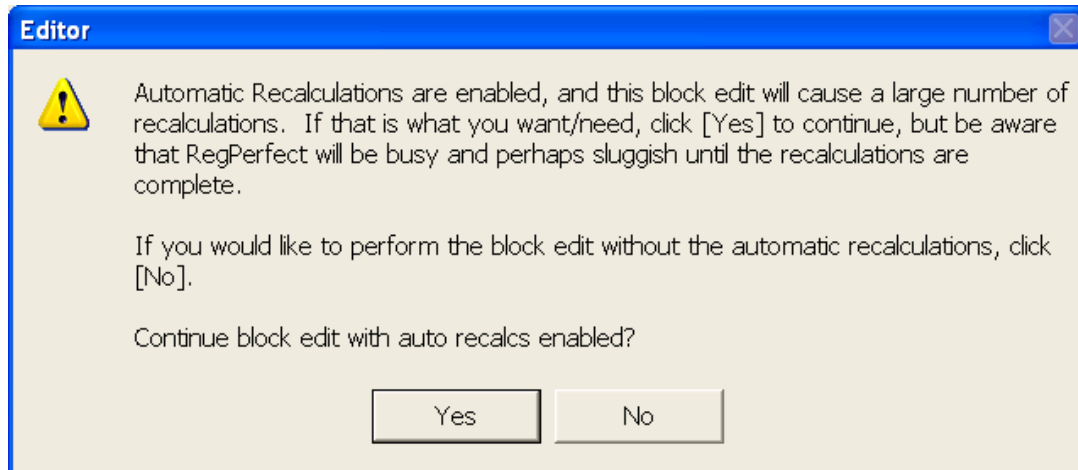


To disable automatic recalculations, click the [Recalcs ON] button. The button caption will change to [Recalcs Off] as shown below.



The button caption always shows the state Automatic Recalculations is currently in, and clicking the button always changes it to the other state.

When automatic recalculations are enabled, Editor inserts a recalculation request for you automatically after each edit. This applies to both individual edits on the spreadsheet or all-flags forms, and to block edits. When you edit a large amount of data with a single block edit, you may see this warning pop-up:



This warning is simply an opportunity for you to consider whether you really want Editor to insert a very large number of recalculations. If you click [Yes], the block edit will continue with the automatic recalculations. If you click [No], the block edit will still continue but without the automatic recalculations.

Tip: In most cases, you should click [Yes]. If you really need to edit a large amount of data, you probably really need to have all the downstream tags recalculated. The worst that can happen is that your RegPerfect system may be very busy and a bit slower than usual for a few hours while the recalculations are processed.

Modifying or Creating an Edit Group

As mentioned earlier, you may change the set of tags you are viewing at any time by clicking on the tag name drop down list. You may also add a tag in a previously unused row or remove a tag by selecting *_None* (the top selection in every tag drop down list).

If you selected an Edit Group before opening the Sample Editor Spreadsheet (as opposed to selecting individual tags), you may save the set of tags you are currently viewing to that Edit Group using the *Save Group* button on the toolbar. This will overwrite the previous set of tags belonging to the group.

If you did not select an Edit Group before opening the Sample Editor Spreadsheet, or if you did but wish to create a new Edit Group using the currently displayed set of tags, click the *Save Group As ...* toolbar button. When prompted, supply a unique name for the group and click *Ok* to save. The group will be added to your Edit Groups using the tags you are currently viewing in the order they appear on the Sample Editor Spreadsheet.

Navigating

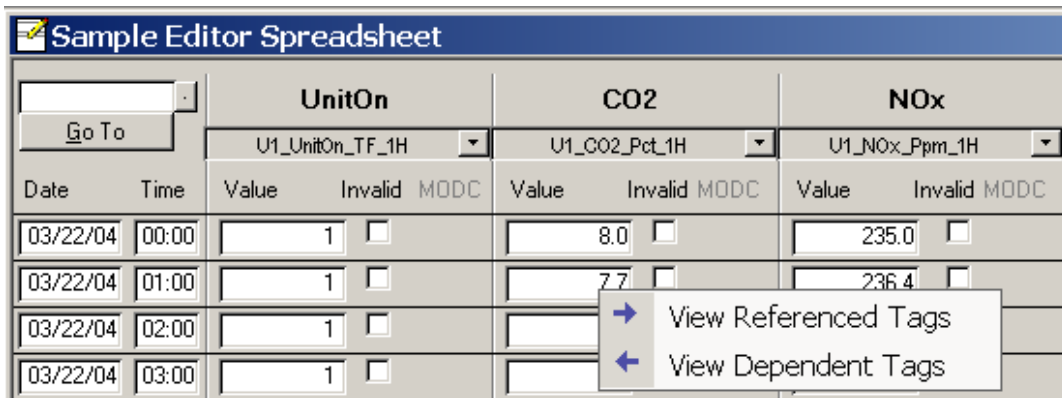
Basic navigation keyboard keys can be used to work your way around the spreadsheet. The up, down, left and right arrow keys all move your cursor as you would expect. The Tab key also moves the cursor to the right and then down. The Page Up and Page Down keys behave normally.

Saving Changes

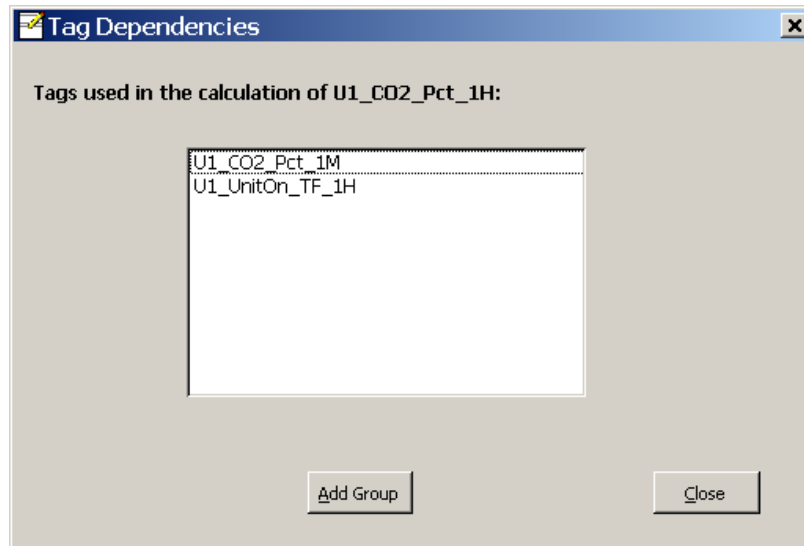
You may notice there is no button for saving your edits on the spreadsheet. Only the Value and MODC columns are editable, and *your changes are saved the moment you move the cursor out of the box you are editing*. If you have edited a value or MODC and change your mind, press the *Esc* key on your keyboard to restore the original value (this must be done while the cursor is still in the box being edited). Changes are also saved when any of the form's buttons are clicked.

Viewing Referenced/Dependent Tags from Sample Editor Spreadsheet

Right-click anywhere in the Value, Invalid or MODC columns (not on the column headers, but in any of the cells under them) to open a context menu:



To view the list of tags that are inputs into the calculation of U1_CO2_Pct_1H, click *View Referenced Tags*. To view the list of tags that use U1_CO2_Pct_1H in their calculation, click *View Dependent Tags*. Either option opens the Tag Dependencies form. In the example below, the *View Referenced Tags* option was selected.

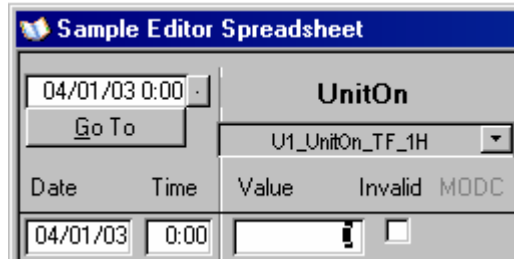


From this form, you may add a new Edit group by selecting 1 to 6 tags and clicking the *Add Group* button. You will be prompted for a group name.

Sample Editor Spreadsheet Buttons

There are several buttons on the spreadsheet. Each is explained below.

Go To Click this button to change the Start Time of the first row of data displayed on the spreadsheet. You must first enter the new time in the box above the *Go To* button.



The screenshot shows a window titled "Sample Editor Spreadsheet". At the top, there is a text box containing "04/01/03 0:00" and a "Go To" button below it. To the right, there is a section titled "UnitOn" with a dropdown menu showing "U1_UnitOn_TF_1H". Below these are columns labeled "Date", "Time", "Value", "Invalid", and "MODC". The "Date" and "Time" columns contain "04/01/03" and "0:00" respectively. The "Value" column has a small icon, and the "Invalid" column has a checkbox.

Previous Click this button to show the previous interval of data. If you are viewing hourly data, for example, and the Date/Time of the first row on the display is 5/20/03 00:00, clicking *Previous* changes the start time to 5/19/03 00:00.

Next Click this button to show the next interval of data. If you are viewing hourly data, for example, and the Date/Time of the first row on the display is 5/20/03 00:00, clicking *Next* changes the start time to 5/21/03 00:00.

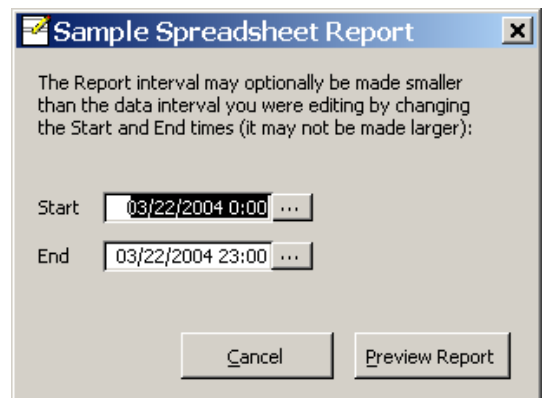
Requery Click this button to requery the database and refresh the data shown on the spreadsheet. This may be useful when you are awaiting the completion of recalculations.

Block Edit Click this button to open the Block Edit form. For more information on block editing, see [Block Edit Form](#).

Hide MODC If you are not interested in viewing or editing MODCs, the display may be easier to read if they are hidden. Clicking this button toggles the visibility of the MODC columns.

Close Closes the Sample Spreadsheet Editor form. This is not a *Cancel* button – pending changes are saved when you click the button.

Report Opens the *Sample Spreadsheet Report* form. Start and End default to the interval of data you were editing. You may make the interval smaller (optional), but making it larger will have no effect on the report. Click the *Preview Report* button to preview the report.



The screenshot shows a dialog box titled "Sample Spreadsheet Report". It contains a message: "The Report interval may optionally be made smaller than the data interval you were editing by changing the Start and End times (it may not be made larger):". Below this are two text boxes: "Start" with the value "03/22/2004 0:00" and "End" with the value "03/22/2004 23:00". At the bottom, there are two buttons: "Cancel" and "Preview Report".

You can use the toolbar buttons to print the report or convert it to RTF or text (Excel format not available).

Editor - [Spreadsheet]

File Tools Help Queue

Sample Spreadsheet Listing

Date/Time	UL_WDn_TP_1H		UL_OCR_PdL_1H		UL_NOc_Pym_1H		UL_NOc_LB_PerM0u_1H		UL_NOc_BA_LB_PerM0u_1H		Value SI Modc	
	Value	SI Modc	Value	SI Modc	Value	SI Modc	Value	SI Modc	Value	SI Modc	Value	SI Modc
03/22/04 0:00	1		8		233		0.333		0.333			
03/22/04 1:00	1		7.7		234.4		0.344		0.344			
03/22/04 2:00	1		7		244		0.374		0.374			
03/22/04 3:00	1		7.4		238.2		0.348		0.348			
03/22/04 4:00	1		8.2		244		0.388		0.388			
03/22/04 5:00	1		8.2		277		0.399		0.399			
03/22/04 6:00	1		8.4		278.8		0.405		0.405			
03/22/04 7:00	1		7.9	X	259.4		0	X	0.411			
03/22/04 8:00	1		7.4	X	244.2		0	X	0.411			
03/22/04 9:00	1		8		233.8		0.423		0.423			
03/22/04 10:00	1		8.3		243		0.399		0.399			
03/22/04 11:00	1		8.2		247.3		0.379		0.379			
03/22/04 12:00	1		7.7		248.9		0.384		0.384			
03/22/04 13:00	1		7.4		288.2		0.348		0.348			
03/22/04 14:00	1		7.7		279.2		0.394		0.394			
03/22/04 15:00	1		7.9		277.4		0.405		0.405			
03/22/04 16:00	1		8		274		0.444		0.444			
03/22/04 17:00	1		8.1		278		0.314		0.314			
03/22/04 18:00	1		8.2		275.9		0.349		0.349			
03/22/04 19:00	1		8.3		277		0.344		0.344			
03/22/04 20:00	1		0		0		0		0			
03/22/04 21:00	1		0		0		0		0			
03/22/04 22:00	1		0		0		0		0			
03/22/04 23:00	1		0		0		0		0			

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Approve Data Click this button to set the Data Approved status flag for all samples shown in the spreadsheet *including all tags and all rows – even those only visible after scrolling up or down.*

Un-approve Data Click this button to clear the Data Approved status flag for all samples shown in the spreadsheet *including all tags and all rows – even those only visible after scrolling up or down.*

Sample Editor Spreadsheet Tool Bar

There are several buttons on the tool bar:



The View Mode button was discussed in [Sample Editor Spreadsheet View Mode and Edit Mode](#).

The Recalcs button was discussed in [Automatic Recalculations](#).



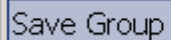
Open the Find and Replace form.



Sort ascending or descending (respectively) on the column in which the cursor resides before you click the button.



Filter by selection. Click the left-most button to filter data based on the data value in the column in which your cursor resides. Click the right-most button to remove all active filters.



Save Group As...

These buttons are discussed in [Modifying or Creating an Edit Group](#).

Edit Sample Form

While the Sample Editor Spreadsheet form restricts editing to the Value and MODC columns, the Edit Sample form allows you to view and edit all the information for a single sample: Sample value, Status flags, MODC and Reasons and actions.

To open the Edit Sample form, double click the value or the invalid check box of the desired time and tag on the Sample Editor Spreadsheet.

The screenshot shows the 'Edit Sample' form with the following details:

- Header:** Time: 06/10/15 10:00, Tag ID / Name: 40 U2_AvailCO2_PMA_1H
- Value/Modc:** Value: 99.6, MODC: 0
- Buttons:** Make Valid, Make Invalid, OutOfService (dropdown)
- System Status Flags (cannot be manually edited):**
 - Sample Invalid
 - Edited Value
 - Edited Status
 - Edited Source Code
- Logger:**
 - Floor Limit
 - Analog Input Fault
 - Min/Max Limit
 - Offline
 - Power Fault
- CEMS Flags:**
 - Missing
 - Out Of Service
 - Fatal Fault
 - Too Few Samples
 - Startup
 - Shutdown
 - Exceeds Scale
 - Short Sample
 - Non Fatal Fault
 - Backup Monitor
 - X-Pattern A
 - X-Pattern B
 - Low Range
 - High Range
 - Data Approved
- Calibration:**
 - In Calibration
 - OOC Daily
 - Not Quality Assured
 - OOC Manual
 - Five Day Cal Drift
 - In Zero Test
 - In Low Test
 - In Mid Test
 - In High Test
 - Calibration Occurred
 - Zero Cal Error > 1x
 - Zero Cal Error > 2x
 - Zero Cal Error > 4x
 - High Cal Error > 1x
 - High Cal Error > 2x
 - High Cal Error > 4x
- Definable:**
 - Status 38
 - Status 39
 - Status 40
 - Status 41
 - Status 42
 - Status 43
 - Status 44
 - Status 45
 - Status 46
 - Status 47
 - Status 48
- Flow/HCl/Hg Test:**
 - Int Test
 - Int Test Failed
 - Int Test Not QA
 - Interference
- Reason/Action Section:**
 - Category: Excess Emission (dropdown)
 - Type: Reason (dropdown)
 - Reason/Action: (text field)
 - Buttons: Update List, Remove From List
- Footer:** Previous, Next, Undo, Ok, Cancel, Apply

Edit Sample Form Overview

This form is divided into 4 sections vertically. At the very top, the header shows the time and tag being edited (these fields are read only). Below the header is the Value/Modc section. Next is the status flag section of the form and at the bottom, the Reason/Action section. Your edits are saved only when you click the *Previous*, *Next*, *Ok* or *Apply* buttons or close the window using the X button at top right. Unlike the Sample Editor Spreadsheet, this form is always in edit mode.

Edit Value or MODC

To modify the sample Value, type a new value in the Value box. To modify the MODC, select a new value from the drop down list.

Tip: The MODC box is disabled (greyed out) for tags that have not been configured to use a data source code. This can be changed on the Tag form of the RegPerfect® Configuration application.

Edit Status Flags

The individual status flags are shown in groups on the form:

- System Status Flags: these flags are not editable – they are set or cleared automatically based on the other flags or on your edits to the value and MODC
- CEMs Flags: you may edit these flags (check the box to set the flag)
- Calibration Flags: you may edit these flags (check the box to set the flag)
- Interference Test Flags: you may edit these flags (check the box to set the flag)
- Definable Flags: these are “extra” flags that are used at a few sites to indicate status conditions that are not covered by any of the built in status flags

All the flag names shown in red font denote a condition that causes data invalidity. The Sample Invalid flag is automatically set whenever any of the red flags are set.

Buttons

Click *Make Valid* to clear all currently checked red status flags.

Click *Make Invalid* to make the sample invalid by setting the status flag in the box to the right of the button (OutOfService in the example at right).

Edit Reasons and Actions

The section at the bottom of the Edit Sample form allows you to insert, modify or delete [reasons and actions](#). The drop down boxes at the top are used to add new reasons or actions. The larger box below shows all the reasons/actions currently associated with this sample.

To insert a new reason/action, select a Category, Type and Reason or Action from the drop down lists:

Category	Type	Reason/Action
Excess Emission	Reason	Process Problems
[Empty Row]		

Reason/Action dropdown menu options:

- <Add New>
- Startup/shutdown
- Control equipment problems
- Process Problems
- Other known causes
- Unknown causes

Then click the *Update List* button to add the reason/action.

Category	Type	Reason/Action
Excess Emission	Reason	Process Problems
Excess Emission	Reason	Process Problems

Buttons: Update List, Remove From List

You know you have successfully added the new reason because it appears in the list box. Repeat this process if necessary to add other reasons/actions.

Category	Type	Reason/Action
Excess Emission	Action	Return to Normal Operations
Excess Emission	Reason	Process Problems
Excess Emission	Action	Return to Normal Operations

Buttons: Update List, Remove From List

Tip: You can assign multiple reasons/actions to a single sample, but you cannot assign more than one reason/action of the same Category and Type. For example, you cannot have 2 Excess Emissions Reasons.

Unlike edits to the Value, MODC or Status Flags, reason/action edits are saved each time you click Update List or Remove From List. The Undo, Ok and Apply buttons at the bottom of the form have no affect on your reason and action editing.

To modify a reason action, click to select it in the lower box, select a different Category, Type and/or Reason/Action in the drop down lists, and click *Update List*.

Category	Type	Reason/Action
Excess Emission	Action	Return to Normal Operations
Excess Emission	Reason	<Add New>
Excess Emission	Action	Return to Normal Operations
		Repaired Baghouse

After clicking *Update List*, the new action is shown in the list.

Category	Type	Reason/Action
Excess Emission	Action	Repaired Baghouse
Excess Emission	Reason	Process Problems
Excess Emission	Action	Repaired Baghouse

To delete a reason/action, click to select the reason or action and click *Remove From List*.

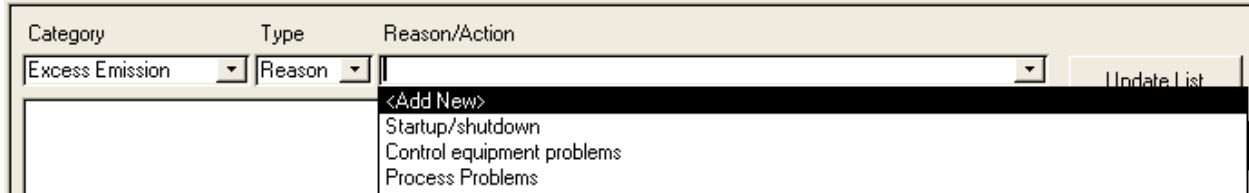
Category	Type	Reason/Action
Excess Emission	Action	Repaired Baghouse
Excess Emission	Reason	Process Problems
Excess Emission	Action	Repaired Baghouse

The selected reason/action is removed.

Category	Type	Reason/Action
Excess Emission	Action	Repaired Baghouse
Excess Emission	Reason	Process Problems

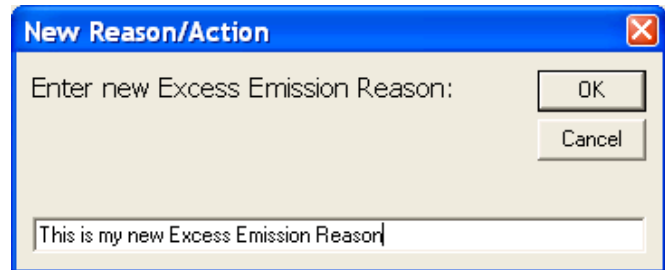
On-the-fly Reasons and Actions

New in Editor v3.2.1.0 is the ability to add new reasons/actions that are not in your standard list. To use this feature, select the Category and Type as you normally would, then select *<Add New>* from the Reason/Action drop down:



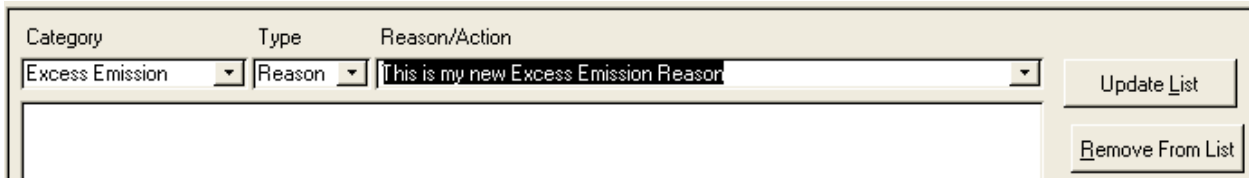
The screenshot shows a software interface with three dropdown menus: 'Category' (set to 'Excess Emission'), 'Type' (set to 'Reason'), and 'Reason/Action'. The 'Reason/Action' dropdown is open, showing a list of options: '<Add New>', 'Startup/shutdown', 'Control equipment problems', and 'Process Problems'. An 'Update List' button is visible to the right of the dropdown.

When you select *<Add New>*, a popup window opens to allow you to enter the text. The text is limited to 75 characters. If you enter more, you will be notified when you click *Ok* and will be given the opportunity to shorten the text.



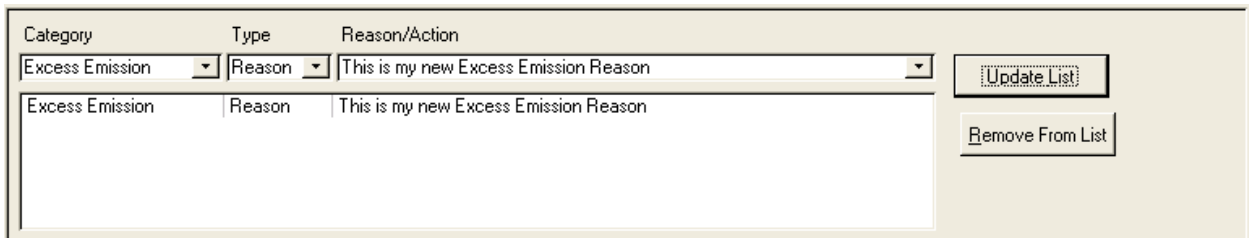
The screenshot shows a 'New Reason/Action' dialog box. It has a blue title bar with a close button. The main area contains the text 'Enter new Excess Emission Reason:' followed by a text input field containing 'This is my new Excess Emission Reason'. There are 'OK' and 'Cancel' buttons on the right side.

When you click *Ok*, the new reason/action is immediately added to your "standard" list of reasons and actions, and it shows as the selected Reason/Action. You still have to click the *Update List* button to actually assign the reason/action to this particular sample.



The screenshot shows the same software interface as before, but now the 'Reason/Action' dropdown is set to 'This is my new Excess Emission Reason'. The 'Update List' button is still present, and a 'Remove From List' button has appeared below it.

After you click *Update List*, the new reason/action appears in the list of those assigned to this sample:



The screenshot shows the software interface with the 'Reason/Action' dropdown set to 'This is my new Excess Emission Reason'. Below the dropdown, a list of assigned reasons is visible, containing one entry: 'Excess Emission | Reason | This is my new Excess Emission Reason'. The 'Update List' and 'Remove From List' buttons are still present.

Edit Sample Form Buttons

The screenshot shows the 'Edit Sample' window with the following details:

- Time:** 11/09/16 0:05
- Tag ID / Name:** 3010 All_HCl_LbPerMBtu_1M
- Value:** 0.0
- MODC:** 0
- Buttons:** Make Valid, Make Invalid, OutOfService (dropdown)
- System Status Flags (cannot be manually edited):**
 - Sample Invalid
 - Edited Value
 - Edited Status
 - Edited Source Code
- Logger:**
 - Floor Limit
 - Analog Input Fault
 - Min/Max Limit
 - Offline
 - Power Fault
- CEMS Flags:**
 - Missing
 - Out Of Service
 - Fatal Fault
 - Too Few Samples
 - Startup
 - Shutdown
 - Exceeds Scale
 - Short Sample
 - Non Fatal Fault
 - Backup Monitor
 - X-Pattern A
 - X-Pattern B
 - Low Range
 - High Range
 - Data Approved
- Calibration:**
 - In Calibration
 - OOC Daily
 - Not Quality Assured
 - OOC Manual
 - Five Day Cal Drift
 - In Zero Test
 - In Low Test
 - In Mid Test
 - In High Test
 - Calibration Occurred
 - Zero Cal Error > 1x
 - Zero Cal Error > 2x
 - Zero Cal Error > 4x
 - High Cal Error > 1x
 - High Cal Error > 2x
 - High Cal Error > 4x
- Definable:**
 - Status 38
 - Status 39
 - Status 40
 - Status 41
 - Status 42
 - Status 43
 - Status 44
 - Status 45
 - Status 46
 - Status 47
 - Status 48
- Flow/HCl/Hg Test:**
 - Int Test
 - Int Test Failed
 - Int Test Not QA
 - Interference
- Table:**

Category	Type	Reason/Action
CEM Failure	Reason	
- Buttons:** Update List, Remove From List
- Footer Buttons:** Previous, Next, Undo, Ok, Cancel, Apply

Previous Save changes and move to the previous sample time

Next Save changes and move to the next sample time

Undo Undo unsaved changes

Ok Save changes and close the Edit Sample form

Cancel Close the Edit Sample form without saving changes

Apply Save changes

Block Edit Form

The Block Edit form allows you to apply edits to multiple samples for 1 to 6 tags in a single operation. To open the Block Edit form, click the *Block Edit* button on the Sample Editor Spreadsheet.

The screenshot shows the 'Block Edit' window with the following sections:

- Select the time interval and tag(s), then choose one or more of the editing options below.**
 - From:** 12/30/1899 0:00
 - Through:** (empty)
 - Tag(s):** U1_UnitOn_TF_1H, U1_O2_Pct_1H, U1_NOx_Ppm_1H, U1_NOx_LbPerMBtu_1H, U1_NOxBA_LbPerMBtu_1H, U1_AvailNox_PMA_1H
 - Time Interval Buttons:** Today, Month to Date, Quarter to Date, Yesterday, Last 30 Days, Previous Quarter
- Edit Value:** New Value = 0 X [Current Value] + (empty)
- Edit MODC:** New MODC = (empty)
- Edit R/A Codes:**
 - Category: Excess Emission
 - Reason: -- No Change --
 - Action: -- No Change --
 - Filter on Value: > 0
 - Filter on Status: OOC_Daily
 - Filter on MODC: = 0
- Edit Status:**
 - Make Invalid by Setting Flag: OutOfService
 - Make Valid by Clearing all Invalid Flag: (empty)
 - Set or Clear Specific Flags: (empty)
 - Flag Grid: M C OS FF OD OM QA < IT IF IQ I 5D ZT LT MT HT Z1 Z2 Z4 H1 H2 H4 P I >S > f B XA XB Lo Hi 38 39 40 41 42 43 44 45 46 47 48
- Restore Original Value:** (empty)

Buttons: Apply Block Edit, Close

Block Edit Overview

Use this form to modify sample Values, MODCs, Reasons, Actions and/or Status Flags – separately, or all at once. For instance, you can modify Value and Status Flags, just Value or just Status Flags. After you have made your selections, click *Apply Block Edit* to perform the edit. Changes are saved immediately when you click this button and cannot be undone (except by performing another edit to reverse the first one).

Select Interval and Tags

Step one for block editing is to select the time interval and tag or tags to which the block edit will be applied. The form opens with *From* defaulted to the Start Time from the Sample Editor Spreadsheet and with no end time or tags selected. The tags in the list are the same tags that were being viewed in the Sample Editor Spreadsheet. Set the From and Through times and click to select one or more tags.

Select the time interval and tag(s), then choose one or more of the editing options below.

From ...

Through ...

Tag(s)

[Today](#) [Month to Date](#) [Quarter to Date](#)

[Yesterday](#) [Last 30 Days](#) [Previous Quarter](#)

Block Edit Sample Values

Click the *Edit Value* radio button to enable edits to the Sample value.

Edit Value New Value = X [Current Value] +

Values are modified using a simple formula that affords some flexibility. Values are set to $(m * x + b)$ where x is the current sample value and m and b are supplied by you. Examples:

Set Value to 0: a convenient way to set UnitOn or any Boolean tag to 0/False

Edit Value New Value = X [Current Value] +

Set Value to 1: a convenient way to set a Boolean tag to 1/True

Edit Value New Value = X [Current Value] +

Increase value by 10%: might be used to belatedly apply a bias factor or correct a scaling problem

Edit Value New Value = X [Current Value] +

Block Edit Sample MODC

Click the *Edit MODC* radio button to enable [MODC](#) edits.

Edit MODC New MODC =

To modify MODCs and other "Source of Data Codes", select the desired value from the MODC drop down list. The list contains all the EPA data source codes grouped and ordered by parameter.

Code	Type	Description
0	Density	Actual Measured Value From Daily Manual Sample
1	Density	Actual Measured Value From Flow Proportional/Weekly Composite Sample
2	Density	Actual Measured Value From Oil Tank Sample
4	Density	Highest Sampled Value in Previous Calendar Year from Oil Tank Sampling
5	Density	Highest Sampled Value in Previous Calendar Year From As Delivered Sample
6	Density	Maximum Value Allowed by Contract (only if higher than measured oil tank sample)
7	Density	Maximum Value Allowed by Contract (only if higher than measured oil as delivered sample)
8	Density	Missing Data (Maximum Potential Value from Table D-6)
9	Density	LME GCV/Density Default
10	Density	Highest Value in Previous 30 Daily Samples
0	Gas Flow	Hourly Measurement
1	Gas Flow	Substitute Data Using Lookback Procedures
2	Gas Flow	Default Minimum Fuel Flow Rate
3	Gas Flow	Max Potential Fuel flow Rate (simplified missing data procedure for peaking units, only)
4	Gas Flow	Emergency Fuel (maximum unit fuel flow rate)
7	Gas Flow	Prorated Long Term Fuel Measurement (OTC NBP only)
9	Gas Flow	Value Reported But Not Used for Hourly Heat Input (OTC NBP only)
0	Gas GCV	Actual Measured GCV From Most Recent Monthly Sampling
1	Gas GCV	Highest of All Sampled Values in Previous Calendar Year (or a higher sampled value, superseding the assumed value)
2	Gas GCV	Maximum Value Allowed by Contract (if higher than monthly sample)
3	Gas GCV	Highest GCV in Previous 30 Daily Samples
4	Gas GCV	Actual Measured GCV From Continuous (hourly) Sampling
5	Gas GCV	Gas Fuel in Lots, as Delivered Sampling: Highest of All Sampled Values in Previous Calendar Year (or a higher sampled value, supe

Tip: Be careful applying block MODC edits to more than 1 tag at a time. The list of valid data source codes may not be the same for the two different parameters.

Block Edit Reasons and Actions

Click the *Edit R/A Codes* radio button to enable block editing of [reasons and actions](#). To add new and/or edit existing reason and action definitions, click the *Edit R/A Definition* button.

<input checked="" type="radio"/> Edit R/A Codes	Category: Excess Emission	<input type="radio"/> Filter on Value: > 0
Reason: -- No Change --	<input type="radio"/> Filter on Status: OOC_Daily	
Action: -- No Change --	<input type="radio"/> Filter on MODC: = 0	<input type="button" value="Edit R/A Definition"/>

Select a Category, Reason and Action from the drop down lists. If you wish to edit only the Reason and not the Action, select *-- No Change --* as the Action (and vice versa). You may also select *-- Remove --* to delete any existing Reason or Action of the selected category.

Optionally, you may use one or more of the filters at the far right to further qualify the Samples to which your Reason/Action block edit is applied. With no filters enabled, the Reason and Action in the example below will be applied to every Sample in the block edit From/Through interval.

<input checked="" type="radio"/> Edit R/A Codes	Category: Excess Emission	<input type="radio"/> Filter on Value: > 0
Reason: Control equipment problems	<input type="radio"/> Filter on Status: OOC_Daily	
Action: Recalibrated Analyzer	<input type="radio"/> Filter on MODC: = 0	

To use the filters, click the radio button of the desired filter(s) and fill in the filter values. In the example below, the Reason will be added and the Action (if any) removed from all Samples that have value ≥ 100 , the InCalibration status flag set, and an MODC of 1.

<input checked="" type="radio"/> Edit R/A Codes	Category: Part 75 Missing Data	<input checked="" type="radio"/> Filter on Value: \geq 100
Reason: DAHS Hardware Failure	<input checked="" type="radio"/> Filter on Status: InCalibration	
Action: -- Remove --	<input checked="" type="radio"/> Filter on MODC: = 1	

Tip: When more than one filter is selected, the logical operator used is AND, not OR. Therefore all of the conditions you specify with the filters must be true of a particular Sample or the edits will not be applied.

Tip: If you edit Sample value, status or MODC and reasons/actions in a single block edit operation, the reason/action edits are applied last. Therefore, if you have used the reason/action filters, Samples are compared to your filter criterion after the value, status or MODC edits are applied.

Block Edit Status Flags

Click the *Edit Status* radio button to enable block editing of [status flags](#).

Click the radio button of the option that that best matches the type of status edit you want.

Make Invalid by Setting Flag

Select this option to make the Samples invalid by setting one of the invalid status flags. Select the desired flag from the dropdown list.

In this example, the *Fatal Fault* flag will be applied to every Sample in the block edit From/Through interval.

Tip: You cannot directly edit the SampleInvalid flag. This flag is set automatically by RegPerfect® and is based on the other flags – if any invalid flags are set, SampleInvalid is automatically set.

Missing	M
InCalibration	C
OutOfService	OS
FatalFault	FF
OOO_Daily	OD
OOO_Manual	OM
NotQualityAssured	QA
TooFewSamples	<
InterferenceTest	IT
InterferenceTestFailed	IF

Make Valid by Clearing all Invalid Flags

Select this option to remove all invalid flags and make the Sample(s) valid. Samples that are already valid will be unaffected, but invalid Samples will be made valid no matter which or how many invalid flags are currently set.

Set or Clear Specific Flags

Select this option to exert complete control of individual status flags. Each column represents one RegPerfect® status flag. The status flag symbol is displayed over a “set” box and a “clear” box. You may set or clear any flag(s) by checking the appropriate box. In the example below, the Missing and InCalibration flags will be cleared (removed) and the OutOfService and FatalFault flags will be set. The red symbols denote status flags that cause data invalidity.

The screenshot shows the 'Edit Status' form with the following options:

- Make Invalid by Setting Flag:
- Make Valid by Clearing all Invalid Flags
- Set or Clear Specific Flags (place the cursor over any of the flag symbols below and pause to get a complete description of the status flag)

Below these options is a row of status flag symbols: M, C, OS, FF, OD, OM, QA, <, IT, IF, IQ, I, 5D, ZT, LT, MT, HT, Z1, Z2, Z4, H1, H2, H4, P, !, >S, >, f, B, XA, XB, Lo, Hi. The symbols M, C, OS, and FF are highlighted in red. Below the symbols are two rows of checkboxes labeled 'Set' and 'Clear'. The 'Set' row has checkboxes for M, C, OS, FF, OD, OM, QA, <, IT, IF, IQ, I, 5D, ZT, LT, MT, HT, Z1, Z2, Z4, H1, H2, H4, P, !, >S, >, f, B, XA, XB, Lo, Hi. The 'Clear' row has checkboxes for M, C, OS, FF, OD, OM, QA, <, IT, IF, IQ, I, 5D, ZT, LT, MT, HT, Z1, Z2, Z4, H1, H2, H4, P, !, >S, >, f, B, XA, XB, Lo, Hi. The checkboxes for M, C, OS, and FF are checked in both rows.

Tip: To see the status flag names, use your mouse to place the cursor over the status flag symbol and pause. A tool tip box containing the flag name will appear.

When you have checked a box to set a flag and apply your block edit, that flag will be set on all Samples in the block edit From/Through interval. For Samples on which the flag was already set, it will remain set. Clearing flags works the same way – the flag will be removed from all Samples and will remain clear if already clear.

Tip: Status flags 38 through 48 are not typically used. They are extra flags used to customize RegPerfect® at a few sites that need to record a status condition not covered by the standard flags. You may edit these special status flags in the same way as the others.

Restore Original Value

Click the *Restore Original Value* radio button to replace edited values with the original values

and flags preserved by the audit trail (audit trail use must be enabled). Note that *Restore Original Value* may not be combined with any of the other editing options – selecting this option deselects all others.

Restore Original Value

Block Edit Form Buttons

There are two buttons at the bottom right of the form.

Apply Block Edit

Click this button to apply your block edit. Changes are saved immediately.

Close

Click this button to close the form.

3.4 Status Flags Editor

The Status Flags Editor form is pictured below. For this example, a CO tag was selected.

Tip: Remember that to open this form rather than the Sample Editor Spreadsheet, you must click the Status Flags View radio button before clicking the Edit Samples button on the Main Window.

Date/Time	Tag Name	Value	Modc	UD	RJA	SI	EV	ES	EC	M	C	OS	FF	OD	OM	QA	<	IT	IF	IQ	Z1	Z2	Z4	H1	H2	H4	5D	ZT	LT	MT	HT	c	!	>	S	
02/05/18 0:10	U3_CO_LbPerHr_1M	10.1	0																																	
02/05/18 0:11	U3_CO_LbPerHr_1M	12.7	0																																	
02/05/18 0:12	U3_CO_LbPerHr_1M	12.1	0																																	
02/05/18 0:13	U3_CO_LbPerHr_1M	13.1	0																																	
02/05/18 0:14	U3_CO_LbPerHr_1M	16	0																																	
02/05/18 0:15	U3_CO_LbPerHr_1M	15.1	0																																	
02/05/18 0:16	U3_CO_LbPerHr_1M	16.1	0																																	
02/05/18 0:17	U3_CO_LbPerHr_1M	17.1	0	X																																
02/05/18 0:18	U3_CO_LbPerHr_1M	18.1	0																																	
02/05/18 0:19	U3_CO_LbPerHr_1M	19.1	0																																	
02/05/18 0:20	U3_CO_LbPerHr_1M	20.1	0																																	
02/05/18 0:21	U3_CO_LbPerHr_1M	21.1	0																																	
02/05/18 0:22	U3_CO_LbPerHr_1M	22.1	0																																	
02/05/18 0:23	U3_CO_LbPerHr_1M	23.1	0																																	
02/05/18 0:24	U3_CO_LbPerHr_1M	24.1	0																																	
02/05/18 0:25	U3_CO_LbPerHr_1M	25.1	0																																	
02/05/18 0:26	U3_CO_LbPerHr_1M	26.1	0																																	
02/05/18 0:27	U3_CO_LbPerHr_1M	30.5	0	X		X							X																							
02/05/18 0:28	U3_CO_LbPerHr_1M	28.1	0																																	
02/05/18 0:29	U3_CO_LbPerHr_1M	32.7	0	X																																
02/05/18 0:31	U3_CO_LbPerHr_1M	31.1	0	X																																
02/05/18 0:32	U3_CO_LbPerHr_1M	36.1	0																																	
02/05/18 0:33	U3_CO_LbPerHr_1M	33.1	0																																	
02/05/18 0:34	U3_CO_LbPerHr_1M	38.2	0																																	
02/05/18 0:35	U3_CO_LbPerHr_1M	39.3	0																																	
02/05/18 0:36	U3_CO_LbPerHr_1M	36.1	0																																	
02/05/18 0:37	U3_CO_LbPerHr_1M	37.1	0																																	
02/05/18 0:38	U3_CO_LbPerHr_1M	38.1	0																																	
02/05/18 0:39	U3_CO_LbPerHr_1M	39.1	0																																	

Features of the Status Flags Editor form are illustrated with small portions of the screen in the remainder of this section. Refer back to the above screen shot for reference if needed.

Status Flags Editor Overview

Each row shows the sample value, MODC, status flags and unit operating status for a single parameter and time. The Start Time you previously selected on the Main Window controls how many rows of data are displayed.

Tip: If you select multiple tags, the display shows data sorted first by SampleTime, then by TagName.

Status Flags Editor																
<input type="text"/> <input type="button" value="Go To"/>																
Date/Time	Tag Name	Value	Modc	UD	R/A	SI	EV	ES	EC	M	C	OS	FF	OD	OM	QA
02/05/18 0:10	U3_CO_LbPerHr_1M	10.1	0													
02/05/18 0:11	U3_CO_LbPerHr_1M	12.7	0													
02/05/18 0:12	U3_CO_LbPerHr_1M	12.1	0													
02/05/18 0:13	U3_CO_LbPerHr_1M	13.1	0													

Each row consists of the following columns:

Sample

Time The date and time of the sample (not editable). The time is *start* time, so an hourly sample with a time of 09:00 represents the hourly average from 09:00 to 09:59.

Tag

Name The tag name of the RegPerfect® tag (not editable).

Value The sample value. The value may be directly edited. Your changes are saved the moment you click on anything outside the row being edited (or press the down/up arrow key).

MODC The method of determination code or data source code. This column is not applicable to all tags. The MODC may be directly edited, and changes are saved the moment you click on anything off the row being edited (or press the down/up arrow).

UD Unit Down indicator. An X in this column indicates that the unit was not operating. You may edit this column by clicking it or by pressing the space bar – either method toggles the X on or off.

RA Reason/action code indicator. An X in this column indicates that a reason and/or action code has been assigned to the sample. You may edit this column by double-clicking it and updating the list in the Edit SampleReasonAction form that pops up.

SI Sample Invalid status flag. An X in this column indicates that the sample is invalid. This column is not editable because the SI flag is derived from the other status flags. SI is set automatically by the system whenever any other status flags that cause invalidity are set. Similarly, SI is cleared automatically when no flags denoting invalidity are set.

EV Edited Value status flag. An X in this column indicates that the sample value has been manually edited. This flag is also controlled automatically by the system and is not editable.

ES Edited Status status flag. An X in this column indicates that the sample status has been manually edited. This flag is also controlled automatically by the system and is not editable.

EC Edited Source Code status flag. An X in this column indicates that the sample MODC has been manually edited. This flag is also controlled automatically by the system and is not editable.

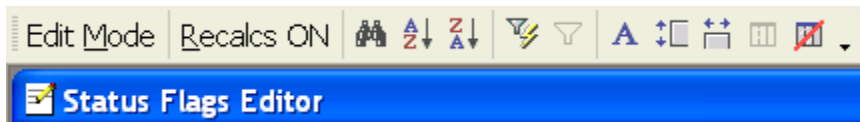
M, C, OS, FF, OD, OM, QA, <, IT, IF, IQ, Z1, Z2, Z4, H1, H2, H4, 5D, ZT, LT, MT, HT, c, !, >S, >, f, B, XA, XB, Lo, Hi, I, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, SU, SD, <S, AF, MM, BO, PF
 These columns show the value of one RegPerfect® status flag. An X in the column indicates that the status flag is set; a blank indicates that the status flag is clear. All these columns may be manually edited (toggled set/clear) by left clicking or by pressing the space bar.

Status Flags Editor View Mode and Edit Mode

Each time the Status Flags Editor form is opened, it defaults to “view mode”; this is indicated by the *View Mode* button at the top left of the toolbar.



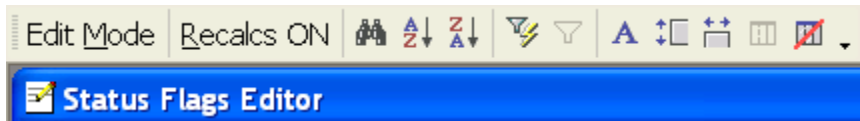
The data on the form may not be edited while in view mode. To change to edit mode, click the *View Mode* toolbar button. This changes the button caption to indicate you are now in edit mode.



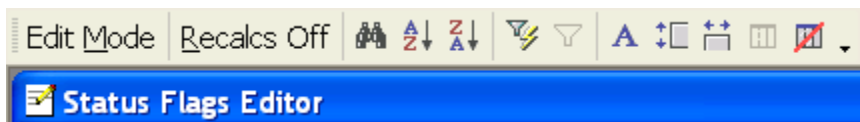
Each time you click the button, you toggle from View Mode to Edit Mode or the reverse.

Status Flags Editor Automatic Recalculations

The second button in the toolbar shows you whether automatic recalculations are enabled/on or disabled/off. In this screen shot, automatic recalculations are on as indicated by the button caption [Recalcs ON].

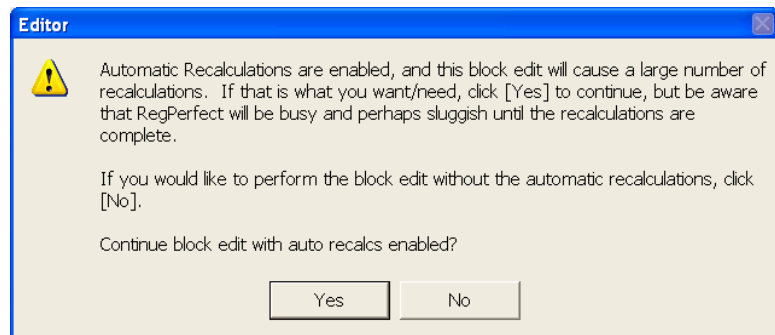


To disable automatic recalculations, click the [Recalcs ON] button. The button caption will change to [Recalcs Off] as shown below.



The button caption always shows the state Automatic Recalculations is currently in, and clicking the button always changes it to the other state.

When automatic recalculations are enabled, Editor inserts a recalculation request for you automatically after each edit. This applies to both individual edits on the spreadsheet or all-flags forms, and to block edits. When you edit a large amount of data with a single block edit, you may see this warning pop-up:



This warning is simply an opportunity for you to consider whether you really want Editor to insert a very large number of recalculations. If you click [Yes], the block edit will continue with the automatic recalculations. If you click [No], the block edit will still continue but without the automatic recalculations.

Tip: In most cases, you should click [Yes]. If you really need to edit a large amount of data, you probably really need to have all the downstream tags recalculated. The worst that can happen is that your RegPerfect system may be very busy and a bit slower than usual for a few hours while the recalculations are processed.

Navigating

Basic navigation keyboard keys can be used to work your way around the spreadsheet. The up, down, left and right arrow keys all move your cursor as you would expect. The Tab key also moves the cursor to the right and then down. The Page Up and Page Down keys behave normally.

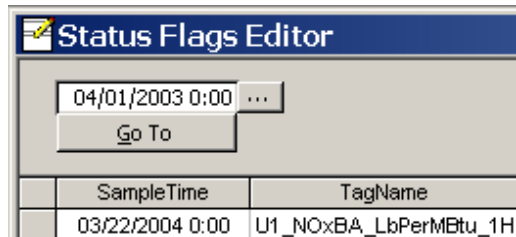
Saving Changes

You may notice there is no button for saving your edits: *your changes are saved the moment you move the cursor out of the row you are editing.* If you have edited a value or MODC and change your mind, press the *Esc* key on your keyboard to restore the original value (this must be done while the cursor is still in the box being edited). Clicking any of the buttons also saves changes.

Status Flags Editor Buttons

There are several buttons on the spreadsheet. Each is explained below.

Go To Click this button to change the Start Time of the first row of data displayed. You must first enter the new time in the box above the *Go To* button.



SampleTime	TagName
03/22/2004 0:00	U1_NOxBA_LbPerMBtu_1H

Previous Click this button to show the previous interval of data. If you are viewing hourly data, for example, and the Date/Time of the first row on the display is 5/20/03 00:00, clicking *Previous* changes the start time to 5/19/03 00:00.

Next Click this button to show the next interval of data. If you are viewing hourly data, for example, and the Date/Time of the first row on the display is 5/20/03 00:00, clicking *Next* changes the start time to 5/21/03 00:00.

Requery Click this button to requery the database and refresh the data shown on the form. This may be useful when you are awaiting the completion of recalculations.

Block Edit Click this button to open the Block Edit form. For more information on block editing, see [Block Edit Form](#).


Status Flags Editor Tool Bar


There are several buttons on the tool bar:




The View Mode button was discussed in [Status Flags Editor View Mode and Edit Mode](#).


The Recalcs button was discussed in [Status Flags Editor Automatic Recalculations](#).


 Open the Find and Replace form.


 Sort ascending or descending (respectively) on the column in which the cursor resides before you click the button.


 Filter by selection. Click the left-most button to filter data based on the data value in the column in which your cursor resides. Click the right-most button to remove all active filters.

 Change font.

 Change row height.

 Change column width.

 Freeze columns. This button is only activated after unfreezing columns (see below). To freeze columns, select the columns by shift-clicking the desired column headers, then click the Freeze columns button.

 Unfreeze columns. The display has a vertical line between the SI and EV columns. When you scroll horizontally, the columns left of the line are “frozen” while those right of the line scroll. Clicking this toolbar button unfreezes the columns so that you may select different columns and freeze them using the Freeze columns tool bar button.

Tip: You must unfreeze columns before you can select a new set of columns to freeze, and after clicking Unfreeze, you must click somewhere on the display before the Freeze button will be activated. It is strongly recommended that you only freeze consecutive columns (left to right) from the left- most column

3.5 Filtering Samples

You may filter the set of samples displayed by either the Sample Editor Spreadsheet or Status Flags Editor. Click/check the *Filter* checkbox on the Main Window, then click *Edit Samples*. The Sample Editor Filter form is displayed.

Sample Editor Filter

Time Interval Filter

Start: [Today](#) [Month to Date](#) [Last 24 Hours](#) [Previous Quarter](#)

End: [Yesterday](#) [Quarter to Date](#) [Last 30 Days](#) [Previous 2 Quarters](#)

Sample Value Filter

Operand: Value:

Unit Operating Filter

Unit Up Unit Down Don't Care UnitOn Tag:

Reason/Action Filter

Reason/Action:

Status Flag Filter

Boolean Operator: Or And

Click the check boxes below to toggle between the 3 status flag filters: On/True, Off/False, or Don't Care.

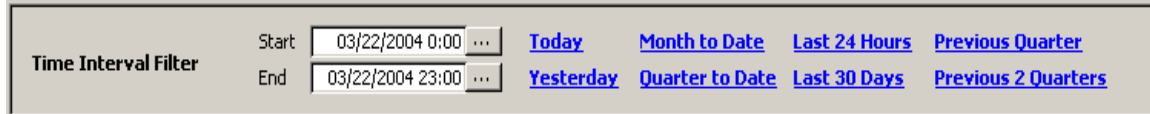
SampleInvalid <input type="checkbox"/>	InterferenceTestNotQA <input type="checkbox"/>	ExceedsScale <input type="checkbox"/>	Status43 <input type="checkbox"/>
EditedValue <input type="checkbox"/>	ZeroCalError1X <input type="checkbox"/>	ShortSample <input type="checkbox"/>	Status44 <input type="checkbox"/>
EditedStatus <input type="checkbox"/>	ZeroCalError2X <input type="checkbox"/>	NonFatalFault <input type="checkbox"/>	Status45 <input type="checkbox"/>
EditedSourceCode <input type="checkbox"/>	ZeroCalError4X <input type="checkbox"/>	BackupMonitor <input type="checkbox"/>	Status46 <input type="checkbox"/>
Missing <input type="checkbox"/>	HighCalError1X <input type="checkbox"/>	XPatternA <input type="checkbox"/>	Status47 <input type="checkbox"/>
InCalibration <input type="checkbox"/>	HighCalError2X <input type="checkbox"/>	XPatternB <input type="checkbox"/>	Status48 <input type="checkbox"/>
OutOfService <input type="checkbox"/>	HighCalError4X <input type="checkbox"/>	LowRange <input type="checkbox"/>	Floor Limit <input type="checkbox"/>
FatalFault <input type="checkbox"/>	FiveDayCalDrift <input type="checkbox"/>	HighRange <input type="checkbox"/>	Analog Input Fault <input type="checkbox"/>
OOO_Daily <input type="checkbox"/>	InZeroTest <input type="checkbox"/>	Interference <input type="checkbox"/>	Min/Max Limit <input type="checkbox"/>
OOO_Manual <input type="checkbox"/>	InLowTest <input type="checkbox"/>	Status38 <input type="checkbox"/>	Offline <input type="checkbox"/>
NotQualityAssured <input type="checkbox"/>	InMidTest <input type="checkbox"/>	Status39 <input type="checkbox"/>	Power Fault <input type="checkbox"/>
TooFewSamples <input type="checkbox"/>	InHighTest <input type="checkbox"/>	Status40 <input type="checkbox"/>	Startup <input type="checkbox"/>
InterferenceTest <input type="checkbox"/>	CalOccurred <input type="checkbox"/>	Status41 <input type="checkbox"/>	Shutdown <input type="checkbox"/>
InterferenceTestFailed <input type="checkbox"/>	Data Approved <input type="checkbox"/>	Status42 <input type="checkbox"/>	

Supply values for the desired filters (described below) and click *Ok* to open the spreadsheet or status flags editing forms showing only the samples that meet the filter criterion. You may use one, several or all filters simultaneously. When you use more than 1 filter, the AND logical operator is applied. For example, if you specify a time interval and a status flag filter, only samples that meet both criterion are shown on the editing form.

Tip: Complex, multiple filters, particularly when applied to multiple tags, can be hard for you to process correctly. Therefore, if a complicated multi-tag filter is not producing the results you expect, simplify and try again. Once you have found some set of data, you can then incrementally add additional filters to refine your result set.

Filter on Time

The Main Window does not allow you to specify an End Time for sample editing. Instead, it calculates an end time for you to ensure that you don't try to view/edit too large a set of samples. However, on this form, you may override and specify any start and end time you wish.

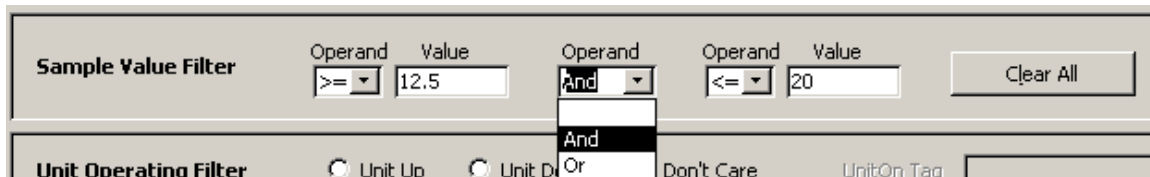


The screenshot shows a 'Time Interval Filter' section. It has two rows: 'Start' and 'End'. Each row has a text input field containing a date and time (e.g., '03/22/2004 0:00') followed by a small '...' button. To the right of these inputs are several blue hyperlinks: 'Today', 'Month to Date', 'Last 24 Hours', 'Previous Quarter', 'Yesterday', 'Quarter to Date', 'Last 30 Days', and 'Previous 2 Quarters'.

You may type in different dates for Start and End, use the date buttons, or use the quick-date shortcuts to specify your search interval. Please note that the larger the search interval, the slower the editing form will perform.

Filter on Sample Value

To filter on Sample value, fill in the desired inequalities and values as pictured in the example below. To remove all Sample value filters, click the *Clear All* button.



The screenshot shows a 'Sample Value Filter' section. It contains two filter conditions. The first condition has an 'Operand' dropdown set to '>=' and a 'Value' input field containing '12.5'. The second condition has an 'Operand' dropdown set to '<=' and a 'Value' input field containing '20'. Between the two conditions is an 'And' dropdown menu. To the right of the second condition is a 'Clear All' button. Below this section is a 'Unit Operating Filter' section with radio buttons for 'Unit Up', 'Unit Down', and 'Don't Care', and a 'UnitOn Tag' dropdown menu.

Filter on Unit Operating

To filter on the unit operating status, click either the *Unit Up* or *Unit Down* radio button. To disable the Unit Operating filter, click the *Don't Care* radio button.



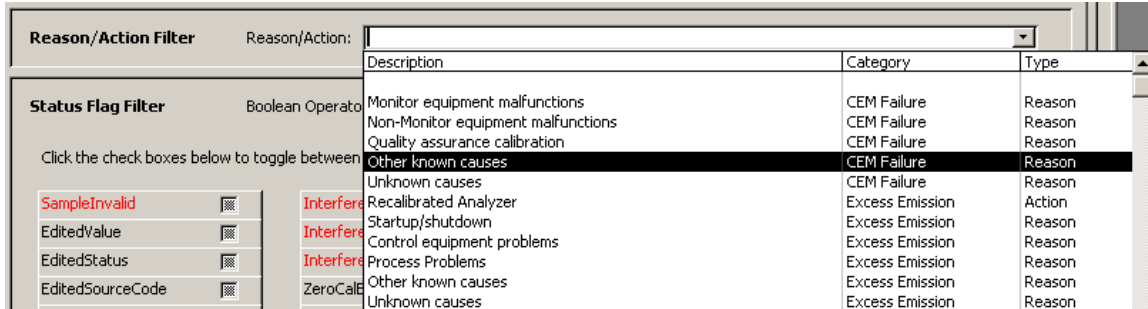
The screenshot shows a 'Unit Operating Filter' section. It has three radio buttons: 'Unit Up' (which is selected), 'Unit Down', and 'Don't Care'. To the right of the radio buttons is a 'UnitOn Tag' dropdown menu with the value 'U1_UnitOn_TF_1H' selected.

When you do select *Unit Up* or *Unit Down*, the UnitOn Tag is automatically supplied by the system (U1_UnitOn_TF_1H in the example above).

Note: If you had selected multiple tags of different averaging intervals or from different monitoring sites prior to clicking Edit Samples on the Main Window, it is likely that those tags will not all share the same Unit Operating tag. In this case, the UnitOn tag dropdown list (above) becomes "enabled" and you must select one UnitOn tag from the list.

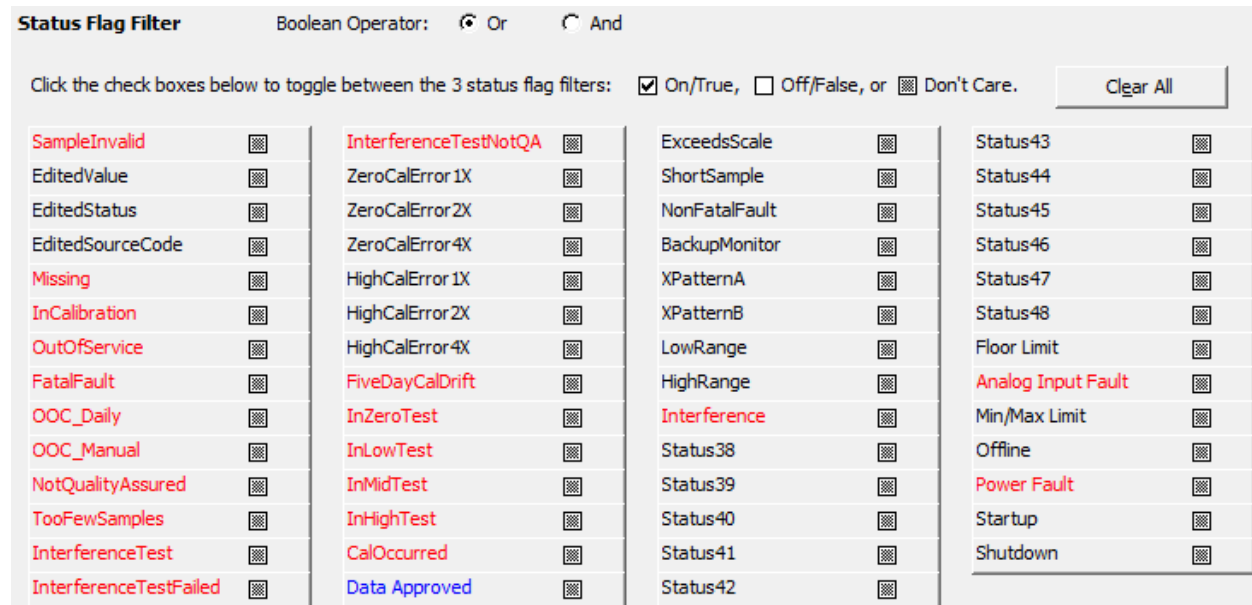
Filter on Reason/Action

To filter on a reason or action, select one from the drop down list. To disable the Reason/Action filter, select the blank entry (at the top of the drop down list).



Filter on Status Flag(s)

The Status Flag filter allows you to filter on one or more flags being on/true or off/false, and it allows you to use the logical operator AND or OR when you are filtering on multiple flags. The status flag names in red font are those that denote invalidity.



In the example above, the filter is set to find only samples for which the SampleInvalid flag is off/false and the ExceedsScale flag is on/true.

Each status flag is listed followed by a 3-state checkbox. When you click a checkbox, it toggles between 3 "states":

- greyed out: no filter is set
- checked: sets a filter requiring the flag to be on/true
- unchecked: sets a filter requiring the flag to be off/false.

To filter on SampleInvalid being off/clear, click the check box until it is in the unchecked state:



To filter on SampleInvalid being on/true, click the check box until it is in the checked state:



To disable filtering on SampleInvalid, click the check box until it is in the greyed out state:



You may filter on any combination of any number of status flags simultaneously.

The Boolean operator (near the top of the Status Flag filter area) is used only when you specify a filter on more than one status flag. When you select Or, a sample will meet the criterion if any of the status flag filters are matched. When you select And, a sample will meet the criterion only when all of the status flag filters are matched.

Tip: To disable all status flag filters, click the Clear All button. This will reset all the checkboxes to the greyed out "Don't Care" state.

When you have specified all desired filters, click the *Ok* button to open the editing form.

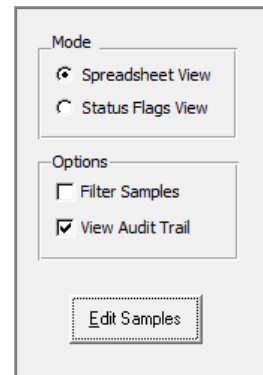
Note: Whether you have selected the spreadsheet or status flags view, the editing form's Previous, Next, Go To and Block Edit buttons will be disabled when you are viewing filtered samples.

3.6 Audit Trail

When RegPerfect's audit trail is enabled (see [DAHS Settings](#)), original measured and calculated values, status flags and MODCs are recorded and kept when manual edits are made to data. You can view the original values side by side with the "active" (edited) values using the Sample Spreadsheet Editor.

From the *Edit Samples* tab of the Main window, select up to 3 tags or an Edit Group that consists of at most 3 tags.

Select the *Spreadsheet View* mode, check the *View Audit Trail* checkbox and click the [Edit samples] button.



The Spreadsheet Editor opens showing your selected tags and their original sample values in side by side columns:

Go To		CO				CO			
		U1_CO_ppm_1H				Original Data			
Date	Time	Value	Invalid	Flags	MODC	Value	Invalid	Flags	MODC
01/01/19	00:00	0.0				0.0			
01/01/19	01:00	0.0				0.0			
01/01/19	02:00	0.0				0.0			
01/01/19	03:00	0.0				0.0			
01/01/19	04:00	0.0				0.0			
01/01/19	05:00	0.0	<input checked="" type="checkbox"/>	OS-<->-4E		0.0			
01/01/19	06:00	0.0	<input checked="" type="checkbox"/>	OS-<->-4E		0.1			
01/01/19	07:00	0.0	<input checked="" type="checkbox"/>	OS-<->-4E		0.1			
01/01/19	08:00	0.1		43-ES		0.1			
01/01/19	09:00	0.1		43-ES		0.1			
01/01/19	10:00	0.1		43-ES		0.1			
01/01/19	11:00	0.1		43-ES		0.1			
01/01/19	12:00	0.2		43-ES		0.2			

Note: the screenshot above includes "Flags" columns because the Spreadsheet Editor Flags option is enabled (see [Preferences](#)).

Data for each of your selected tags are shown in even numbered columns with the audit trail samples (if any) in adjacent columns under the heading "Original Data". If the Value column of an audit trail sample is NULL, there is no audit trail entry for that time and tag ID – this means that the original value has never been edited, or that it was edited but subsequently restored to the original. Most features of this form are identical to those of the standard [Sample Editor Spreadsheet](#). The remainder of this section will describe how the audit trail works in more detail.

How Audit Trail Records Are Created and Deleted

You must enable the audit trail in [DAHS Settings](#). If disabled, no audit trail records will be created.

RegPerfect collects “measured” data from external devices such as PLCs and calculates its own data from those measured tags and other calculated tags. Both of these actions create what we will refer to as the “original sample” (a sample consists of a tag ID, time, value, status flags and MODC).

Generally, an audit record is created when an edit is made to an original sample. The audit record contains a copy of the original data (tag ID, time, value, flags and MODC) and also the login name of the Windows user that performed the edit.

Specifically:

- Only the first edit to an original sample creates an audit record.
- Editing one or all parts of a sample -- value, status flags and/or MODC -- will create an audit record with one exception:
 - The Data Approved status flag may be set and cleared without creating an audit record
- Users can restore an original sample using the Sample Log form (described below) or block editing ([Restore Original Value](#)).
- Restoring an original sample deletes the audit record.
- Users may not edit or delete audit records. Very old audit records are automatically purged according to the Days of Raw Data to Retain setting in [DAHS Settings](#).
- RegPerfect system recalculations never create an audit record even when they overwrite previous calculations or edited values.
- For measured samples only – those that come from an external PLC, logger, etc. – a demand poll or buffer recovery may overwrite current sample values. When this occurs, audit records (if any) will be deleted since the data will have been restored to the original device’s copy.

View/Restore a Single Audit Record

On the Sample Spreadsheet Editor, dbl-click a non-null value in the Original Data column to open the Sample Log form. In this example, the value in the 4th row under CO Original Data was dbl-clicked.

CO		CO				CO			
Go To		U1_CO_ppm_1H				Original Data			
Date	Time	Value	Invalid	Flags	MODC	Value	Invalid	Flags	MODC
01/01/19	02:00	0.0	<input type="checkbox"/>			0.0	<input type="checkbox"/>		
01/01/19	03:00	0.0	<input type="checkbox"/>			0.0	<input type="checkbox"/>		
01/01/19	04:00	0.0	<input type="checkbox"/>			0.0	<input type="checkbox"/>		
01/01/19	05:00	0.0	<input checked="" type="checkbox"/>	OS-<->-4E		0.0	<input type="checkbox"/>		

Sample Log

Time: 01/01/19 5:00

Tag ID/Name: 16 U1_CO_ppm_1H

Edited By: MLSUPPORT

Value: 0.0

MODC: 0

<p>System Status Flags</p> <p><input type="checkbox"/> Sample Invalid</p> <p><input type="checkbox"/> Edited Value</p> <p><input type="checkbox"/> Edited Status</p> <p><input type="checkbox"/> Edited Source Code</p>	<p>CEM's Flags</p> <p><input type="checkbox"/> Missing</p> <p><input type="checkbox"/> Out Of Service</p> <p><input type="checkbox"/> Fatal Fault</p> <p><input type="checkbox"/> Too Few Samples</p> <p><input type="checkbox"/> Calibration Occurred</p> <p><input type="checkbox"/> Exceeds Scale</p> <p><input type="checkbox"/> Short Sample</p> <p><input type="checkbox"/> Non Fatal Fault</p> <p><input type="checkbox"/> Backup Monitor</p> <p><input type="checkbox"/> X-Pattern A</p> <p><input type="checkbox"/> X-Pattern B</p> <p><input type="checkbox"/> Low Range</p> <p><input type="checkbox"/> High Range</p> <p><input type="checkbox"/> Data Approved</p>	<p>Calibration Flags</p> <p><input type="checkbox"/> In Calibration</p> <p><input type="checkbox"/> OOC Daily</p> <p><input type="checkbox"/> Not Quality Assured</p> <p><input type="checkbox"/> OOC Manual</p> <p><input type="checkbox"/> Five Day Cal Drift</p> <p><input type="checkbox"/> In Zero Test</p> <p><input type="checkbox"/> In Low Test</p> <p><input type="checkbox"/> In Mid Test</p> <p><input type="checkbox"/> In High Test</p> <p><input type="checkbox"/> Zero Cal Error > 1x</p> <p><input type="checkbox"/> Zero Cal Error > 2x</p> <p><input type="checkbox"/> Zero Cal Error > 4x</p> <p><input type="checkbox"/> High Cal Error > 1x</p> <p><input type="checkbox"/> High Cal Error > 2x</p> <p><input type="checkbox"/> High Cal Error > 4x</p>	<p>Interference/Hg Test Flags</p> <p><input type="checkbox"/> Int Test</p> <p><input type="checkbox"/> Int Test Failed</p> <p><input type="checkbox"/> Int Test Not QA</p> <p><input type="checkbox"/> Interference</p> <p>Definable Flags</p> <p><input type="checkbox"/> Status 38 <input type="checkbox"/> Status 44</p> <p><input type="checkbox"/> Status 39 <input type="checkbox"/> Status 45</p> <p><input type="checkbox"/> Status 40 <input type="checkbox"/> Status 46</p> <p><input type="checkbox"/> Status 41 <input type="checkbox"/> Status 47</p> <p><input type="checkbox"/> Status 42 <input type="checkbox"/> Status 48</p> <p><input type="checkbox"/> Status 43</p> <p>Logger Flags</p> <p><input type="checkbox"/> Floor Limit</p> <p><input type="checkbox"/> Analog Input Fault</p> <p><input type="checkbox"/> Min/Max Limit</p> <p><input type="checkbox"/> Offline</p> <p><input type="checkbox"/> Power Fault</p>
---	--	--	--

Previous Next Restore Close

This window is the same as the [Edit Sample Form](#) with a few exceptions. First, the data on this form is read-only. Second, it shows the name of the logon user that performed the edit causing the creation of this audit record. Finally, it has a button to restore the original value.

Restore Restore the original sample. This overwrites the "current" data and deletes the audit record.

Example:

Before restoring the original CO sample with timestamp 1/1/2019 05:00:

		CO				CO			
Go To		U1_CO_ppm_1H				Original Data			
Date	Time	Value	Invalid	Flags	MODC	Value	Invalid	Flags	MODC
01/01/19	02:00	0.0	<input type="checkbox"/>			0.0	<input type="checkbox"/>		
01/01/19	03:00	0.0	<input type="checkbox"/>			0.0	<input type="checkbox"/>		
01/01/19	04:00	0.0	<input type="checkbox"/>			0.0	<input type="checkbox"/>		
01/01/19	05:00	0.0	<input checked="" type="checkbox"/>	OS-<>-43		0.0	<input type="checkbox"/>		

After (note that the audit record has been deleted):

		CO				CO			
Go To		U1_CO_ppm_1H				Original Data			
Date	Time	Value	Invalid	Flags	MODC	Value	Invalid	Flags	MODC
01/01/19	02:00	0.0	<input type="checkbox"/>			0.0	<input type="checkbox"/>		
01/01/19	03:00	0.0	<input type="checkbox"/>			0.0	<input type="checkbox"/>		
01/01/19	04:00	0.0	<input type="checkbox"/>			0.0	<input type="checkbox"/>		
01/01/19	05:00	0.0	<input type="checkbox"/>				<input checked="" type="checkbox"/>		

3.7 Export Samples

Tag data values may be exported to a tab delimited text file. To begin, select 1 to 26 tags, or a tag group, and click the *Export Samples* button to open the Sample Export form.

Note: if you select tags of different intervals, for example 1-minute and 1-hour tags, the format of the output will appear to be misaligned when you view the data in a text editor such as Notepad. However, all the data will still import correctly into Excel.

Start and End

The maximum allowed export interval is one year.

Status Flag Options

- Sample Invalid only: includes an SI column for each selected tag
- Sample Invalid + MODC: includes SI and the MODC for each selected tag
- SI + MODC + C + M + OS + OC + XS: includes columns for the MODC and all the indicated status flags for each selected tag

Export Path

Click *Choose Path* to select a path or type in a path for the output file.

Note: all export files are written to drives and folders on the server only. If you are running Editor on a client PC, you must select or type in a path that exists on the server. If you are running Editor on a client PC and would like to export files using Editor on the client PC, you need to share a folder on the client and map a network drive on the server to that folder on the client. Then you must type in the path to the share in the uniform naming convention (UNC). For example: ||ClientPCName|SharedFolderName|TheRestOfThePath.

Click *Export Data* to begin the export.

The date and time that you run the export are incorporated into the output file name:
ExportData_YYYY.MM.DD_hh.mm.ss.txt

The output file may be imported into MS Excel using the *From Text* import option on the *Data* tab. In Excel 2010 (and perhaps in other versions), once the file is selected the import wizard correctly detects all needed options and you may simply click Next, Next, Finish and Ok to successfully import the file.

The output file size and the time required to complete the export will vary widely based on the selected Start, End and Status Flag option. Exporting a few tags or only hourly tags is quite fast, but the more tags you select, particularly 1-minute tags, the longer it will take to export. Similarly, exporting more status flags takes longer than fewer status flags.

Sample Export

EXPORTING SAMPLE DATA MAY TAKE SEVERAL MINUTES. You may select up to 26 tags on the Edit Samples tab or select a Group. Limit 1-min tags. To continue, Modify the Start and End times (maximum of 1 year span), select Status Flag Option for output, change or keep Export Path and select Export Data. View the data file(s) in the Export Path folder.

Start 04/16/15 0:00 ...

End 07/15/15 23:59 ...

Status Flag Options

- Sample Invalid Only
- Sample Invalid + MODC
- SI + MODC + C + M + OS + OC + XS

Export Path D:\RegPerfect\Backup\ Choose Path

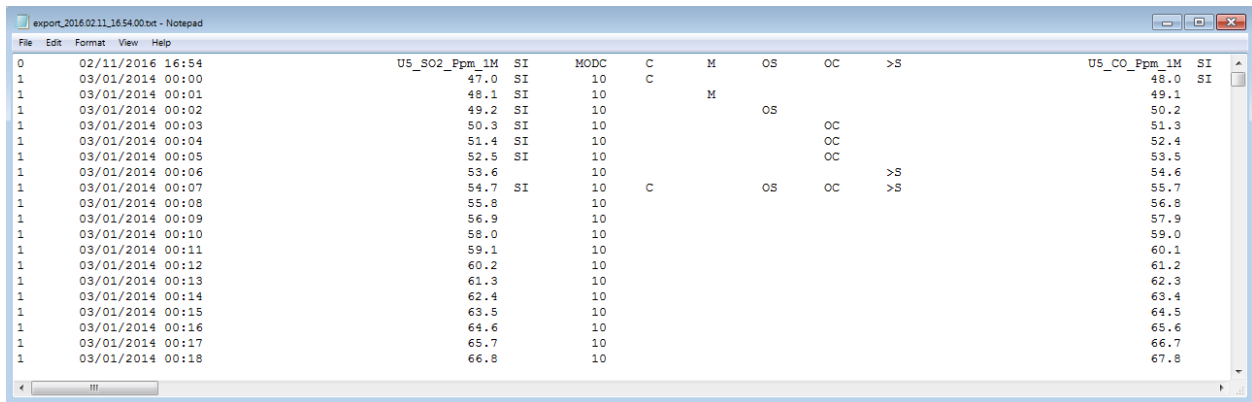
Cancel Export Data

The table below provides some approximations based on testing on a moderately equipped laptop with a moderately sized and recently re-indexed database. Your results may vary.

Tags Exported	Export Interval	Flag Options	Time to Export
26 1-minute tags	30 days	1 – SI only	30 sec
26 1-minute tags	30 days	3 – SI, MODC, C, M, OS, OC, XS	1 min, 30 sec
26 1-minute tags	6 months	3 – SI, MODC, C, M, OS, OC, XS	5 min
26 1-minute tags	1 year	3 – SI, MODC, C, M, OS, OC, XS	10 min

Example Output using the Sample Invalid + MODC + C/M/OS/OC/XS option

The first line contains the date/time of the export and column headers for each tag, MODC and status flag. Note that the leftmost column (the zero and ones at far left in the screenshot below) is required for technical reasons but contains no useful data.



Below the header, each row contains the data of all the selected tags for one date/time in the export interval.

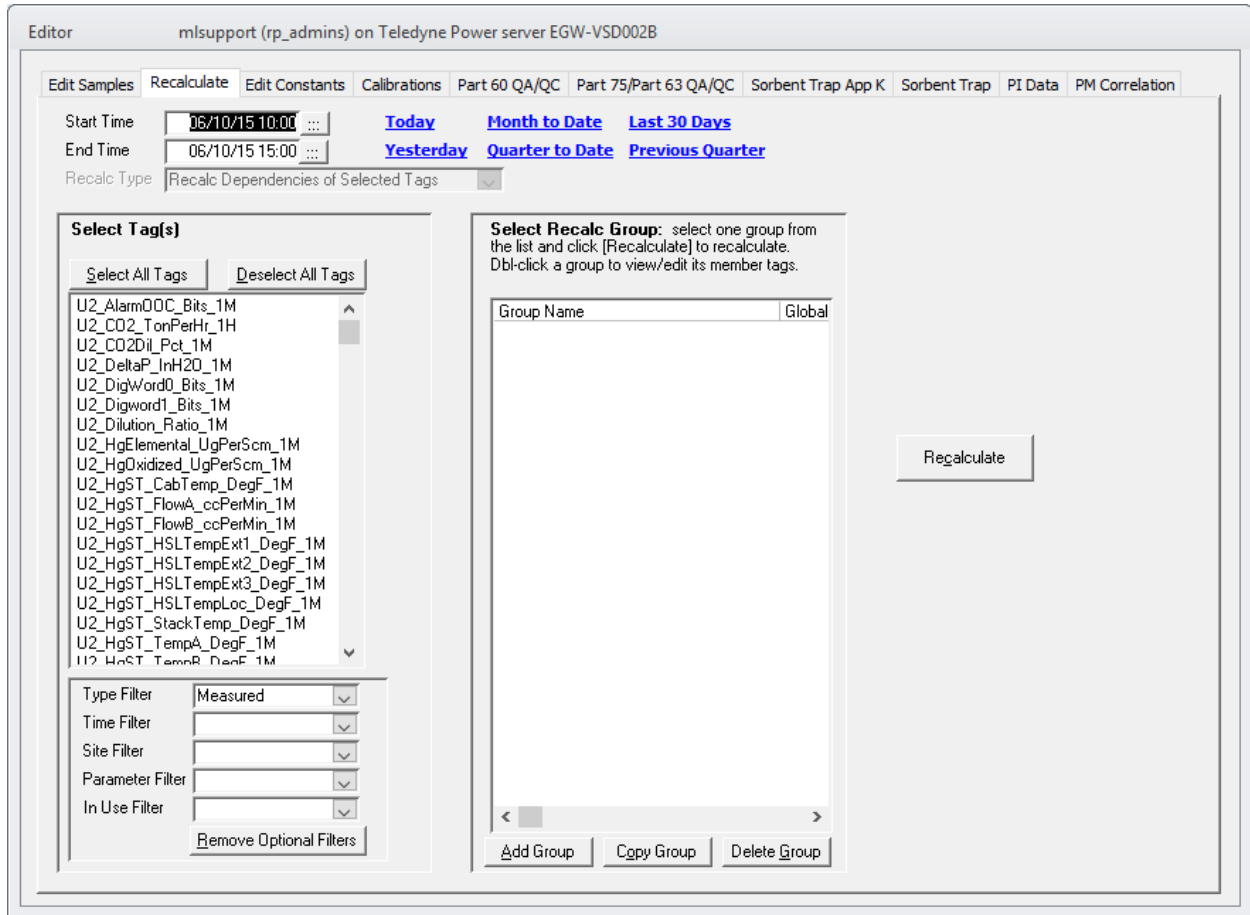
02/11/2016 16:54	U5_SO2_Ppm_1M	SI	MODC	C	M	OS	OC	>S
03/01/2014 00:00	47.0	SI	1	C				
03/01/2014 00:01	48.1	SI	1		M			
03/01/2014 00:02	49.2	SI	1			OS		
03/01/2014 00:03	50.3	SI	1				OC	
03/01/2014 00:04	51.4	SI	1				OC	
03/01/2014 00:05	52.5	SI	1				OC	
03/01/2014 00:06	53.6		1					>S
03/01/2014 00:07	54.7	SI	1	C		OS	OC	>S
03/01/2014 00:08	55.8		1					
03/01/2014 00:09	56.9		1					

The magnified view above shows the 2nd column (date/time) followed by the tag value, the SI flag, MODC and other flags. The presence of a status flag symbol indicates that the flag was set/true for that tag and date/time. Data values are shown to the configured decimal precision for each tag.

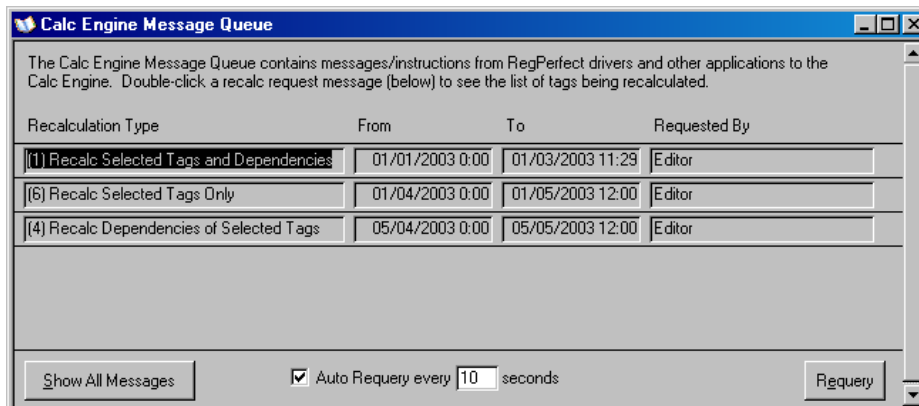
The status flag symbols are: **SI** – SampleInvalid, **C** – InCalibration, **M** – Missing, **OS** – OutOfService, **OC** – OutOfControl (also includes OOC_Manual and NotQualityAssured) and **>S** – ExceedsScale.

4. Recalculate

The *Recalculate* tab of the Main Window provides a convenient way of selecting tags and a time frame for recalculation. Recalculations may be necessary for various reasons including manual edits to measured Samples or a formula change to a calculated tag. To recalculate, you must select Start Time, End Time, Recalc Type and select between 1 and 32 tags. Then click the *Recalculate* button.



Tip: When you click Recalculate, the Editor application inserts your request into the Message Queue used by RegPerfect's [Calculation Engine](#). To see the status of your recalculation request, click Queue on the [menu bar](#).



4.1 Specify Start and End Times

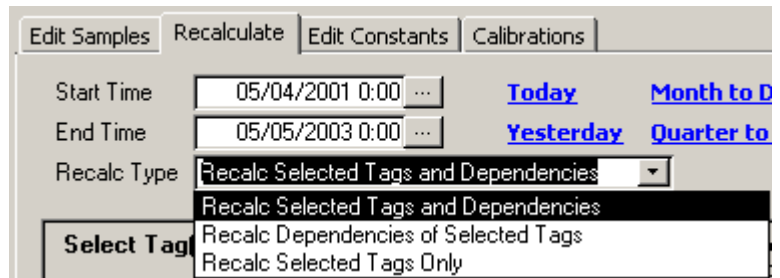
Although you can select any interval of time, recalculations over large intervals of time with many tags may take a long time to complete. It is usually better to break up your recalculations into smaller, more manageable sizes (a week or less) and make sure they have the desired effect before committing to longer recalculations.

The Start Time of your recalculation may not be earlier than the [Data Lock Date](#).

4.2 Choose the Recalculation Type

There are 3 different recalculation types, and each can be very useful depending on the circumstances. Select the recalculation type from the dropdown list.

The set of tags that ultimately get recalculated is entirely determined by the recalculation type:



The screenshot shows a software interface with a 'Recalculate' button. Below it, there are fields for 'Start Time' (05/04/2001 0:00) and 'End Time' (05/05/2003 0:00). To the right of these fields are links for 'Today', 'Month to D', 'Yesterday', and 'Quarter to'. Below the time fields is a 'Recalc Type' dropdown menu. The dropdown is open, showing three options: 'Recalc Selected Tags and Dependencies' (which is selected), 'Recalc Dependencies of Selected Tags', and 'Recalc Selected Tags Only'. A 'Select Tag' button is visible to the left of the dropdown.

Recalc Selected Tags and Dependencies

Each of the tags you explicitly selected and all “downstream” tags (those that are dependent on any of the tags you selected) get recalculated. For example, if you have selected the raw 1 hour NOx ppm and CO2 tags, this method will also force the recalculation of hourly NOx lbs/mmBtu, quarterly and annual CO2 and NOx and probably others. This is a very safe way to do recalculations because it ensures that modifications ripple through all the tags that might be affected.

Recalc Dependencies of Selected Tags

The tags you explicitly selected are not recalculated. Instead, all tags dependent on any of the tags you selected get recalculated. This is particularly useful after making manual edits to measured raw-level data because you don't have to know which calculated tags are affected by your editing – just let RegPerfect® figure it out for you. This is the only method allowed when the Tag Type filter is set to [Measured](#).

Recalc Selected Tags Only

Only the tags you explicitly selected get recalculated. This may be useful when you are trying to ensure you have solved a problem before committing to a long recalculation of many downstream tags.

4.3 Select Tags

Select one to 32 tags by single clicking the desired tag name(s) in the large list on the left side of the form. Since the list of tags may be quite long, filters are provided (just below the tag list) to help you come up with a shorter, more manageable tag list.

The screenshot shows a dialog box titled "Select Tag(s)". At the top, there are two buttons: "Select All Tags" and "Deselect All Tags". Below these is a large list box containing the following tags: U2_AlarmOOC_Bits_1M, U2_CO2_TonPerHr_1H, U2_CO2Dil_Pct_1M, U2_DeltaP_InH2O_1M, U2_DigWord0_Bits_1M, U2_Digword1_Bits_1M, U2_Dilution_Ratio_1M, U2_HgElemental_UgPerScm_1M, U2_HgOxidized_UgPerScm_1M, U2_HgST_CabTemp_DegF_1M, U2_HgST_FlowA_ccPerMin_1M, U2_HgST_FlowB_ccPerMin_1M, U2_HgST_HSLTempExt1_DegF_1M, U2_HgST_HSLTempExt2_DegF_1M, U2_HgST_HSLTempExt3_DegF_1M, U2_HgST_HSLTempLoc_DegF_1M, U2_HgST_StackTemp_DegF_1M, U2_HgST_TempA_DegF_1M, and U2_HgST_TempR_DegF_1M. Below the list box are five filter sections, each with a label and a dropdown menu: Type Filter (set to "Measured"), Time Filter, Site Filter, Parameter Filter, and In Use Filter. At the bottom of the filter section is a button labeled "Remove Optional Filters".

The Type Filter must always be set to *Measured* or *Calculated* because only one recalculation method is allowed for [measured tags](#). For the other filters, the first entry in the drop down list is a blank row. To disable a filter, click the blank row. To apply the filter, select any non-blank row – *Unit 1* in this example.

This is a close-up of the filter section from the previous image. It shows five filter labels: Type Filter, Time Filter, Site Filter, Parameter Filter, and In Use Filter. Each has a dropdown arrow. The 'In Use Filter' dropdown is currently open, displaying two options: 'True' and 'False'. The 'Type Filter' dropdown is set to 'Measured'.

Each time you select a filter from the drop down lists, the tag list is immediately updated.

To remove all filters (except the required *Type Filter*), click *Remove Optional Filters*.

4.4 Using Tag Recalc Groups

Although the filters make it easier to select the individual tag(s) you want to recalculate, it can still be a cumbersome process to filter your tag list and select the tags. *Recalc Groups* allow you to name and save a selected group of tags so that you only have to select the tags once – after the group has been created, you can select the tags with a single click. Recalc Groups are shown in the list box on the right side of the form.

Tip: To recalculate data for the tags in a Recalc Group, click to select the group in the Recalc Group list, then click the Recalculate button.

Select Recalc Group: select one group from the list and click [Recalculate] to recalculate. Dbl-click a group to view/edit its member tags.

Group Name	Global
Unit 1 Hourly Averages	Y
Unit 1 Raw Data	

Recalculate

Create Tag Recalc Groups

There are two ways to create Recalc Groups. First, you can choose the tags that will comprise the group in the tag list (on the left side of the form) by clicking/selecting from one to 32 tags. Then click the *Add Group* button.

Editor mlsupport (rp_admins) on Teledyne Power server EGW-VSD002B

Edit Samples Recalculate Edit Constants Calibrations Part 60 QA/QC Part 75/Part 63 QA/QC Sorbent Trap App K Sorbent Trap PI Data PM Correlation

Start Time 06/10/15 10:00 ... Today Month to Date Last 30 Days
End Time 06/10/15 15:00 ... Yesterday Quarter to Date Previous Quarter
Recalc Type Recalc Selected Tags and Dependencies

Select Tag(s)

Select All Tags Deselect All Tags

- U2_AvailCO2_PMA_1H
- U2_AvailHg_PMA_1H
- U2_AvailNOx_PMA_1H
- U2_AvailSO2_PMA_1H
- U2_AvailStackFlow_PMA_1H
- U2_CH4_MTon_1H
- U2_CH4Year_MTon_1H
- U2_CO2_MTon_1H
- U2_CO2_Pct_1H
- U2_CO2_Ton_1H
- U2_CO2_TonPerHr_1H
- U2_CO2Dil_Pct_1H
- U2_CO2Qtr_Ton_1H
- U2_CO2Year_MTon_1H
- U2_CO2Year_Ton_1H
- U2_DeltaP_InH2O_1H
- U2_Exempt_TF_1H
- U2_Fc_scfPerMBtu_1H
- U2_FlueGas_Coeff_Ratio_1H

Type Filter Calculated
Time Filter 1 Hour(s)
Site Filter
Parameter Filter
In Use Filter
Remove Optional Filters

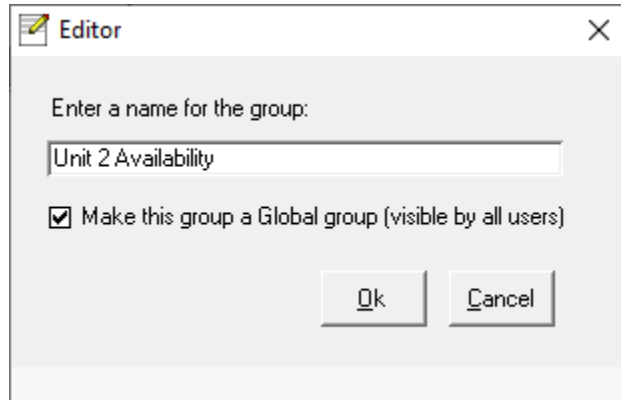
Select Recalc Group: select one group from the list and click [Recalculate] to recalculate. Dbl-click a group to view/edit its member tags.

Group Name	Global
------------	--------

Recalculate

Add Group Copy Group Delete Group

After selecting the tags and clicking *Add Group*, you are prompted to supply a name for the group and if the group should be a "Global" group (visible by all users):

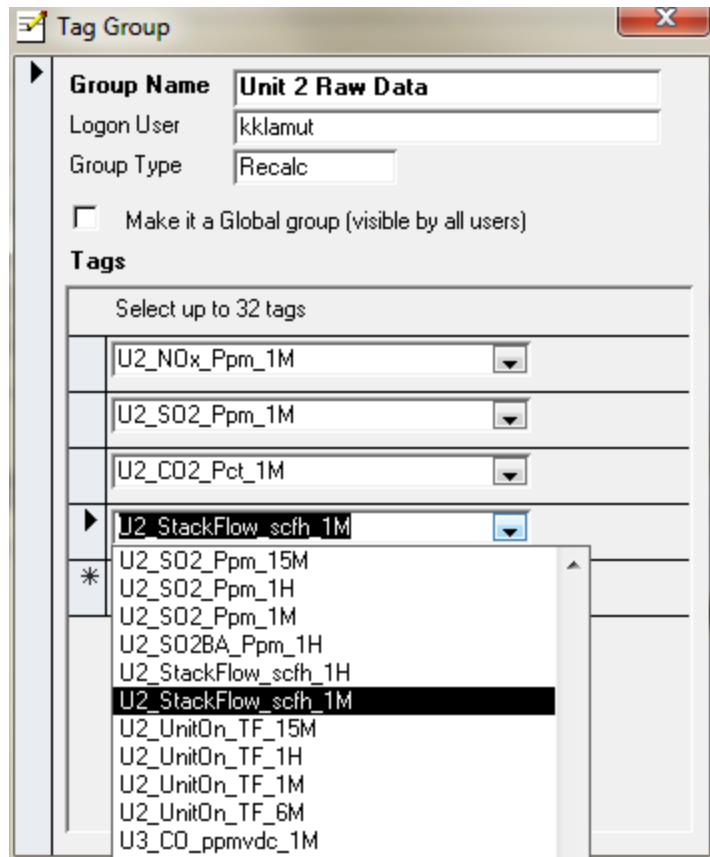


Click *OK* to add the Recalc Group. The group is added to the list and is displayed on the right side of the form.

The second way to add a Recalc Group is to click the *Add Group* button with no tags selected. This opens the Tag Group form.

Enter a name for your group and select the desired tags from the drop down lists. You can delete a tag from the group by single clicking on the record selector box (left of the tag name) and pressing the *Delete* button on your keyboard.

Unlike the Edit Groups on the Edit Sample tab, the Recalc Groups do not have a tag order. RegPerfect's Calculation Engine automatically determines the order in which tags are calculated.



Modify and Delete Tag Edit Groups

Select Recalc Group: select one group from the list and click [Recalculate] to recalculate. Dbl-click a group to view/edit its member tags.

Group Name	Global
Unit 1 Hourly Averages	Y
Unit 1 Raw Data	

< >

Add Group Copy Group Delete Group

To change the tags that comprise an existing Recalc Group, double click the Recalc Group Name to open the Tag Group form (discussed in the previous section). To delete, click to select the desired Recalc Group(s) and click the *Delete Group* button.

To use your Recalc Groups, click to select a single Recalc Group name, supply the Start and End times and a recalculation type, and click the *Recalculate* button.

Copy a Recalc Group to an Edit Group

A Recalc Group and its tags may be copied to the list of Edit groups. The Edit Groups are viewed on the Edit Samples tab. For more information on Edit Groups, see [Using Tag Edit Groups](#).

To copy a Recalc group, click to select the desired group and click the *Copy Group* button. Enter a name for the Edit group when prompted, and click *Ok* to add the new Edit group. Note that Edit Groups are restricted to a maximum of 6 tags, so an attempt to copy a Recalc group with more than 6 tags will not work.

Tip: Two Edit groups may not have the same name, and two Recalc groups may not have the same name. However, an Edit group may have the same name as a Recalc group.

5. Edit Constants

The Edit Constants tab of the Main Window allows you to view and edit RegPerfect® constant values. [Constants](#) are used in RegPerfect® to store values that change rarely such as calibration bottle values, bias factors, instrument spans, alarm limits and more.

Constant Name	Category	Data Type	Units	Current Value
M12_NOX_P_HighRange_Daily_High_RefValue	CalReferenceValue	Float	Ppm	794
M12_NOX_P_HighRange_Daily_Zero_RefValue	CalReferenceValue	Float	Ppm	0
M12_NOX_P_HighRange_Qtrly_Low_RefValue	CalReferenceValue	Float	Ppm	250.5
M12_NOX_P_HighRange_Qtrly_Mid_RefValue	CalReferenceValue	Float	Ppm	553
M12_O2D_P_HighRange_Daily_High_RefValue	CalReferenceValue	Float	Pct	20.84
M12_O2D_P_HighRange_Daily_Zero_RefValue	CalReferenceValue	Float	Pct	0
M12_O2D_P_HighRange_Qtrly_Low_RefValue	CalReferenceValue	Float	Pct	5.61
M12_O2D_P_HighRange_Qtrly_Mid_RefValue	CalReferenceValue	Float	Pct	10.18
M12_OPAC_P_HighRange_Daily_High_RefValue	CalReferenceValue	Float	Pct	30.7
M12_OPAC_P_HighRange_Daily_Zero_RefValue	CalReferenceValue	Float	Pct	0
M13_NOX_P_HighRange_Daily_High_RefValue	CalReferenceValue	Float	Ppm	794
M13_NOX_P_HighRange_Daily_Zero_RefValue	CalReferenceValue	Float	Ppm	0
M13_NOX_P_HighRange_Qtrly_Low_RefValue	CalReferenceValue	Float	Ppm	250.5
M13_NOX_P_HighRange_Qtrly_Mid_RefValue	CalReferenceValue	Float	Ppm	553
M13_O2D_P_HighRange_Daily_High_RefValue	CalReferenceValue	Float	Pct	20.84
M13_O2D_P_HighRange_Daily_Zero_RefValue	CalReferenceValue	Float	Pct	0
M13_O2D_P_HighRange_Qtrly_Low_RefValue	CalReferenceValue	Float	Pct	5.61
M13_O2D_P_HighRange_Qtrly_Mid_RefValue	CalReferenceValue	Float	Pct	10.18
M13_OPAC_P_HighRange_Daily_High_RefValue	CalReferenceValue	Float	Pct	29.7
M13_OPAC_P_HighRange_Daily_Zero_RefValue	CalReferenceValue	Float	Pct	0
M14_CO2W_P_HighRange_Daily_High_RefValue	CalReferenceValue	Float	Pct	6.12
M14_CO2W_P_HighRange_Daily_Zero_RefValue	CalReferenceValue	Float	Pct	0
M14_CO2W_P_HighRange_Qtrly_Low_RefValue	CalReferenceValue	Float	Pct	2.498
M14_CO2W_P_HighRange_Qtrly_Mid_RefValue	CalReferenceValue	Float	Pct	5.67
M14_COWDualRg_P_HighRange_Daily_High_RefValue	CalReferenceValue	Float	Ppm	1894
M14_COWDualRg_P_HighRange_Daily_Zero_RefValue	CalReferenceValue	Float	Ppm	0
M14_COWDualRg_P_HighRange_Qtrly_Low_RefValue	CalReferenceValue	Float	Ppm	603
M14_COWDualRg_P_HighRange_Qtrly_Mid_RefValue	CalReferenceValue	Float	Ppm	1351

Category Filter: CalReferenceValue | Calibration Type Filter: | Site Filter: | Calibration Level Filter: | Usage Filter: | Instrument Range Filter: | Remove All Filters

Sort By: Sort By Category Name, Constant Name | Sort By Constant Name
 Ascending | Descending

Edit Constant Values

This form shows the list of Constants used at your site. To edit a constant, double click the constant or single click to select it and then click the *Edit Constant Values* button.

5.1 Filter and Sort Constants

Because the list of Constants may be quite long, filters and sorts are provided to make it easier to find the Constant you are looking for.

To filter the Constants list, supply a *Category Filter*, *Site Filter*, *Usage Filter* or *Instrument Range Filter* by selecting from the drop down lists. For Calibration type constants there are 2 additional filters: *Calibration Type Filter* and *Calibration Level Filter*. The filter is applied as soon as you make your selection. To remove a filter, select the blank line at the top of the drop down list or click the *Remove All Filters* button.

Category Filter: [dropdown menu open]

- AlarmLimit
- AvailabilityStart
- CalReferenceValue
- FuelFlowStartDate
- FullScale
- MissingDataMaxMin
- OutputScalingFactor

By default, the Constants list is sorted in ascending order -- first by Category, then by Constant name. You may change the sort order by clicking the radio buttons. Suppose, for example, that you have three units – Units 1, 2 and 3 – and you want to find the calibration reference value constants for Unit 3. By clicking the *Sort By Constant Name* and *Descending* radio buttons, the Unit 3 bottle value constants can be brought near the top of the Constants list.

Sort By Category Name, Constant Name
 Sort By Constant Name
 Ascending Descending

5.2 Constant Value Editor Form

When you double click a Constant in the list, or when you single click to select a Constant and then click the *Edit Constant* button, the Edit Constant form is opened.

Constant Value Editor

Constant: MB_NO_P_HighRange_Daily_High_RefValue

Category: CalReferenceValue Units: Ppm Data Type: Float

Effective From	Effective Through	Value	Gas Type	Vendor ID	Cylinder ID	Certification Date	Expiration Date
09/30/08 7:30		242			CC230220	05/20/08 0:00	
09/02/08 7:00	09/30/08 7:29	241			137703		
08/14/08 7:00	09/02/08 6:59	243					
06/29/08 8:15	08/14/08 6:59	248					
06/06/08 7:40	06/29/08 8:14	247					
04/23/08 14:00	06/06/08 7:39	248					
04/09/08 12:00	04/23/08 13:59	242					

Buttons: Add New, Close

In the example above, the NO span bottle value constant is displayed. The Constant name, category and data type at the top of the form are read-only, but the Units can be edited. The center section of the form shows all of the Constant's values along with their effectivity dates. In the above sample, the bottle value was 241 until September 30, and is currently 242 (the null Effective Through date/time indicates this value is the "current" value).

It is important to RegPerfect® applications that the Effective From date/time of each Constant value is exactly 1 minute later than the Effective Through date of the previous value. It is also important that exactly one Constant value has a null Effective Through date. For these reasons, Editor automatically supplies and adjusts the effective dates when you add, modify or delete Constant values.

For calibration reference constants associated with Part 75 daily calibrations (high injection only) and linearity tests, the following fields are required and will be printed on emissions and QA/Certification EDRs:

- Gas Type
- Vendor ID
- Cylinder ID
- Expiration Date

Add a Constant Value

To add a new value for the Constant, click the *Add New* button. A new blank row is displayed and the cursor is placed in the Effective From box.

Value(s)		
Effective From	Effective Through	Value of Constant During Effective Period
03/04/2003 12:34 ...		19.9
01/01/2003 0:00 ...	03/04/2003 12:33	19.6

Enter the Effective From date/time and the Value. The Effective Through date is not editable.

Value(s)		
Effective From	Effective Through	Value of Constant During Effective Period
03/04/2003 12:34 ...		19.9
01/01/2003 0:00 ...	03/04/2003 12:33	19.6
05/23/2003 14:22 ...		18.4

Your changes are saved when you click on or tab to any box on the form that is not on the row you are editing. The Effective Through date is automatically supplied by the Editor application, and the Constant values are resorted to from newest to oldest.

Value(s)		
Effective From	Effective Through	Value of Constant During Effective Period
05/23/2003 14:22 ...		18.4
03/04/2003 12:34 ...	05/23/2003 14:21	19.9
01/01/2003 0:00 ...	03/04/2003 12:33	19.6

The new Constant value has been moved to the top of the list with a null Effective Through date (indicating that this is the current bottle value until a new one is added). Note that the Effective Through date of the 19.9 bottle value has been automatically adjusted and set to 1 minute prior to the Effective From date you supplied for the new bottle value.

To add a Constant value with an effectivity period that falls between or before existing Constant values, just add a new value as described above and supply the correct Effective From date. The Edit Constant form will adjust other constants' effectivity periods automatically. In the example below, look at the picture on the left. A new Constant value of 20 that takes effect on 4/12/03 is being added but has not yet been saved. The picture on the right shows the form after the new Constant value has been saved.

The new constant value was correctly placed between the old 3/4/03 and 5/23/03 rows and the Effective Through dates were all correctly adjusted by the Editor application.

Effective From	Effective Through	Value of Constant Effective Period
05/23/2003 14:22 ...		18.4
03/04/2003 12:34 ...	05/23/2003 14:21	19.9
01/01/2003 0:00 ...	03/04/2003 12:33	19.6
04/12/2003 18:55 ...		20

Effective From	Effective Through	Value of Constant Effective Period
05/23/2003 14:22 ...		18.4
04/12/2003 18:55 ...	05/23/2003 14:21	20
03/04/2003 12:34 ...	04/12/2003 18:54	19.9
01/01/2003 0:00 ...	03/04/2003 12:33	19.6

Edit Constant Values

To change a Constant value, type over the value and/or Effective From date. To save, close the form or click on any box not in the row being edited. The Edit Constant form automatically adjusts the Effective Through date if necessary.

Delete Constant Values

To delete a Constant value, click the record selector box just left of the Effective From date and press the *Delete* key on your keyboard. The 4/12/2003 Constant value is selected in the example below. You may select more than 1 record at a time using *Shift-Click*.

Value[s]			
	Effective From	Effective Through	Value of Constant During Effective Period
	05/23/2003 14:22 ...		18.4
▶	04/12/2003 18:55 ...	05/23/2003 14:21	20
	03/04/2003 12:34 ...	04/12/2003 18:54	19.9
	01/01/2003 0:00 ...	03/04/2003 12:33	19.6

Tip: Be cautious about deleting Constant values. RegPerfect® calculations and reports may not function correctly if you delete all of a Constant's values or if you delete values with old effectivity dates and later run a report over that interval.

6. Calibrations

The *Calibrations* tab of the Main Window is used to view/edit calibrations and interference tests, to edit cal bottle values and to reassess daily QA tests. The form contains two tabs – one for working with daily calibrations and interference tests, another for working with quarterly calibrations.

Editor: Main Window Current User: JHGILMER

Daily QA Tests

Start Time

End Time

Select Instrument: select one or multiple instruments

Site	Analyzer	Range	P/B	QA Test Type	Part 75	Part 60
U1	CO2	High	P	Daily Cal	Yes	Yes
U1	FLOW	High	P	Daily Cal	Yes	Yes
U1	FLOW	High	P	Interference	Yes	-
U1	GFFM	High	P	Daily Cal	Yes	-
U1	NOX	High	P	Daily Cal	Yes	-
U1	OFFM Mass	High	P	Daily Cal	Yes	Yes
U1	OFFM Vol	High	P	Daily Cal	Yes	Yes
U1	SO2	High	P	Daily Cal	Yes	Yes
U2	H2O	High	P	Daily Cal	Yes	-
U2	NOX Low	Low	P	Daily Cal	Yes	-
U2	O2D	High	P	Daily Cal	Yes	-
U2	O2W	High	P	Daily Cal	Yes	-
U2	SO2 DualRg	High	P	Daily Cal	Yes	-
U2	SO2 DualRg	Low	P	Daily Cal	Yes	-
U3	SO2	High	P	Daily Cal	Yes	-

Site Filter

 Analyzer Filter

 P/B Filter

 Range Filter

Select Action: use one of the buttons below to view/edit tests or reference values, or to reassess test results

From

Show only Failed QA Tests

For QA tests used to report for both Part 60 and Part 75, view results according to

6.1 Daily QA Tests

The *Daily QA Tests* tab lists all the instruments configured for daily cal, interference, integrity or beam intensity checks on the left. On the right are three boxes containing buttons – these are the three things you can do with your [daily QA tests](#): view/edit the tests, edit the reference values and reassess test results. At bottom left are dropdown boxes that can be used to filter the list of instruments.

Daily QA Tests | Linearity / CGA

Start Time: 03/22/2004 14:00 ... Today Last 24 Hours Quarter to Date
 End Time: 03/23/2004 13:59 ... Yesterday Month to Date Previous Quarter

Select Instrument: select one or multiple instruments

Select All Deselect All

Site	Analyzer	Range	P/B	QA Test Type	Part 75	Part 60
U1	CO2	High	P	Daily Cal	Yes	Yes
U1	FLOW	High	P	Daily Cal	Yes	Yes
U1	FLOW	High	P	Interference	Yes	-
U1	GFFM	High	P	Daily Cal	Yes	-
U1	NOX	High	P	Daily Cal	Yes	-
U1	OFFM Mass	High	P	Daily Cal	Yes	Yes
U1	OFFM Vol	High	P	Daily Cal	Yes	Yes
U1	SO2	High	P	Daily Cal	Yes	Yes
U2	H2O	High	P	Daily Cal	Yes	-
U2	NOX Low	Low	P	Daily Cal	Yes	-
U2	O2D	High	P	Daily Cal	Yes	-
U2	O2w	High	P	Daily Cal	Yes	-
U2	SO2 DualRg	High	P	Daily Cal	Yes	-
U2	SO2 DualRg	Low	P	Daily Cal	Yes	-
U3	SO2	High	P	Daily Cal	Yes	-

Site Filter: [] Analyzer Filter: [] P/B Filter: [] Range Filter: [] Remove All Filters

Select Action: use one of the buttons below to view/edit tests or reference values, or to reassess test results

Edit Daily QA Tests

For QA tests used to report for both Part 60 and Part 75, view results according to: [Part 75]

Show only Failed QA Tests

Edit Reference Values

Reassess Test Results

From: 03/23/04 00:00 ...

Specify Start and End Times

Supply values for Start Time and End Time at the top left of the form. There are no restrictions on the interval of time you select.

Select Instruments

Single click to select the desired instrument(s) in the instrument list on the left side of the form. At sites with full CEMs and multiple units, the instrument list can be rather long, so filters are provided.

The first entry in the drop down list for each filter is a blank row. To disable a filter, click/select the blank row. To apply the filter, select any non-blank row.

Each time you select a filter from the drop down lists, the instrument list is immediately updated. To remove filters, select the blank row from the filter drop down list, or click *Remove All Filters*.

Select Instrument: select one or multiple instruments

Select All Deselect All

Site	Analyzer	Range	P/B	QA Test Type	Part 75	Part 60
U1	CO2	High	P	Daily Cal	Yes	Yes
U1	FLOW	High	P	Daily Cal	Yes	Yes
U1	FLOW	High	P	Interference	Yes	-
U1	GFFM	High	P	Daily Cal	Yes	-
U1	NOX	High	P	Daily Cal	Yes	-
U1	OFFM Mass	High	P	Daily Cal	Yes	Yes
U1	OFFM Vol	High	P	Daily Cal	Yes	Yes
U1	SO2	High	P	Daily Cal	Yes	Yes
U2	H2O	High	P	Daily Cal	Yes	-
U2	NOX Low	Low	P	Daily Cal	Yes	-
U2	O2D	High	P	Daily Cal	Yes	-
U2	O2w	High	P	Daily Cal	Yes	-
U2	SO2 DualRg	High	P	Daily Cal	Yes	-
U2	SO2 DualRg	Low	P	Daily Cal	Yes	-
U3	SO2	High	P	Daily Cal	Yes	-

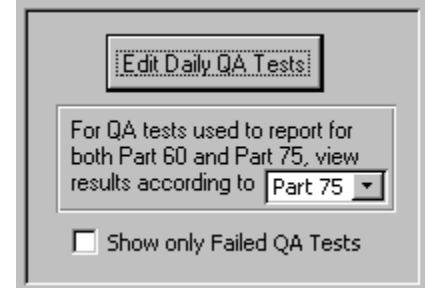
Site Filter: [] Analyzer Filter: [] P/B Filter: [] Range Filter: [] Remove All Filters

Edit Daily QA Tests

To view/edit daily QA tests, select the desired instruments and the start and end times, then click the *Edit Daily QA Tests* button to open the [Daily Calibration Editor](#) form.

There are two optional settings that may affect which tests are displayed or how the test results are shown. At some sites, daily calibration tests are configured in RegPerfect® as being subject to both Part 60 and Part 75 regulations. The dropdown list box allows you to select which regulation is used to show test results (pass/fail).

To show only failed tests, check the *Show only Failed QA Tests* check box.



Tip: Editor provides a fast and easy way to check for failed daily QA tests. Open the Editor application, click on the Calibrations tab and click the Select All button. Set Start Time to today at 00:00 and End Time to current time and check the Show only Failed QA Tests check box. Then click Edit Daily QA Tests. Using just four mouse clicks, you can see whether you failed any daily QA tests.

Daily Calibration Editor Form

This form shows test results for the instruments and interval you selected on the Daily QA Tests property sheet. In the example below, the interval is 1/1/2003 to 1/3/2003, and the selected instruments are CO2, NOx, SO2 and FLOW (both for calibrations and for interference tests).

Daily Calibration Editor																
Filters:		From		To		For QA tests used to report for both Part 60 and Part 75, view results according to									Show only Failed QA Tests (failed daily calibrations or interference checks)	
		01/01/2003 0:00		01/03/2003 0:00		Part 75									<input type="checkbox"/>	
Test End Time	Instrument	Site	Description	P/B	Range	Rule	Result	Use For QA	Test Level	End Time	Span Value	Reference Value	Actual Value	Deviation	Result	Online
01/01/03 0:00	U1	SO2	P	High	Part 75	Warning	<input checked="" type="checkbox"/>	Zero	0:00	2000.0	0.0	2.6	0.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
								High	0:00	2000.0	1750.0	1698.3	2.6	>1x	<input checked="" type="checkbox"/>	
01/01/03 7:30	U1	CO2	P	High	Part 75	Fail	<input checked="" type="checkbox"/>	Zero	7:15	15.0	0.0	0.2	1.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
								High	7:30	15.0	13.0	14.1	7.3	>2x	<input checked="" type="checkbox"/>	
01/01/03 7:30	U1	FLOW	P	High	Part 75	Pass	<input checked="" type="checkbox"/>	Zero	7:15	1.2	0.0	0.0	0.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
								High	7:30	1.2	0.8	0.8	0.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
01/01/03 7:30	U1	FLOW	P	High	Part 75	Pass	<input checked="" type="checkbox"/>	INT	7:30					<input type="checkbox"/>	<input checked="" type="checkbox"/>	
														<input type="checkbox"/>	<input type="checkbox"/>	
01/01/03 7:30	U1	NOx	P	High	Part 75	Fail	<input checked="" type="checkbox"/>	Zero	7:15	500.0	0.0	2.3	2.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
								High	7:30	500.0	450.0	423.0	27.0	>2x	<input checked="" type="checkbox"/>	
01/02/03 0:00	U1	SO2	P	High	Part 75	Pass	<input checked="" type="checkbox"/>	Zero	0:00	2000.0	0.0	5.1	0.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
								High	0:00	2000.0	1750.0	1722.3	1.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
01/02/03 7:30	U1	CO2	P	High	Part 75	Warning	<input checked="" type="checkbox"/>	Zero	7:15	15.0	0.0	0.6	4.0	>1x	<input checked="" type="checkbox"/>	
								High	7:30	15.0	13.0	12.8	1.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
01/02/03 7:30	U1	FLOW	P	High	Part 75	Pass	<input checked="" type="checkbox"/>	Zero	7:15	1.2	0.0	0.0	0.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
								High	7:30	1.2	0.8	0.8	0.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

The header area of the Daily Calibration Editor shows the interval of data being displayed, the regulation being used to assess test results and the filter for showing only failed tests.

To change the QA tests being displayed by the form, modify the From time, To time, regulation and/or the failed test filter and click the *Requery* button in the form footer.

Tip: If your site uses both Part 60 and Part 75 criterion to assess calibration results, you can view the test results first one way and then the other. Just click the drop down list, select the desired regulation and click the Requery button.

The daily QA test results are shown in the center of the form sorted by Test End Time then by Instrument name. The overall test result is shown in the Result column near the center of the form (in bold). The result of individual zero, span, integrity or beam intensity checks is shown in the Result column at far right. From left to right, the columns are:

Test End Time	The overall end time of the QA test
Site	The mnemonic of the monitoring site in which the instrument resides
Description	The instrument type or parameter
P/B	<i>P</i> indicates primary, <i>B</i> indicates a backup analyzer
Range	<i>High</i> or <i>Low</i> – the range of the analyzer
Rule	<i>Part 75</i> or <i>Part 60</i> – indicates the regulation used to assess the test result
Result	The overall result of the test: <ul style="list-style-type: none"> <i>Pass</i> the test passed <i>Warn</i> the test passed, but one or more tests were close to failure <i>Fail</i> the test failed <i>Inc</i> the test passed, but was incomplete (only the zero or only the span) <i>Off</i> the test was conducted while the unit was offline and QA tests for this instrument are not configured to use offline tests
Use For QA	A check indicates that this test is being used for quality assurance. You can uncheck this box for a test that failed for reasons not relating to the CEMs (lightning strike, for example). If you later reassess test results, the test will be ignored.
Test Level	<i>Zero</i> , <i>Mid</i> or <i>High</i> for a daily calibration test, <i>INT</i> for an interference test
End Time	The end time of the test
Span Value	The span of the instrument
Ref Value	The bottle or reference value (double-click to edit)
Actual Value	The actual value recorded by the CEMs
Deviation	The deviation between Reference and Actual values which may be computed as $ R-A $ or as $ R-A / \text{Span}$
Result	The result of an individual range test (zero, mid or high): <ul style="list-style-type: none"> <i>blank</i>: deviation was less than the performance specification (PS) <i>>0x</i>: beam intensity was less than established minimum <i>>1x</i>: $1 \times \text{PS} \leq \text{deviation} < 2 \times \text{PS}$ <i>>2x</i>: $2 \times \text{PS} \leq \text{deviation}$. For a cal using Part 60 rules, this also indicates that the deviation was less than 4 x PS. <i>>4x</i>: deviation was greater than 4 x PS (Part 60 only)

- Off:* the test was conducted while the unit was offline and the instrument is not configured to use offline tests
- ERR:* the deviation could not be computed (most likely because the instrument span is incorrectly configured as zero)

Online A check in this box indicates that the unit was online during the test

While most of the values are read-only, you may edit these fields:

- *Reference Value:* double click the reference value to open the [Constant Value Editor](#) form.
- *Use For QA:* uncheck this box to cause a calibration to be ignored for the purposes of data validation
- *Actual Value:* for unusual circumstances involving data recovery or real-time data collection problems, users that are members of the RP_ADMINS or RP_MANAGERS security groups may modify the actual value

To save edits to *Use For QA* or *Actual Value*, close the form, or click on any field on a different test/row than the one being edited.

The bottom of the Daily Calibration Editor form has several buttons:

- Previous** Shows daily QA tests from the previous interval. The interval is the amount of time between the *From* and *To* times shown at the top of the form.
- Next** Shows daily QA tests from the next interval.
- Requery** Requeries the database based on the current interval, regulation and failed test filter and refreshes the information being displayed.
- Close** Close the Daily Calibration Editor form.
- Reassess** Inserts a command into the [Message Queue](#) instructing RegPerfect's [Calculation Engine](#) to reassess daily QA tests. The instrument whose tests are reassessed and the reassessment start time are determined by which test in the list you last clicked on. For example, if you click on the U1 CO2 daily cal that ended on 1/2/2003 at 7:30am, the reassessment is performed for CO2 beginning with that test.



A screenshot of the bottom of the Daily Calibration Editor form. It shows a row of buttons with the following text from left to right: '01/02/03 7:30', 'U1', 'CO2', 'P', 'High', 'Part 75', and 'Warning'.

Add New

The [Add New] button, added for RegPerfect v7, allows users in the RP_ADMINS or RP_MANAGERS security groups to manually insert daily calibrations, interference checks, weekly integrity tests and beam intensity checks.

The screenshot shows the 'Daily Calibration Editor' window. At the top, there are filter fields for 'From' (04/01/15 0:00) and 'To' (04/02/15 5:53). A dropdown menu is set to 'Part 75'. Below the filters is a table with columns: Test End Time, Instrument (Site, Description, P/B, Range), Rule, Result, Use For QA, Test Level, End Time, Span Value, Reference Value, Actual Value, Deviation, Result, Used Alt Spec, and Online. The table contains four rows of test data, each with two sub-rows for 'Zero' and 'High' test levels. At the bottom of the window, there are buttons for 'Previous', 'Next', 'Requery', 'Reassess', 'Report', 'Add New', and 'Close'.

To manually add a new test, you must have the Daily Calibration Editor form open. Click any field on the instrument/test-type type row that you want to add. In the example above, the form is displaying both daily calibrations and interference tests. If you want to add a new daily cal test, first place your cursor in a field – like Test Level or Result – on one of the daily cal test rows by clicking in that field. Then click the [Add New] button to open the *Insert Daily/Weekly Test* form.

The screenshot shows the 'Insert Daily/Weekly Test' form overlaid on the table. The form has a blue header with the title 'Insert Calibration, Interference, Integrity or Beam Intensity Check'. Below the header, there are input fields for 'Instrument Name / Range' (CS3_DP_P_Instrument / High) and 'Calibration Type' (Daily). A 'Done' button is next to the instrument name field. Under the 'Use For' section, there is a checked checkbox for 'Quality Assurance'. Below this, there are input fields for 'Test Level' (Zero, High), 'Test End Time' (with a calendar icon), and 'Actual Value'. An 'Insert Test' button is located at the bottom right of the form.

Fill in the required fields and click [Insert Test]. You may insert multiple tests if desired before clicking [Done] to close the form. Note: when inserting a new interference check, enter an Actual Value of 1 for a passed test or 0 for a failed test.

Interference Test Editor Form

The Daily Calibration Editor form, discussed in the previous section, is opened when you have selected instruments with daily calibration tests. If you have also selected one or more flow monitors' interference checks, the interference tests are shown in the same format as daily cals but with some blanks.

Site	Analyzer	Range	P/B	QA Test Type	Part 75	Part 60
U1	CO2	High	P	Daily Cal	Yes	Yes
U1	FLOW	High	P	Daily Cal	Yes	Yes
U1	FLOW	High	P	Interference	Yes	-

However, if you only select interference tests and no calibration tests to view/edit, the Interference Test Editor form is opened. This form shows only the information that is pertinent to interference checks.

Test End Time	Instrument			Result	Use For	
	Site	Description	P/B		QA	Online
01/01/03 7:30	U1	FLOW	P	Pass	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
01/02/03 7:30	U1	FLOW	P	Pass	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

There are fewer columns shown for interference tests:

Test End Time The overall end time of the QA test

Site The mnemonic of the monitoring site in which the instrument resides

Description The instrument type or parameter

P/B *P* indicates primary, *B* indicates a backup analyzer

Result The overall result of the test:

Pass the test passed

Fail the test failed

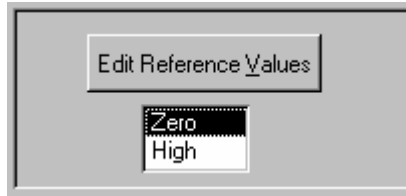
Use For QA A check indicates that this test is being used for quality assurance. You can uncheck this box for a test that failed for reasons not relating to the CEMs (lightning strike, for example). If you then reassess test results, the test will be ignored.

Online A check in this box indicates that the unit was online during the test

In all other ways, the buttons and controls on the form work identically to their counterparts on the [Daily Calibration Editor](#) form.

Edit Reference Values

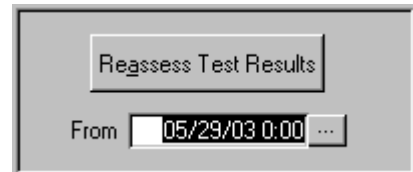
To view or edit reference values, select a single instrument from the instrument list. Select a test range (Zero, Mid or High) and click the *Edit Reference Values* button. The [Constant Value Editor](#) form opens.



Reassess Test Results

RegPerfect® assesses the results of daily calibrations and interference tests shortly after the tests are completed. Tests may be [reassessed](#) to correct problems that occur in real time.

To reassess the test(s), select one or more instruments in the instrument list. Then supply the start time of the reassessment interval in the *From* box (shown at right). Finally, click the *Reassess Test Results* button.



You may also reassess tests from the [Daily Calibration Editor](#) form.

Tip: Any time you reassess QA tests, the reassessment end time is automatically set to current PC clock time by Editor. This is necessary to avoid potential user error in underestimating the effects of the changes in the status of one calibration error test -- changes to one test may cause a ripple effect of changes to other tests for quite a long period.

6.2 Linearity / CGA Tests

The *Linearity / CGA* tab lists all the instruments configured for quarterly calibration tests on the left side of the form. On the right are three boxes containing buttons – these are the three things you can do with your quarterly calibration: view/edit the tests, edit the reference values and insert a new test. At bottom left are dropdown boxes that can be used to filter the list of instruments.

The screenshot shows the 'Linearity / CGA' form. At the top, there are date pickers for 'Start Time' (01/01/16 0:00) and 'End Time' (08/31/16 14:42), along with buttons for 'Today', 'Last 24 Hours', 'Quarter to Date', 'Yesterday', 'Month to Date', and 'Previous Quarter'. Below this is a 'Select Instrument' section with 'Select All' and 'Deselect All' buttons. A table lists instruments with columns for Site, Analyzer, Range, P/B, Part 75, and Part 60. The 'K5 HCl' row is selected. Below the table are filters for Site, Analyzer, P/B, and Range, with a 'Remove All Filters' button. To the right, the 'Select Action' section contains three boxes: 'Edit Quarterly Cals' with a dropdown for 'Part 75', 'Edit Reference Values' with a dropdown for 'Zero', 'Mid', 'High', and two 'Insert Quarterly Cals' buttons.

Site	Analyzer	Range	P/B	Part 75	Part 60
K5	CO2	High	P	Yes	Yes
K5	CO Inlet	High	P	-	Yes
K5	HCl	High	P	-	Yes
K5	HCl	Low	P	Yes	Yes
K5	Hg	High	P	Yes	-
K5	NH3	High	P	-	Yes
K5	NO	High	P	-	Yes
K5	NOX	High	P	Yes	Yes
K5	NOX	Low	P	Yes	-
K5	O2D	High	P	Yes	Yes
K5	PM	High	P	-	Yes
K5	SO2	High	P	Yes	Yes
K5	THC	High	P	Yes	Yes

Specify Start and End Times

Supply values for Start Time and End Time at the top left of the form. There are no restrictions on the interval of time you select. If you select a very large interval (years) and you feel the editing performance is too slow, choose a smaller interval.

Select Instruments

Single click to select the desired instrument(s) in the list on the left side of the form. In the example at right, the K5 HCl instrument has been selected. At sites with full CEMs and multiple units, the instrument list can be rather long, so filters are provided (just below the instrument list) to help you come up with a shorter, more manageable list.

The first entry in the drop down list for each filter is a blank row. To disable a filter, click/select the blank row. To apply the filter, select any non-blank row.

This is a close-up of the 'Select Instrument' section from the screenshot above. It shows the table with 'K5 HCl' selected and the filters below it. The Site Filter is set to 'No. 5 Cement Kiln'.

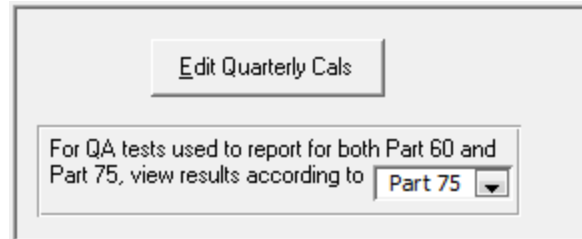
Site	Analyzer	Range	P/B	Part 75	Part 60
K5	CO2	High	P	Yes	Yes
K5	CO Inlet	High	P	-	Yes
K5	HCl	High	P	-	Yes
K5	HCl	Low	P	Yes	Yes
K5	Hg	High	P	Yes	-
K5	NH3	High	P	-	Yes
K5	NO	High	P	-	Yes
K5	NOX	High	P	Yes	Yes
K5	NOX	Low	P	Yes	-
K5	O2D	High	P	Yes	Yes
K5	PM	High	P	-	Yes
K5	SO2	High	P	Yes	Yes
K5	THC	High	P	Yes	Yes

Each time you select a filter from the drop down lists, the instrument list is immediately updated. To remove filters, select the blank row from the filter drop down list, or click *Remove All Filters*.

Edit Quarterly Calibration Tests

To view/edit quarterly calibrations, select the desired instrument(s) and the start and end times, then click the *Edit Quarterly Cals* button to open the [Quarterly Calibration Editor](#) form.

At some sites, calibration tests are configured in RegPerfect® as being subject to both Part 60 and Part 75 regulations. The dropdown list box allows you to select which regulation is used to format test results (i.e. Low/Mid/High for Part 75, Audit Points 1 and 2 for Part 60).



Quarterly Calibration Editor Form

This form shows quarterly calibration test results for the instrument(s) and interval you selected on the Linearity / CGA property sheet. In the example below, the interval is 1/1/2016 to 8/31/2016 14:42, and the selected instrument is HCl.

Quarterly Calibration Editor														
Filters: From 01/01/16 0:00 To 08/31/16 14:42 For QA tests used to report for both Part 60 and Part 75, view results according to Part 75														
Cal End Time	Instrument			Rule	Use For QA	Test Level	End Time	Full Scale Value	Span Value	Reference Value	Actual Value	Drift		
	Site	Description	P/B Range									% Error	IR-AI	
01/01/16 1:05	K5	HCl	P	High	Part 75	<input checked="" type="checkbox"/>	Zero	01/01/16 1:03	30.0	45.0	0.0	0.1	0.2%	0.1
							Mid	01/01/16 1:04	30.0	45.0	17.5	17.1	0.9%	0.4
							High	01/01/16 1:05	30.0	45.0	28.0	28.9	2.0%	0.9
01/01/16 1:10	K5	HCl	P	High	Part 75	<input checked="" type="checkbox"/>	Zero	01/01/16 1:08	30.0	45.0	0.0	-0.1	0.2%	0.1
							Mid	01/01/16 1:09	30.0	45.0	17.5	17.9	0.9%	0.4
							High	01/01/16 1:10	30.0	45.0	28.0	27.1	2.0%	0.9
01/01/16 1:15	K5	HCl	P	High	Part 75	<input checked="" type="checkbox"/>	Zero	01/01/16 1:13	30.0	45.0	0.0	0.1	0.2%	0.1
							Mid	01/01/16 1:14	30.0	45.0	17.5	17.9	0.9%	0.4
							High	01/01/16 1:15	30.0	45.0	28.0	27.1	2.0%	0.9
01/01/16 15:00	K5	HCl	P	High	Part 75	<input type="checkbox"/>	Zero	01/01/16 5:00	30.0	45.0	0.0	0.1	0.2%	0.1
							Mid	01/01/16 10:00	30.0	45.0	17.5	17.9	0.9%	0.4
							High	01/01/16 15:00	30.0	45.0	28.0	28.9	2.0%	0.9

Previous Next Bequery Close

The header area of the Quarterly Calibration Editor shows the interval of data being displayed and the regulation being used to format the tests.

Filters: From To For QA tests used to report for both Part 60 and Part 75, view results according to

To change the QA tests being displayed by the form, modify the From time, To time or regulation, then click the *Requery* button in the form footer.

Tip: If your site reports calibrations using both Part 60 and Part 75, you can view the test first one way and then the other. Just click the drop down list, select the desired regulation and click the Requery button.

For QA tests used to report for both Part 60 and Part 75, view results according to

The quarterly calibration tests are shown in the center of the form sorted by Test End Time then by Instrument name.

Cal End Time	Instrument				Rule	Use For QA	Test Level	End Time	Full Scale Value	Span Value	Reference Value	Actual Value	Drift	
	Site	Description	P/B	Range									% Error	R-A
01/01/16 1:05	K5	HCl	P	High	Part 75	<input checked="" type="checkbox"/>	Zero	01/01/16 1:03	30.0	45.0	0.0	0.1	0.2 %	0.1
							Mid	01/01/16 1:04	30.0	45.0	17.5	17.1	0.9 %	0.4
							High	01/01/16 1:05	30.0	45.0	28.0	28.9	2.0 %	0.9

From left to right, the columns are:

- Cal End Time** The overall end time of one 2 or 3-range calibration test
- Site** The mnemonic of the monitoring site in which the instrument resides
- Description** The instrument type or parameter
- P/B** *P* indicates primary, *B* indicates a backup analyzer
- Range** *High* or *Low* – the range of the analyzer
- Rule** *Part 75* or *Part 60* – indicates the regulation used to format the test
- Use For QA** A check indicates that this test is being used for quality assurance. You can uncheck this box for a test that failed for reasons not relating to the CEMs (lightning strike, for example).
- Test Level** *Low*, *Zero* or *Audit Point 1*; *Mid* or *Audit Point 2*; or *High*.
- End Time** The end time of the test
- Full Scale Value** Full scale of the instrument and range at cal end time.
- Span Value** Span of the instrument and range at cal end time.
- Reference Value** The bottle or reference value (double-click to edit)
- Actual Value** The actual value recorded by the CEMs
- % Error** The deviation expressed as the absolute value of the difference of the Reference and Actual Values divided by the Reference, Full Scale or Span Value as configured in the calibration definition. If configured as |R-A|, |R-A|/Reference * 100 is calculated for this column.
- |R-A|** The deviation expressed as the absolute value of the difference between Reference and Actual values

The columns with pure white backgrounds are editable, the others are read-only. To edit the reference value, double click it to open the [Constant Value Editor](#) form. To modify other columns, type your

changes directly over the displayed values, then close the form or click on any box on the form that is not on the row you are editing to save.

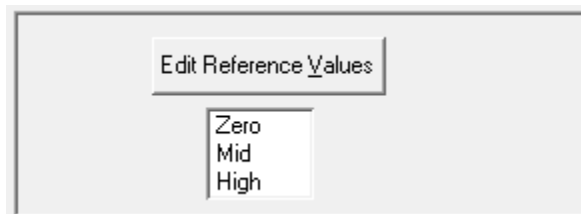
To delete one or more quarterly calibrations, click to select the record selector (left of the Cal End Time column) and press the *Delete* key on your keyboard.

The bottom of the Quarterly Calibration Editor form has several buttons:

- Previous** Shows quarterly cals from the previous interval. The interval is the amount of time between the *From* and *To* times shown at the top of the form.
- Next** Shows quarterly cals for the next interval.
- Requery** Requeries the database based on the current interval and regulation, and refreshes the information being displayed.
- Close** Closes the Quarterly Calibration Editor form.

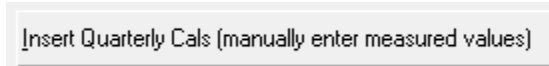
Edit Reference Values

To view or edit reference values, select a single instrument from the instrument list. Select a test range (Zero/Low, Mid or High) and click the *Edit Reference Values* button. The [Constant Value Editor](#) form opens.



Insert Quarterly Cal

If for any reason it is necessary to manually input a linearity or CGA test, select a single instrument from the instrument list and click the *Insert Quarterly Cal* button to open the [Insert Linearity or Cylinder Gas Audit](#) form.



Insert Linearity or Cylinder Gas Audit Form

This form allows you to manually input a linearity or CGA. Note that for a linearity to be reported on the EDR, you must still use the linearity wizard of the EDR Setup application.

At the top of the form, the name, range, full scale, span and engineering units of the instrument and range you selected are displayed. In the center of the form, supply the End Date, Time and Actual Value for each test. If you enter the tests in order, the form will automatically set the End Date column after you have supplied it for the first Zero/Low test.

Support of weekly above span linearity for HG CEMs has been added to the application v7.0.2016.1128. If a HG instrument is selected, the Weekly Above Span Linearity checkbox is shown at the top of the form. Checking/Unchecking the checkbox switches between inputting a weekly above span linearity and a regular linearity/CGA for HG.

Range Tests					Drift	
Test Level	End Date	Time (hh:mm)	Actual Value	Reference Value	IR-AI/Span * 100	IR-AI
Zero					%	
Mid					%	
High					%	
Zero					%	
Mid					%	
High					%	
Zero					%	
Mid					%	
High					%	
Zero					%	
Mid					%	
High					%	

The buttons at the bottom right allow you to save or cancel and exit:

Ok Save your work and close the form

Cancel Close the form without saving

Apply Save your changes but leaves the form open

7. Part 60 QA/QC

The *Part 60 QA/QC* tab of the Main Window is used to add, edit or view quarterly/annual quality assurance tests that will be reported to state or local agencies. The form contains two tabs – one for cylinder gas audits, and another for relative accuracy test audits.

Note: The Part 60 QA/QC tab is only visible if you are subject to Part 60 regulations.

7.1 CGA Tests

The CGA tab shows a list of existing cylinder gas audits sorted by test end time in descending order. From this form, you can view/edit tests, add new tests and run reports.

Part 60 Cylinder Gas Audit (& Opacity Filter Test)

To view/edit test detail, double click the desired test, or single click to highlight the test and click [View/Edit]
To add a new CGA / Opacity Filter test, click [Add New]
To run a report, click to select the desired tests (use Shift-Click or Ctrl-Click for multiples), and click [Report]
To filter the list of tests, use the optional filters at bottom left

Qtr Performed	Unit/Stack	Parameter	EndTime	Instrument	Scale	Result
Qtr 1 - 2016	K5	NOX	01/01/2016 01:15	K5_NOX_P_Instrument	H	Pass
Qtr 1 - 2016	K5	HCl	01/01/2016 01:15	K5_HCl_P_Instrument	H	Pass
Qtr 1 - 2016	K5	THC	01/01/2016 01:15	K5_THC_P_Instrument	H	Pass
Qtr 1 - 2016	K5	NOX	01/01/2016 01:15	K5_NOX_P_Instrument	H	Pass
Qtr 1 - 2016	K5	HCl	01/01/2016 01:15	K5_HCl_P_Instrument	L	Pass
Qtr 1 - 2016	K5	CO2	01/01/2016 00:10	K5_CO2_P_Instrument	H	Pass

Unit/Stack Filter

Instrument Filter

Quarter/Year Filter

Filter CGA Tests

Because the list of tests may be quite long, filters are provided to make it easier to find the one(s) you are looking for.

To filter the CGA list, supply a *Unit/Stack Filter*, *Instrument Filter* or *Quarter/Year Filter* by selecting from the drop down lists. The filter is applied as soon as you make your selection. To remove a filter, select the blank line at the top of the drop down list or click the *Remove All Filters* button.

Unit/Stack Filter

Instrument Filter

Quarter/Year Filter

View/Edit an Existing CGA Test

To view or edit an existing test, double click the test. Alternatively, you may single click to select the test and click the [View/Edit] button. Either method opens the *Cylinder Gas Audit* form.

Cylinder Gas Audit / Calibration Filter Audit

Unit/Stack **No. 5 Cement I** Instrument Name/Range **K5_HCl_P_Instrument** High Group **2**

Result

Results (Dbl-click to edit)

Test Date	Level	ReferenceMean	MeasuredMean	Results	Pass/Fail	Equation Used
01/01/2016	Z	0	0.033	0.1	Pass	IR-AI/Span * 100
01/01/2016	M	17.5	17.633	0.3	Pass	IR-AI/Span * 100
01/01/2016	H	28	27.7	0.7	Pass	IR-AI/Span * 100

Runs (not directly editable)

End Date/Time	Level	Span Value	Ref Value	Meas Value
01/01/2016 01:03	Z	45	0	0.1
01/01/2016 01:04	M	45	17.5	17.1
01/01/2016 01:05	H	45	28	28.9
01/01/2016 01:08	Z	45	0	-0.1
01/01/2016 01:09	M	45	17.5	17.9
01/01/2016 01:10	H	45	28	27.1
01/01/2016 01:13	Z	45	0	0.1
01/01/2016 01:14	M	45	17.5	17.9
01/01/2016 01:15	H	45	28	27.1

The overall test Result (Pass/Fail) is show near the top left. Under that, the summary statistics for each level are displayed followed by the individual test runs. None of the data on this form is directly editable.

Note: For Pennsylvania sites, and additional check-box field called "Include in PADEP Report" is shown on this form, and it is editable.

Results (Dbl-click to edit)						
Test Date	Level	ReferenceMean	MeasuredMean	Results	Pass/Fail	Equation Used
01/01/2016	Z	0	0.033	0.1	Pass	IR-AI/Span * 100
01/01/2016	M	17.5	17.633	0.3	Pass	IR-AI/Span * 100
01/01/2016	H	28	27.7	0.7	Pass	IR-AI/Span * 100

Double-click either of the summary rows in the *Results* list ...

... to open the *CGA Results* form. For each gas level, the currently selected specification is shown along with the results. Click the radio button(s) of the most favorable result for each gas level.

Cal Level	Mean of Reference	Mean of Measured	Results Equation	Perf. Spec.	Results	Pass/Fail
Z	0.000	0.033	<input checked="" type="radio"/> IR-AI/Span * 100	15	0.1	Pass
			<input type="radio"/> IR - AI	5	0	Pass
M	17.500	17.633	<input checked="" type="radio"/> IR-AI/Span * 100	15	0.3	Pass
			<input type="radio"/> IR - AI	5	0.1	Pass
H	28.000	27.700	<input checked="" type="radio"/> IR-AI/Span * 100	15	0.7	Pass
			<input type="radio"/> IR - AI	5	0.3	Pass

In most cases, you should select the primary specification (top row) *unless the test failed using the primary and passed using the alternate specification* (bottom row).

Add a new CGA Test

To add a new CGA test, click the [Add New] button to start the *CGA Test Wizard*.

After selecting a Unit/Stack and an instrument, the wizard queries your database to find the dates on which you performed quarterly calibration tests, and shows them in the right most list box. Click to select the date for which you wish to add a CGA Test, then click [Next] to continue.

Step 1 of 3) Select the desired unit/stack, instrument and CGA test start date:

Unit/Stack: No. 5 Cement Kiln

Instrument	Range	CGA Test Date
K5_CO2_P_Instrument	High	1/1/2016
K5_COInlet_P_Instrument	High	2/1/2015
K5_HCl_P_Instrument	High	1/1/2015
K5_HCl_P_Instrument	Low	
K5_NH3_P_Instrument	High	
K5_NO_P_Instrument	High	
K5_NOx_P_Instrument	High	

Tip: If the date of your CGA test does not appear in the list after you select an instrument, it means that RegPerfect did not collect the raw calibration test data. In such cases, you must manually enter the calibration test on the Calibration tab of Editor, then return to the CGA Test Wizard to create a CGA. See [Insert Quarterly Cal](#) for more information.

Step 2 of the wizard shows you all of the quarterly calibration tests on the date

Step 2 of 3) Select/highlight the calibrations which comprise the CGA Test.
(use [Shift]-Click or [Ctrl]-Click to select more than one row):

Instrument	Range	End Time
K5_HCl_P_Instrument	High	1/1/2016 1:05:00 AM
K5_HCl_P_Instrument	High	1/1/2016 1:10:00 AM
K5_HCl_P_Instrument	High	1/1/2016 1:15:00 AM
K5_HCl_P_Instrument	High	1/1/2016 3:00:00 PM

you selected. Click to select the tests that were a part of the CGA, then click [Next] to continue.

Step 3 allows you to view your choices and, if necessary, to override the default standard and alternate drift limits. Click [Done] to add the CGA test and view the results on the *Cylinder Gas Audit* form ([View/Edit an Existing CGA Test](#)).

CGA Test Wizard

Step 3 of 3) Review your selections. Press [Done] to save and view/edit CGA records...

Instrument Name: Range:

No. Cal Tests Selected:

Reference Precision:

Measured Precision: Standard Drift Limit:

Cal Error Calculation: Alternate Drift Limit:

Buttons:

CGA Report

To run a CGA Report, select one or more CGA tests from the Main Window, then click the Report button.

CGA RATA

Part 60 Cylinder Gas Audit (& Opacity Filter Test)

To view/edit test detail, double click the desired test, or single click to highlight. To add a new CGA / Opacity Filter test, click [Add New]. To run a report, click to select the desired tests (use Shift-Click or Ctrl-Click). To filter the list of tests, use the optional filters at bottom left.

Qtr Performed	Unit/Stack	Parameter	EndTime	Instrument	Scale	Result
Qtr 1 - 2016	K5	NOX	01/01/2016 01:15	K5_NOX_P_Instrument	H	Pass
Qtr 1 - 2016	K5	HCl	01/01/2016 01:15	K5_HCl_P_Instrument	H	Pass
Qtr 1 - 2016	K5	THC	01/01/2016 01:15	K5_THC_P_Instrument	H	Pass
Qtr 1 - 2016	K5	NOX	01/01/2016 01:15	K5_NOX_P_Instrument	H	Pass
Qtr 1 - 2016	K5	HCl	01/01/2016 01:15	K5_HCl_P_Instrument	L	Pass
Qtr 1 - 2016	K5	CO2	01/01/2016 00:10	K5_CO2_P_Instrument	H	Pass

The report opens in preview mode with a toolbar that allows you to print, alter the page setup, or export to Word or Notepad (Excel format not available).



Cylinder Gas Audit

10/04/2016

Page 1

Facility: Maaleea Power Plant	Test Date: 01/01/2016	Instrument Name: KS NOK P Instrument
Unit/Stack: KS	Test Result: Pass	Performance Spec: 15 Pct
Parameter/Scale: NOX / High		Alternate Spec: 5 Ppm

Date	Time	Test Level	Span Value	Reference Value	Measured Value	Ref Value As Pct Span
01/01/2016	01:03	L	100	40.000	40.500	40.0 %
01/01/2016	01:04	M	100	100.000	101.000	100.0 %
01/01/2016	01:05	H	100	160.000	158.000	160.0 %
01/01/2016	01:08	L	100	40.000	39.500	40.0 %
01/01/2016	01:09	M	100	100.000	99.000	100.0 %
01/01/2016	01:10	H	100	160.000	162.000	160.0 %
01/01/2016	01:13	L	100	40.000	40.500	40.0 %
01/01/2016	01:14	M	100	100.000	99.000	100.0 %
01/01/2016	01:15	H	100	160.000	158.000	160.0 %

Summary Statistics:

Cal Gas Level	Reference	Mean	CEMS Mean	Specification Used	Results
L	40.000		40.167	Std	0.2
M	100.000		99.667	Std	0.3
H	160.000		159.333	Std	0.7

7.2 Part 60 RATA Tests

The RATA tab shows a list of existing RATAs sorted by test end time in descending order. From this form, you can view/edit tests, add new tests and run reports.

Editor: Main Window

Current User: JHGILMER

Edit Samples | Recalculate | Edit Constants | Calibrations | Part 60 QA/QC | Part 75 QA/QC

CGA | RATA

Part 60 RATAs

To view/edit test detail, double click the desired test, or single click to highlight the test and click [View/Edit]
To add a new RATA, click [Add New]
To run a report, click to select the desired test and click [Report] (only 1 RATA report at a time)
To filter the list of tests, use the optional filters at bottom left

Qtr Performed	Unit/Stack	Parameter	Test End Time	System	Test	Rel Acc	Result
Qtr 3 - 2005	U4	TRS	08/01/2005 11:41	U4_TR5_P_P60_MonSys	1	7.01	Pass
Qtr 2 - 2005	U3	CO	04/01/2005 16:46	U3_CO_P_P60_MonSys	1	6.1	Pass
Qtr 2 - 2005	U4	CO	04/01/2005 12:16	U4_CO_P_P60_MonSys	1	4.6	Pass
Qtr 1 - 2005	U3	CO	03/01/2005 12:21	U3_CO_P_P60_MonSys	1	2.9	Pass

Unit/Stack Filter

System Filter

Quarter/Year Filter

Filter RATAs

Because the list of tests may be quite long, filters are provided to make it easier to find the one(s) you are looking for.

To filter the RATA list, supply a *Unit/Stack Filter*, *System Filter* or *Quarter/Year Filter* by selecting from the drop down lists. The filter is applied as soon as you make your selection. To remove a filter, select the blank line at the top of the drop down list or click the *Remove All Filters* button.

Unit/Stack Filter []
 System Filter []
 Quarter/Year Filter
 U3_CO_P_P60_MonSys
 U4_CO_P_P60_MonSys
 U4_TRS_P_P60_MonSys

View/Edit an Existing RATA

To view or edit an existing test, double click the test. Alternatively, you may single click to select the test, then click the [View/Edit] button. Either method opens the *Part 60 RATA Detail* form.

Part 60 RATA Detail

Unit/Stack: Unit 3 Monitoring System: U3_CO_P_P60_MonSys Group: 4

Test Number: [1] Units of Measure: Ppmvdc Reason for RATA: Periodic Quality Assurance

RATA Runs Dbl-click to edit run

Run	Start Time	Duration	Load	CEM Value	RM Value	RM-CEM	Use Run
1	04/01/2005 12:00	21		17.5	16.5	-1.0	Yes
2	04/01/2005 12:25	21		23.8	22.1	-1.7	Yes
3	04/01/2005 12:55	21		19.8	19.3	-0.5	Yes
4	04/01/2005 13:25	21		23.8	24.0	0.2	Yes
5	04/01/2005 13:55	21		19.8	20.8	1.0	Yes
6	04/01/2005 14:25	21		23.8	24.1	0.3	Yes
7	04/01/2005 14:55	21		19.8	17.8	-2.0	Yes
8	04/01/2005 15:25	21		23.8	19.9	-3.9	-
9	04/01/2005 15:55	21		19.8	18.9	-0.9	Yes
10	04/01/2005 16:25	21		23.8	23.7	-0.1	Yes

[Add Run]

RATA Results Dbl-click to edit (select primary or alternate specification)

End Time	CEMs Mean	RM Mean	Difference Mean	Std Deviation	T value	Conf Coeff	Alt Spec	Rel Acc	Result
04/01/2005 16:46	21.300	20.800	-0.500	1.000	2.306	0.800	-	6.10	Pass

[Delete] [Edit RATA Tags] [Cancel] [Ok]

The overall test Result (Pass/Fail) is show at bottom right. You may change the Test Number, Units and Reason for RATA and save using the [OK] button or by clicking the [X] at top right.

Double-click a run in the *RATA Runs* list...

RATA Runs Dbl-click to edit run

Run	Start Time	Duration	Load	CEM Value
1	04/01/2005 12:00	21		17.5
2	04/01/2005 12:25	21		23.8
3	04/01/2005 12:55	21		19.8
4	04/01/2005 13:25	21		23.8
5	04/01/2005 13:55	21		19.8
6	04/01/2005 14:25	21		23.8

... to open the *Edit RATA Run* form. From here, you may edit any and all information pertaining to the run.

Edit RATA Run

Run Number: 6 RataRunID: 38

Default Time Between Runs: 30 (minutes from start of one run to start of next run)

Start Date/Time: 04/01/2005 14:25

Duration (minutes): 21

Use Run:

Reference Value: 24.1

CEMs Value: 23.8 Retrieve: U3_CO_ppmvdc_1M

Load Value: Retrieve: [disabled]

Buttons: Delete, Cancel, Ok

Note: In the example screen shot above, the Load Value and [Retrieve] button are disabled. There is an option to exclude load from Part 60 RATAs, and that option was selected during RATA creation for this example.

Double-click the RATA Results row...

RATA Results Dbl-click to edit (select primary or alternate specification)

End Time	CEMs Mean	RM Mean	Difference Mean	Std Deviation
04/01/2005 16:46	21.300	20.800	-0.500	1.000

...to open the *RATA Results* form. Use this form to select the alternate specification when the RATA test failed using the primary specification.

RATA Result

End Date/Time: 04/01/2005 16:46 Group: 4

RATA Test

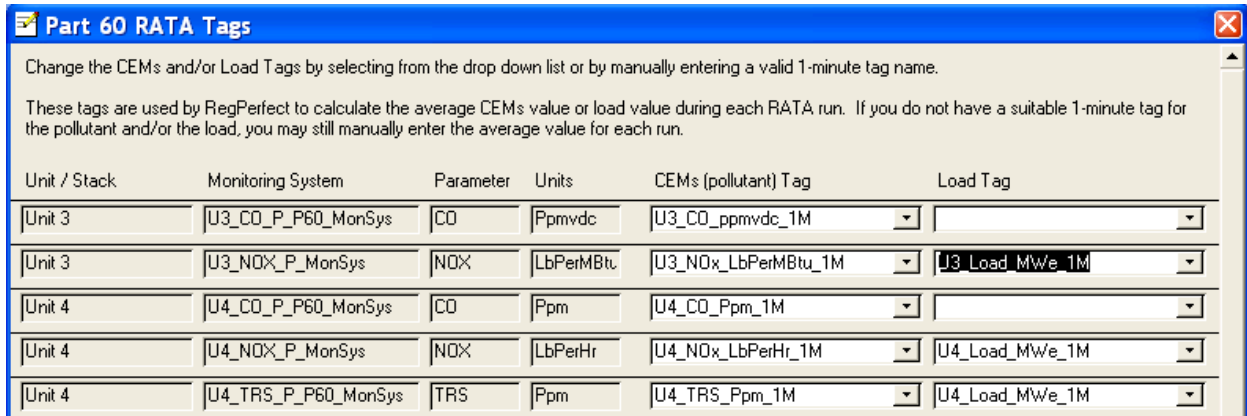
Calculation Method	Limit	Result
<input checked="" type="radio"/> Primary Relative Accuracy: 6.1	10	Pass
<input type="radio"/> Alternate Relative Accuracy: 6.4	5	Fail

Buttons: Cancel, Ok

Edit RATA Tags

While it is perfectly acceptable to manually enter the CEMS value for each run from the stack tester's results, you may alternatively configure a CEMS and/or load tag so that RegPerfect can calculate the average value of each run for you automatically. There are two places to configure these tags.

First, on the Main Window, at the bottom of the RATA tab, the [Edit RATA Tags] button opens a form showing the configured RATA tags for all Part 60 monitoring systems.



Unit / Stack	Monitoring System	Parameter	Units	CEMs (pollutant) Tag	Load Tag
Unit 3	U3_CO_P_P60_MonSys	CO	Ppmvdc	U3_CO_ppmvdc_1M	
Unit 3	U3_NOX_P_MonSys	NOX	LbPerMBtu	U3_NOx_LbPerMBtu_1M	U3_Load_MWe_1M
Unit 4	U4_CO_P_P60_MonSys	CO	Ppm	U4_CO_Ppm_1M	
Unit 4	U4_NOX_P_MonSys	NOX	LbPerHr	U4_NOx_LbPerHr_1M	U4_Load_MWe_1M
Unit 4	U4_TRS_P_P60_MonSys	TRS	Ppm	U4_TRS_Ppm_1M	U4_Load_MWe_1M

Use the drop down lists to select the appropriate CEMS and Load tags.

A second [Edit RATA Tags] button is located at the bottom of the *Part 60 RATA Detail* form. This one opens the same form as above, but it only shows the tags for the selected monitoring system.

Add new Part 60 RATA

To add a new RATA, click the [Add New] button to start the *RATA Test Wizard*.

Select a Unit/Stack and monitoring system, then click [Next].

RATA Wizard

Unit/Stack | Unit 3 | Monitoring System | U3_CO_P_P60_MonSys

Step 1 of 5) Select a Unit/Stack/Pipe and a monitoring system:

Unit/Stack/Pipe ID: Unit 3

Monitoring System: U3_CO_P_P60_MonSys, U3_NOX_P_MonSys

Buttons: Cancel, < Back, Next >

Tip: If your monitoring system list is empty, contact the TML Call Center for help. Prior to this version of Editor, there was no reason to configure monitoring systems for Part 60, but now systems must be added to use the Part 60 RATA screens.

Review defaults and make changes if needed. Pay particular attention to the decimal precision, primary and alternate relative accuracy drift limits, and the emissions limit.

The emissions limit is the plant specific limit used in the alternate calculation of relative accuracy.

Click [Next] to continue.

RATA Wizard

Unit/Stack | Unit 3 | Monitoring System | U3_CO_P_P60_MonSys

Step 2 of 5) Review/modify these default RATA settings:

Parameter: CO

Units: Ppmwdc

Decimal Precision: 1

Primary RA Limit: 10 %

Alternate RA Limit: 5 %

Emissions Limit: 20

Buttons: Cancel, < Back, Next >

Review the defaults and make changes if needed.

Typically, you should check the box to include load data (unless you have no load signal coming into RegPerfect).

Click [Next] to continue.

RATA Wizard
Unit/Stack: Unit 3 Monitoring System: U3_CO_P_P60_MonSys

Step 3 of 5) Review/modify these default settings:

Test Number	1	
Reason for RATA	Periodic Quality Assurance	
Include Load Data	<input checked="" type="checkbox"/>	
CEMs Value Tag	U3_CO_ppmvdc_1M	(optional) ?
Load Value Tag	U3_Load_MWe_1M	(optional)

Buttons: Cancel, < Back, Next >

Enter the start time of the first run and the reference value. Enter the CEMS and Load values or use the [Retrieve] buttons to make Editor calculate them automatically.

Default Time Between Runs will be used to calculate a default for the start time of your next run.

Click [Next] to continue.

RATA Wizard
Unit/Stack: Unit 3 Monitoring System: U3_CO_P_P60_MonSys

Step 4 of 5) Supply information about the first run:

Run Number	1	Default Time Between Runs	30	(minutes)
Start Time	03/01/2005 8:00			
Duration (minutes)	21			
Reference Value	16.9			
CEMs Value	17.5	Retrieve		
Load Value	110	Retrieve		
Use Run	<input checked="" type="checkbox"/>			

Buttons: Cancel, < Back, Next >

Review the information. If you need to make changes, use the [Back] button. Otherwise, click [Done] to create the RATA and open the *Part 60 Rata Detail* window.

RATA Wizard
Unit/Stack: Unit 3 Monitoring System: U3_CO_P_P60_MonSys

Step 5 of 5) Review your selections. Press [Done] to save and view/edit the RATA...

Test Number	1	Primary RA Limit	10	%
Start Time of First Run	03/01/2005 8:00	Alternate RA Limit	5	%
Duration (minutes)	21	Emissions Limit	20	
Use Run	<input checked="" type="checkbox"/>	Decimal Precision	1	

Buttons: Cancel, < Back, Next >, Done

Use the [Add Run] button to add additional runs until RATA entry is complete.

Part 60 RATA Detail

Unit/Stack: **Unit 3** Monitoring System: **U3_CO_P_P60_MonSys** Gro

Test Number:

Units of Measure:

Reason for RATA:

RATA Runs Dbl-click to edit run

Run	Start Time	Duration	Load	CEM Value	RM Value	RM-CEM	Use Run
1	03/01/2005 08:00	21	110	17.5	16.9	-0.6	Yes

Part 60 RATA Report

To run a RATA Report, select a single RATA from the Main Window, then click the Report button.

Editor: Main Window Current User: JI

Edit Samples Recalculate Edit Constants Calibrations **Part 60 QA/QC** Part 75 QA/QC

CGA **RATA**

Part 60 RATAs

To view/edit test detail, double click the desired test, or single click to highlight the test and click [View/Edit]
 To add a new RATA, click [Add New]
 To run a report, click to select the desired test and click [Report] (only 1 RATA report at a time)
 To filter the list of tests, use the optional filters at bottom left

Qtr Performed	Unit/Stack	Parameter	Test End Time	System	Test	Rel Acc	Result
Qtr 3 - 2005	U4	TRS	08/01/2005 11:41	U4_TR5_P_P60_MonSys	1	7.01	Pass
Qtr 2 - 2005	U3	CO	04/01/2005 16:46	U3_CO_P_P60_MonSys	1	6.1	Pass
Qtr 2 - 2005	U4	CO	04/01/2005 12:16	U4_CO_P_P60_MonSys	1	4.6	Pass
Qtr 1 - 2005	U3	CO	03/01/2005 08:21	U3_CO_P_P60_MonSys	1	0	< 9

The report opens in preview mode with a toolbar that allows you to print, alter the page setup, or export to Word, Notepad (Excel format not available).

Part 60 Rata Report

10/06/2005

Page 1

Facility Name: Test	Test Date/Number: 04/01/2005, Test 1
Unit/Stack: Unit 2	Reason for Test: Periodic Quality Assurance
Parameter: CO	Primary Spec: 10 % of Reference Mean
Units: Ppmvdc	Alternate Spec: 5 % of 20 Ppmvdc
Relative Accuracy: 6.1 %	Std Deviation: 1.0
Performance Spec: 10 % of Reference Mean (Primary Spec)	Conf Coeff: 0.8
Test Result: Pass	T Value: 2.206

Run	Start Date/Time	Duration	Use Run	Load	CEM Value	Reference Value	Difference
1	04/01/2005 12:00	21	Yes		17.5	16.5	-1.0
2	04/01/2005 12:25	21	Yes		22.8	22.1	-1.7
3	04/01/2005 12:55	21	Yes		19.8	19.3	-0.5
4	04/01/2005 13:25	21	Yes		22.8	24.0	0.2
5	04/01/2005 13:55	21	Yes		19.8	20.8	1.0
6	04/01/2005 14:25	21	Yes		22.8	24.1	0.3
7	04/01/2005 14:55	21	Yes		19.8	17.8	-2.0
8	04/01/2005 15:25	21	-		22.8	19.9	-2.9
9	04/01/2005 15:55	21	Yes		19.8	18.9	-0.9
10	04/01/2005 16:25	21	Yes		22.8	23.7	-0.1
Mean Values					21.2	20.8	-0.5

7.3 Part 60 HCl Temperature and Pressure Audit

The Part 60 HCl Temp/Pressure Audit tab is only visible when an HCl instrument has been configured and has a CEMS type of 'Integrated Path'. This tab shows a list of existing temperature and pressure audits listed individually so both results can be seen, but are actually paired together when adding, editing or reporting. The list is sorted by the latest audit time of the pair in descending order.

Part 60 HCl IP CEMS Temperature and Pressure Accuracy Audits

To view/edit test detail, double click the desired test, or single click to highlight the test and click [View/Edit]
 To add a new test, click [Add New]
 To run a report, click to select the desired tests (use Shift-Click or Ctrl-Click for multiples), and click [Report]
 To filter the list of tests, use the optional filters at bottom left

Qtr Performed	Unit/Stack	Parameter	Audit Time	Instrument	Scale	Result
Qtr 4 - 2016	K1	Temperature	11/14/2016 09:57	K1_HCl_P_Instrument	High	Pass
Qtr 4 - 2016	K1	Pressure	11/14/2016 09:57	K1_HCl_P_Instrument	High	Pass
Qtr 4 - 2016	K1	Pressure	11/07/2016 15:08	K1_HCl_P_Instrument	High	Pass
Qtr 1 - 2000	All	Temperature	01/01/2000 00:00	All_HCl_P_Instrument	High	Pass
Qtr 4 - 2016	All	Pressure	10/28/2016 00:00	All_HCl_P_Instrument	High	Pass
Qtr 4 - 2016	All	Temperature	10/24/2016 10:23	All_HCl_P_Instrument	High	Pass
Qtr 2 - 2016	All	Pressure	06/24/2016 10:23	All_HCl_P_Instrument	High	Pass
Qtr 3 - 2016	All	Temperature	07/24/2016 10:24	All_HCl_P_Instrument	High	Pass
Qtr 3 - 2016	All	Pressure	08/24/2016 10:24	All_HCl_P_Instrument	High	Pass
Qtr 1 - 2001	All	Temperature	01/01/2001 00:00	All_HCl_P_Instrument	High	Pass
Qtr 1 - 2001	All	Pressure	01/01/2001 00:00	All_HCl_P_Instrument	High	Pass
Qtr 1 - 2001	All	Temperature	01/01/2001 00:00	All_HCl_P_Instrument	High	Pass
Qtr 1 - 2001	All	Pressure	01/01/2001 00:00	All_HCl_P_Instrument	High	Fail

Unit/Stack Filter: [Dropdown]
 Instrument Filter: [Dropdown]
 Quarter/Year Filter: [Dropdown]
 Parameter Filter: [Dropdown]
 Remove All Filters

Report
View/Edit
Add New

Filter HCl Temperature and Pressure Audits

Filters are provided to make it easier to find the one(s) you are looking for.

To filter the list, supply a *Unit/Stack Filter*, *Instrument Filter*, *Quarter/Year Filter* or *Parameter Filter* by selecting from the drop down lists. The filter is applied as soon as you make your selection. To remove a filter, select the blank line at the top of the drop down list or click the *Remove All Filters* button.

Unit/Stack Filter: [Dropdown]
 Instrument Filter: [Dropdown]
 Quarter/Year Filter: [Dropdown]
 Parameter Filter: [Dropdown]
 Temperature
 Pressure

View/Edit Existing HCl Temperature and Pressure Audit

To view or edit an existing audit pair, double click either one in the list. Alternatively, you may single click to select an audit, and then click the [View/Edit] button. Either method opens the *HCl Temperature and Pressure Audit* form.

HCl Temperature and Pressure Audit

Temperature and Pressure Audit for HCl IP CEMS

Instrument Name / Range: All_HCl_P_Instrument High

Units: Metric U.S.

Temperature Audit

Date / Time: 07/24/16 10:24

Pass/Fail: **Pass**

Reference Value (°C)	280.0	Measured Value (°C)	277.2
Absolute Difference (°C)	2.8	Absolute Relative Difference (%)	1.0
Max Absolute Difference (°C)	2.8	Max Absolute Relative Difference (%)	1.0

Pressure Audit

Date / Time: 08/24/16 10:24

Pass/Fail: **Pass**

Reference Value (kPa)	2.40	Measured Value (kPa)	2.52
Absolute Difference (kPa)	0.12	Absolute Relative Difference (%)	5.0
Max Absolute Difference (kPa)	0.12	Max Absolute Relative Difference (%)	5.0

Buttons: Delete Temperature, Delete Pressure, Delete Both, Cancel, Save

The audit results (Pass/Fail) are shown in the left column. You may change any field on this form and save the changes by clicking the [Save] button. You can also cancel all changes made since opening the form by clicking the [Cancel] button. Lastly, you can delete either audit or both by clicking the [Delete] buttons.

The darker fields are calculated automatically after entering a reference value and a measured value. These fields can be manually changed, but will be overwritten if a reference value or measured value is changed.

Hover your mouse over a calculated field to see either a description of how it is calculated or a reference to a maximum value.

Add New HCI Temperature and Pressure Audit

To add a new audit pair, click the [Add New] button to open the *HCI Temperature and Pressure Audit* form.

The screenshot shows a web form titled "HCI Temperature and Pressure Audit" with a subtitle "Temperature and Pressure Audit for HCI IP CEMS". At the top, there is a "Units" section with radio buttons for "Metric" and "U.S.". Below this is a section for "Instrument Name / Range" with two dropdown menus. The form is divided into two main sections: "Temperature Audit" and "Pressure Audit". Each section contains a "Date / Time" field with a calendar icon, a "Pass/Fail" checkbox, and several numerical input fields. For the Temperature Audit, the "Max Absolute Difference (°F)" is set to 5.0 and the "Max Absolute Relative Difference (%)" is set to 1.0. For the Pressure Audit, the "Max Absolute Difference (\"H2O)" is set to 0.5 and the "Max Absolute Relative Difference (%)" is set to 5.0. At the bottom right, there are "Cancel" and "Save" buttons.

Temperature Audit	
Date / Time	<input type="text"/>
Reference Value (°F)	<input type="text"/>
Measured Value (°F)	<input type="text"/>
Absolute Difference (°F)	<input type="text"/>
Absolute Relative Difference (%)	<input type="text"/>
Max Absolute Difference (°F)	5.0
Max Absolute Relative Difference (%)	1.0

Pressure Audit	
Date / Time	<input type="text"/>
Reference Value (\"H2O)	<input type="text"/>
Measured Value (\"H2O)	<input type="text"/>
Absolute Difference (\"H2O)	<input type="text"/>
Absolute Relative Difference (%)	<input type="text"/>
Max Absolute Difference (\"H2O)	0.5
Max Absolute Relative Difference (%)	5.0

Select an instrument name and range and a system of units in the blue section at the top of the form. Then pick or type in a date and type in reference and measured values. Results are calculated and displayed automatically in the darker fields. These fields can be manually changed, but will be overwritten if a reference value or measured value is changed. Click the [Save] or [Cancel] button as desired to close the form.

Hover your mouse over a calculated field to see either a description of how it is calculated or a reference to a maximum value.

HCI Temperature and Pressure Audit Report

To run a temperature and pressure audit report(s), select one or more audit(s) from the Main Window, then click the Report button.

Part 60 HCl IP CEMs Temperature and Pressure Accuracy Audits

To view/edit test detail, double click the desired test, or single click to
 To add a new test, click [Add New]
 To run a report, click to select the desired tests (use Shift-Click or Ctrl-
 To filter the list of tests, use the optional filters at bottom left

Qtr Performed	Unit/Stack	Parameter	Audit Time	Instrument	Scale	Result
Qtr 1 - 2000	All	Temperature	01/01/2000 00:00	All_HCI_P_Instrument	High	Pass
Qtr 4 - 2016	All	Pressure	10/28/2016 00:00	All_HCI_P_Instrument	High	Pass
Qtr 4 - 2016	All	Temperature	10/24/2016 10:23	All_HCI_P_Instrument	High	Pass
Qtr 2 - 2016	All	Pressure	06/24/2016 10:23	All_HCI_P_Instrument	High	Pass
Qtr 3 - 2016	All	Temperature	07/24/2016 10:24	All_HCI_P_Instrument	High	Pass

The report(s) opens in preview mode with a toolbar that allows you to print, alter the page setup, or export to Word or Notepad.

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HCI IP CEMs Temperature and Pressure Audit 11/14/2016
Page 1

Unit/Stack: All
 Analyzer Make and Model: TELEDYNE MONITOR LABS INCT201
 Analyzer Serial Number: 12345

Date	Time	Parameter	Units	Reference Value	Measured Value	Absolute Difference	Max Absolute Difference	Absolute Relative Difference	Max Absolute Relative Difference	Audit Result
01/01/2000	00:00	Temperature	°F	200.0	202.0	2.0	5.0	1.0	1.0	Pass
10/28/2016	00:00	Pressure	"H2O	10.0	9.8	0.2	0.5	2.0	5.0	Pass

Unit/Stack: All
 Analyzer Make and Model: TELEDYNE MONITOR LABS INCT201
 Analyzer Serial Number: 12345

Date	Time	Parameter	Units	Reference Value	Measured Value	Absolute Difference	Max Absolute Difference	Absolute Relative Difference	Max Absolute Relative Difference	Audit Result
07/24/2016	10:24	Temperature	°C	280.0	277.2	2.8	2.8	1.0	1.0	Pass
08/24/2016	10:24	Pressure	kPa	2.40	2.52	0.12	0.12	5.0	5.0	Pass

Page: 1 of 1 Filtered

7.4 Part 60 HCl Dynamic Spiking Audit

The Part 60 HCl DSA tab is only visible when an HCl instrument has been configured and has a CEMS type of 'Extractive'. This tab shows a list of existing dynamic spiking audits listed by descending audit time.

Qtr Performed	Unit/Stack	Audit Time	Instrument	Scale	Result
Qtr 4 - 2016	All	10/27/2016 09:01	All_HCl_P_Instrument	High	Pass
Qtr 4 - 2016	All	10/26/2016 14:03	All_HCl_P_Instrument	High	Fail
Qtr 3 - 2016	K5	09/26/2016 14:41	K5_HCl_P_Instrument	High	Pass

Filter HCl Dynamic Spiking Audits

Filters are provided to make it easier to find the one(s) you are looking for.

To filter the list, supply a *Unit/Stack Filter*, *Instrument Filter*, or *Quarter/Year Filter* by selecting from the drop down lists. The filter is applied as soon as you make your selection. To remove a filter, select the blank line at the top of the drop down list or click the *Remove All Filters* button.

Unit/Stack Filter

Instrument Filter

Quarter/Year Filter

- Qtr 4 - 2016
- Qtr 3 - 2016

View/Edit Existing HCl Dynamic Spiking Audit

To view or edit an existing audit, double click one in the list. Alternatively, you may single click to select an audit, and then click the [View/Edit] button. Either method opens the *HCl Dynamic Spiking Audit* form.

HCl Dynamic Spiking Audit

Dynamic Spiking Audit for HCl Extractive CEMS

Instrument Name / Range / Span: All_HCl_P_Instrument High 50 Ppm

Emission Std / Units / Decimals: 0.0004 lb/MMBtu 1

Audit Date / Time: 10/27/16 9:01

Audit Result / Evaluation Method: Pass Percent of Span Percent of Emission Standard

Dilution Factor Determination

Flow measurements

Tracer gas not natively present

Tracer gas natively present

Zero Level Calibration (ppm)

C	MC	% Error
0.0	1.0	2.0
0.0	2.0	4.0
0.0	3.0	6.0
ME _{extractive}		4.0

Mid Level Calibration (ppm)

C _{tracer spiked}	M _{native tracer}	M _{spiked tracer}	DF	MC _{native}				Actual Values				DSE
				Pre1	Pre2	Post1	Post2	Avg	C _{spike}	MC _{spiked}		
100.0	1.0	11.0	0.101	23.0	24.0	26.0	27.0	25.0	25.0	26.0	1.0	
100.0	1.0	10.0	0.091	26.0	26.0	26.0	26.0	26.0	25.0	27.0	1.1	
100.0	1.0	9.0	0.081	27.0	27.0	27.0	27.0	27.0	25.0	27.0	0.2	
DSA Accuracy											1.5	

High Level Calibration (ppm)

C _{tracer spiked}	M _{native tracer}	M _{spiked tracer}	DF	MC _{native}				Actual Values				DSE
				Pre1	Pre2	Post1	Post2	Avg	C _{spike}	MC _{spiked}		
200.0	1.0	20.0	0.095	5.0	5.0	5.0	5.0	5.0	50.0	10.0	0.7	
200.0	0.0	19.0	0.095	4.0	5.0	4.0	5.0	4.5	50.0	11.0	2.2	
200.0	2.0	18.0	0.081	2.0	3.0	4.0	5.0	3.5	50.0	12.0	4.7	
DSA Accuracy											5.1	

Delete
?
Close

The audit result (Pass/Fail) is shown in the blue section at the top of the form. This form is linked directly to the database so any changes made are saved automatically. You can delete the entire audit by clicking the [Delete] button. Database values can be selected by clicking the blue boxes with ellipses to the right of the M_{spiked tracer} (if a tracer gas method has been selected) and Post2 columns.

The darker fields are calculated automatically after changing any field that is needed for the calculation. These fields can be manually changed, but will be overwritten if any of their referenced fields are changed.

Hover your mouse over any field to see a description and in the case of calculated fields, the formula used.

Add New HCI Dynamic Spiking Audit

To add a new audit, click the [Add New] button to open the *HCI Dynamic Spiking Audit* form.

The screenshot shows the 'HCI Dynamic Spiking Audit' form. The top section is a blue header with the title 'Dynamic Spiking Audit for HCI Extractive CEMS'. Below the title are several input fields: 'Instrument Name / Range / Span', 'Emission Std / Units / Decimals', 'Audit Date / Time', and 'Audit Result / Evaluation Method'. The 'Evaluation Method' section has two radio buttons: 'Percent of Span' (selected) and 'Percent of Emission Standard'. To the right, a 'Dilution Factor Determination' box contains three radio buttons: 'Flow measurements' (selected), 'Tracer gas not natively present', and 'Tracer gas natively present'. Below the header are three calibration sections: 'Zero Level Calibration (ppm)', 'Mid Level Calibration (ppm)', and 'High Level Calibration (ppm)'. Each section has a table of input fields for 'C', 'MC', 'DF', 'Pre1', 'Pre2', 'Post1', 'Post2', 'Avg', 'Cspike', 'MCspiked', and 'DSE'. The 'Zero Level' section also includes an 'MEextractive' field. The 'Mid Level' and 'High Level' sections include 'MCnative' and 'Actual Values' sub-sections. At the bottom, there is a 'DSA Accuracy' field for each level, a help button with a question mark, and a 'Close' button.

The blue section at the top of the form must be filled in before the individual runs. A few things to note here. One, the emission standard is only necessary if the *Percent of Emission Standard* option is selected. Two, the decimal precision is only used for display purposes; the only values that get rounded are the ME and DSA accuracy numbers when determining the audit result. Third, changing the method for determining the dilution factor will change the available fields in the calibration runs. Lastly, hover your mouse over some of the fields in the top section to see a description.

After the top section has been completed, enter the individual runs for each calibration level. Database values can be selected by clicking the blue boxes containing ellipses to the right of the M_{spiked} tracer (if a tracer gas method has been selected) and MC or Post2 columns. Results are calculated and displayed automatically in the darker fields as you go, but the measurement error for zero level and the accuracy for mid and high levels and the overall audit result should not be considered complete until three runs for each calibration level have been entered. These darker calculated fields can be manually changed, but will be overwritten if any of their referenced fields are changed. Hover your mouse over any field in the calibration runs to see a description and in the case of calculated fields, the formula used.

HCl Dynamic Spiking Audit Report

To run a dynamic spiking audit report(s), select one or more audit(s) from the Main Window, then click the Report button.

Qtr Performed	Unit/Stack	Audit Time	Instrument	Scale	Result
Qtr 4 - 2016	All	10/27/2016 09:01	All_HCl_P_Instrument	High	Pass
Qtr 4 - 2016	K5	10/27/2016 09:01	K5_HCl_P_Instrument	Low	Fail
Qtr 4 - 2016	K5	10/27/2016 09:01	K5_HCl_P_Instrument	High	Pass
Qtr 4 - 2016	All	10/26/2016 14:03	All_HCl_P_Instrument	High	Fail

The report(s) opens in preview mode with a toolbar that allows you to print, alter the page setup, or export to Word or Notepad.

RegPe x

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HCl Extractive CEMS Dynamic Spiking Audit 11/14/2016
Page 1

Date/Time: 10/27/2016 9:01 Analyzer Make and Model: TELEDYNE MONITOR LABS INC T201
 Unit/Stack: All Analyzer Serial Number: 12345
 Audit Result: **Pass** Analyzer Span: 50 Ppm

Zero Level Calibration (ppm)		
C	MC	% Error
0.0	1.0	2.0
0.0	2.0	4.0
0.0	3.0	6.0
ME _{extractive} ¹		4

Mid Level Calibration (ppm)				MC _{native}					Actual Values			
C _{tracer spiked}	M _{native tracer}	M _{spiked tracer}	DF	Pre1	Pre2	Post1	Post2	Avg	C _{spike}	MC _{spiked}	DSE	
100.0	1.0	11.0	0.101	23.0	24.0	26.0	27.0	25.0	25.0	26.0	1.0	
100.0	1.0	10.0	0.091	26.0	26.0	26.0	26.0	26.0	25.0	27.0	1.1	
100.0	1.0	9.0	0.081	27.0	27.0	27.0	27.0	27.0	25.0	27.0	0.2	
DSA Accuracy ¹											2	

High Level Calibration (ppm)				MC _{native}					Actual Values			
C _{tracer spiked}	M _{native tracer}	M _{spiked tracer}	DF	Pre1	Pre2	Post1	Post2	Avg	C _{spike}	MC _{spiked}	DSE	
200.0	1.0	20.0	0.095	5.0	5.0	5.0	5.0	5.0	50.0	10.0	0.7	
200.0	0.0	19.0	0.095	4.0	5.0	4.0	5.0	4.5	50.0	11.0	2.2	
200.0	2.0	18.0	0.081	2.0	3.0	4.0	5.0	3.5	50.0	12.0	4.7	
DSA Accuracy ¹											5	

¹Measurement error and dynamic spiking audit accuracy calculated as percent of span

7.5 Part 60 HCl Relative Accuracy Audit

The Part 60 HCl RAA tab is only visible when an HCl instrument has been configured. This tab shows a list of existing relative accuracy audits listed by descending audit time.

Part 60 HCl Relative Accuracy Audit

To view/edit test detail, double click the desired test, or single click to highlight the test and click [View/Edit]
To add a new test, click [Add New]
To run a report, click to select the desired tests (use Shift-Click or Ctrl-Click for multiples), and click [Report]
To filter the list of tests, use the optional filters at bottom left

Qtr Performed	Unit/Stack	Audit Time	Instrument	Scale	Rel Acc	Result
Qtr 4 - 2016	All	11/02/2016 16:50	All_HCl_P_Instrument	High	12.0	Pass
Qtr 4 - 2016	K5	11/02/2016 16:50	K5_HCl_P_Instrument	Low	0.7	Pass
Qtr 4 - 2016	K5	11/02/2016 16:50	K5_HCl_P_Instrument	High	11.4	Pass

Unit/Stack Filter

Instrument Filter

Quarter/Year Filter

Filter HCl Relative Accuracy Audits

Filters are provided to make it easier to find the one(s) you are looking for.

To filter the list, supply a *Unit/Stack Filter*, *Instrument Filter*, or *Quarter/Year Filter* by selecting from the drop down lists. The filter is applied as soon as you make your selection. To remove a filter, select the blank line at the top of the drop down list or click the *Remove All Filters* button.

Unit/Stack Filter

Instrument Filter

Quarter/Year Filter

Qtr 4 - 2016

Qtr 3 - 2016

View/Edit Existing HCl Relative Accuracy Audit

To view or edit an existing audit, double click one in the list. Alternatively, you may single click to select an audit, and then click the [View/Edit] button. Either method opens the *HCl Relative Accuracy Audit* form.

HCl Relative Accuracy Audit

Instrument Name / Range: K5_HCl_P_Instrument High

Audit Date / Time: 11/02/16 16:50 7

Reference Method: Method 26

Decimal Precision: 3

Engineering Units: lb/MMBtu Use Alternative RA Calculation

Audit Result: Pass Equivalent Emission Standard: ppm

	Reference Value	CEMS Value	Absolute Difference
Run 1	0.012	0.011 ...	0.001
Run 2	0.012	0.009 ...	0.003
Run 3	0.011	0.019 ...	0.008
Average	0.012	0.013	0.001

Relative Accuracy (%) 11.4

Delete Cancel Save

The audit result (Pass/Fail) is shown in the blue section at the top of the form. You can cancel or save any changes since opening the form. You can also delete the entire audit. Database values can be selected by clicking the blue boxes containing ellipses to the right of the CEMS Value column.

The darker fields are calculated automatically after changing any field that is needed for the calculation. These fields can be manually changed, but will be overwritten if any of their referenced fields are changed.

Hover your mouse over the Audit Result to see an explanation of the result or over the Relative Accuracy to see the formula used.

Add New HCI Relative Accuracy Audit

To add a new audit, click the [Add New] button to open the *HCI Relative Accuracy Audit* form.

	Reference Value	CEMS Value	Absolute Difference
Run 1			
Run 2			
Run 3			
Average			

Relative Accuracy (%)

In the blue section at the top of the form, select an instrument name and range, type in or pick a date/time and then select a reference method, the decimal precision you want displayed on the form and the engineering units for the reference and CEMS values. Check the *Use Alternative RA Calculation* box and type in an equivalent emission standard if it provides better results and the requirements are met. Checking the box displays a reminder of the requirements. Also, hovering your mouse over the box or its label or the *Audit Result* box will display text explaining how the result is determined and the limit.

Results are calculated and displayed automatically in the darker fields as you go, but the relative accuracy should not be considered complete until three runs have been entered. Likewise for the overall audit result, it should not be considered complete until three runs have been entered. These darker calculated fields can be manually changed, but will be overwritten if any of their referenced fields are changed.

Hover your mouse over the *Audit Result* to see an explanation of the result or over the *Relative Accuracy* to see the formula used.

HCI Relative Accuracy Audit Report

To run a relative accuracy audit report(s), select one or more audit(s) from the Main Window, then click the Report button.

The screenshot shows the HCI RAA software interface. At the top, there are tabs for CGA, RATA, HCI Temp/Pressure Audit, HCI DSA, and HCI RAA. Below the tabs, the title is "Part 60 HCI Relative Accuracy Audit". To the right of the title, there are instructions: "To view/edit test detail, double click the desired test, or single To add a new test, click [Add New] To run a report, click to select the desired tests (use Shift-Click To filter the list of tests, use the optional filters at bottom left". Below the instructions is a table with the following data:

Qtr Performed	Unit/Stack	Audit Time	Instrument	Scale	Rel Acc	Result
Qtr 4 - 2016	All	11/02/2016 16:50	All_HCI_P_Instrument	High	12.0	Pass
Qtr 4 - 2016	K5	11/02/2016 16:50	K5_HCI_P_Instrument	Low	0.7	Pass
Qtr 4 - 2016	K5	11/02/2016 16:50	K5_HCI_P_Instrument	High	11.4	Pass

The report(s) opens in preview mode with a toolbar that allows you to print, alter the page setup, or export to Word or Notepad.

The screenshot shows the HCI Relative Accuracy Audit report preview window. The window title is "HCI Relative Accuracy Audit". The report content is as follows:

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HCI Relative Accuracy Audit 11/14/2016
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Date/Time: 11/02/2016 16:50 Analyzer Make and Model: TELEDYNE MONITOR LABS INC HCI IP-CEMS Low Range
 Unit/Stack: No. 5 Cement Kiln Analyzer Serial Number: 9090
Audit Result: Pass Reference Method: Method 26

Units (lb/MWh)	Reference Value	CEMS Value	Absolute Difference
Run 1	32.20	31.98	0.22
Run 2	32.24	32.84	0.60
Run 3	32.22	32.54	0.32
Average	32.22	32.54	0.32

Relative Accuracy¹ 0.7%

¹Relative Accuracy calculated as percent of reference value average

Page: 1 of 2 Filtered

8. Part 75 QA/QC

The *Part 75 QA/QC* tab of the Main Window is used to add, edit or view quarterly/annual quality assurance tests that will be reported to EPA/ARD. The form contains three tabs – one for linearity tests, one for relative accuracy test audits, and one for RATA test qualifications.

Note: The Part 75 QA/QC tab is only visible if you are subject to Part 75 regulations.

8.1 Linearity Tests

The Linearity tab shows a list of existing linearity tests sorted by most recent tests first. From this form, you can view/edit tests, add new tests, run reports and enter/view Protocol Gas Verification Program data for the tests.

Editor: Main Window

Current User: XZHONG

Edit Samples Recalculate Edit Constants Calibrations Part 60 QA/QC **Part 75 QA/QC** PI Data

Linearity RATA RATA Test Qualification

Part 75 Linearity Tests

To view/edit test detail, double click the desired test, or single click to highlight the test and click [View/Edit]
To add a new linearity test, click [Add New]
To run a report, click to select the desired tests (use Shift-Click or Ctrl-Click for multiples), and click [Report]
To filter the list of tests, use the optional filters at bottom left

Qtr Performed	Unit/Stack	Component	Date	Test Number	Instrument	Scale	Result
Qtr 3 - 2008	MB	NOX (A11)	7/29/2008	50	MB_NO_P_Instrument	H	Pass
Qtr 3 - 2008	MB	O2W (A12)	7/29/2008	51	MB_O2W_P_Instrument	H	Pass
Qtr 3 - 2008	MB	NOX (B11)	7/29/2008	52	MB_NO_B_Instrument	H	Pass
Qtr 2 - 2008	MB	NOX (A11)	4/28/2008	47	MB_NO_P_Instrument	H	Pass
Qtr 2 - 2008	MB	O2W (A12)	4/28/2008	48	MB_O2W_P_Instrument	H	Pass
Qtr 2 - 2008	MB	NOX (B11)	4/28/2008	49	MB_NO_B_Instrument	H	Pass
Qtr 2 - 2008	MB	NOX (A11)	4/7/2008	44	MB_NO_P_Instrument	H	Pass
Qtr 2 - 2008	MB	O2W (A12)	4/7/2008	45	MB_O2W_P_Instrument	H	Pass
Qtr 2 - 2008	MB	NOX (B11)	4/7/2008	46	MB_NO_B_Instrument	H	Pass
Qtr 1 - 2008	MB	NOX (A11)	2/19/2008	41	MB_NO_P_Instrument	H	Pass
Qtr 1 - 2008	MB	O2W (A12)	2/19/2008	42	MB_O2W_P_Instrument	H	Pass
Qtr 1 - 2008	MB	NOX (B11)	2/19/2008	43	MB_NO_B_Instrument	H	Pass
Qtr 3 - 2007	MB	NOX (A11)	8/16/2007	38	MB_NO_P_Instrument	H	Pass
Qtr 3 - 2007	MB	O2W (A12)	8/16/2007	39	MB_O2W_P_Instrument	H	Pass

Unit/Stack Filter

Instrument Filter

Quarter/Year Filter

Remove All Filters

Report

Protocol Gas

View/Edit

Add New

Filter Linearity Tests

Because the list of tests may be quite long, filters are provided to make it easier to find specific tests.

Supply a *Unit/Stack Filter*, *Instrument Filter* or *Quarter/Year Filter* by selecting from the drop down lists. The filters are applied as soon as you make your selection(s). To remove a filter, select the blank line at the top of the drop down list or click the *Remove All Filters* button.

View/Edit an Existing Linearity Test

To view or edit an existing test, double click the test. Alternatively, you may single click to select the test and click the [View/Edit] button. Either method opens the *Linearity Test* form.

EDR Site ID **B001** Instrument Name/Range **MB_NO_P_Instrument** High Group **51**

Enabled Test Number **50** Reason For Test **QA** Grace Period Indicator Result **Pass**

Comment

Summaries (Dbl-click to view std and alt spec results)

UnitID	CompID	SysID	Date	SpanValue	ReferenceMean	MeasuredMean	Results	AltPS	Level	Span	Reason
B001	A11	111	7/29/2008	300	76.6	75.9	0.9	0	L	H	QA
B001	A11	111	7/29/2008	300	166	165.867	0.1	0	M	H	QA
B001	A11	111	7/29/2008	300	250	252.433	1	0	H	H	QA

Runs

UnitID	CompID	SysID	Date	Time	SpanValue	RefValue	MeasValue	Level	Span	Aborted
B001	A11	111	7/29/2008	0908	300	76.6	75.7	L	H	
B001	A11	111	7/29/2008	0912	300	250	247.5	H	H	
B001	A11	111	7/29/2008	0921	300	166	165.2	M	H	
B001	A11	111	7/29/2008	0937	300	76.6	75.5	L	H	
B001	A11	111	7/29/2008	0945	300	250	253.8	H	H	
B001	A11	111	7/29/2008	0951	300	166	167.6	M	H	
B001	A11	111	7/29/2008	1008	300	76.6	76.5	L	H	
B001	A11	111	7/29/2008	1017	300	250	256	H	H	
B001	A11	111	7/29/2008	1022	300	166	164.8	M	H	

Delete Protocol Gas Cancel Ok

The overall test Result (Pass/Fail) is shown near the top right. Under that, the summary statistics for each level are displayed followed by the individual test runs. You may edit the fields above the summary records (Enabled, Reason For Test, etc.) and click [Ok] to save, but you may not directly edit the test Result.

Summaries (Dbl-click to view std and alt spec results)

UnitID	CompID	SysID	Date	SpanValue	Refere
LM6	A61		6/25/2008	90	21.3
LM6	A61		6/25/2008	90	49.2
LM6	A61		6/25/2008	90	82.9

Double-click any of the Summary rows ...

... to open the *Linearity Results* form. For each gas level, the selected specification is shown along with the results.

Cal Gas Level	Mean of Reference	Mean of Measured	Results Equation	Perf. Spec.	Results	Pass/Fail
L	21.300	21.700	<input checked="" type="radio"/> $LE = R - A /R * 100$	5	1.9	Pass
			<input type="radio"/> $CE = R - A $	5	0.4	Pass
M	49.200	49.067	<input checked="" type="radio"/> $LE = R - A /R * 100$	5	0.3	Pass
			<input type="radio"/> $CE = R - A $	5	0.1	Pass
H	82.900	83.233	<input checked="" type="radio"/> $LE = R - A /R * 100$	5	0.4	Pass
			<input type="radio"/> $CE = R - A $	5	0.3	Pass

The wizard selects the specification according to Part 75 rules:

The primary specification ($|R - A|/R * 100$) is selected *unless the test failed using the primary and passed using the alternate specification ($|R - A|$)*.

Click the [Protocol Gas] button to Open the *Protocol Gas Data* form from which you may enter/view Protocol Gas Verification Program data for this test. Refer to [Enter/View Protocol Gas Verification Program Data](#) for more details.

Add a New Linearity Test

To add a new linearity, click the [Add New] button to start the *Linearity Test Wizard*.

After selecting a Unit/Stack, the list box fills with the components for that Unit. Select the appropriate system/component and click [Next].

Step 1 of 5) Select the desired unit/stack and component

Unit/Stack/Pipe:

Component	Comp ID	Instrument Name	Range
NOX	A11	U1_NOX_P_Instrument	High
O2D	A12	U1_O2D_P_Instrument	High
NOX	LK1	U1_NOX_P_Instrument	High

Buttons:

Tip: Previously, linearity tests had to be reported multiple times for components that belong to multiple monitoring systems (such as diluents CO2/O2). With the XML EDR, this is no longer the case. Linearity tests are now considered "component level tests" and need only be reported once – monitoring system IDs are no longer reported with linearity tests.

The wizard presents a list of all dates on which you ran quarterly calibrations for the component you selected in step 1. Click to select the desired date, then click [Next] to continue.

Linearity Test Wizard

Step 2 of 5) Select the linearity start date:

Linearity Test Date

- 5/7/2008
- 1/14/2008
- 10/18/2007
- 7/24/2007
- 7/5/2007
- 4/5/2007
- 1/8/2007
- 10/9/2006

Cancel < Back Next >

Step 3 of the wizard shows you all of the quarterly calibration tests on the date you selected. Click to select the tests that comprised the linearity, then click [Next] to continue.

Linearity Test Wizard

Step 3 of 5) Select/highlight the calibrations which comprise the Linearity Error Test.
(use [Shift]-Click or [Ctrl]-Click to select more than one row):

Instrument	Range	Cal End Time	Unit
U1_NOX_P_Instrument	High	05/07/2008 14:35	Online
U1_NOX_P_Instrument	High	05/07/2008 14:50	Online
U1_NOX_P_Instrument	High	05/07/2008 15:05	Online

Cancel < Back Next >

Supply the requested data and click [Next].

Linearity Test Wizard

Step 4 of 5) Supply or overwrite the following information about the Linearity Error Test:

Reason for Test: QA

Test Performed in Grace Period:

Indicator of Aborted Test: [Dropdown]

Cancel < Back Next >

Step 5 allows you to review your choices. Click the [Back] button if you need to make changes. Otherwise, click [Done] to add the linearity test and view the results on the *Linearity* form.

Linearity Test Wizard

Step 5 of 5) Review your selections. Press [Done] to save and view/edit 601/2 records...

Instrument Name: U1_O2D_P_Instrument

Instrument Range: High

Span Scale: H

Component Type: O2D A12

Number of Calibrations: 3

Reason for Test: QA

Grace Period Indicator: 0

Indicator of Aborted Test: [Dropdown]

Test Number: 36

Cancel < Back Next > Done

Linearity Report

To run a Linearity Report, select one or more tests from the Main Window, then click the Report button.

Editor: Main Window

Current User: ...

Edit Samples Recalculate Edit Constants Calibrations Part 60 QA/QC **Part 75 QA/QC**

Linearity RATA RATA Test Qualification

Part 75 Linearity Tests

To view/edit test detail, double click the desired test, or single click to highlight the test and click [View/Edit]
 To add a new linearity test, click [Add New]
 To run a report, click to select the desired tests (use Shift-Click or Ctrl-Click for multiples), and click [Report]
 To filter the list of tests, use the optional filters at bottom left

Qtr Performed	Unit/Stack	Component	Date	Test	Instrument	Scale	Qtr Reported	Result
Qtr 2 - 2008	U6	NOX (A61)	6/25/2008	31	U6_NOX_P_Instrument	H	Qtr 2 - 2008	Pass
Qtr 2 - 2008	U5	NOX (LK1)	6/25/2008	31	U5_NOX_P_Instrument	H	Qtr 2 - 2008	Pass
Qtr 2 - 2008	U3	O2D (A32)	5/8/2008	33	U3_O2D_P_Instrument	H	Qtr 2 - 2008	Pass

The report opens in preview mode with a toolbar that allows you to print, alter the page setup, or export to Word, Notepad (Excel format not available).

RT601//602

Linearity Report (RT601/602) 07/13/2009
Page 1

ORIS Code: 55270 Facility Name: Teledyne Power
 EDR Site ID: LM6 Component ID: A61 ReasonForTest: QA
 Component Type: NOX Grace Period: 0

Instrument Name: U6_NOX_P_Instrument Test End Date/Time: 06/25/2008 Scale: High
 Performance Spec: 5 † Test No.: 31 Highest Error: 1.9
 Status (Pass/Fail): Pass

Date	Time	Cal Gas Level	Span Value	Ref Value	Meas Value	Aborted Test Indicator	Ref Value As Pct Span
06/25/2008	1228	L	90.0	21.3	21.4		23.7 †
06/25/2008	1231	M	90.0	49.2	48.9		54.7 †
06/25/2008	1237	H	90.0	82.9	83.1		92.1 †
06/25/2008	1242	L	90.0	21.3	21.8		23.7 †
06/25/2008	1246	M	90.0	49.2	49.1		54.7 †
06/25/2008	1252	H	90.0	82.9	83.2		92.1 †
06/25/2008	1257	L	90.0	21.3	21.9		23.7 †
06/25/2008	1302	M	90.0	49.2	49.2		54.7 †
06/25/2008	1307	H	90.0	82.9	83.4		92.1 †

Summary Statistics:

Cal Gas Level	Reference	Mean	CEMS Mean	Alt Perf Spec	Results
H	82.900	83.233	No	0.4	
L	21.300	21.700	No	1.9	
M	49.200	49.067	No	0.3	

Enter/View Protocol Gas Verification Program Data

To enter or view the protocol gas data for a test, single click to select the test and click the [Protocol Gas] button to open the *Protocol Gas Data* form.

Report a Protocol Gas Data record for each cylinder of gas used during the test.

Unit/Stack/Pipe ID Test End Date
Parameter (ID) Test Number

Test Type	Gas Level	Gas Type	Cylinder ID	Vendor ID	Expiration Date
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

On the *Protocol Gas Data* form, enter/edit the protocol gas data for each cylinder of gas used during the linearity test. Typically you will have three data records, one each for the low, mid and high gas respectively.

[Auto Retrieve] Automatically retrieve the protocol gas data for this test from the associated Calibration Reference Constants.

8.2 Part 75 RATA Tests

The RATA tab shows a list of existing RATAs sorted by most recent test first. From this form, you can view/edit tests, add new tests, run reports and enter/view Protocol Gas Verification Program and Air Emission Testing Body data for the tests.

Editor: Main Window

Current User: XZHONG

Part 75 RATAs

To view/edit test detail, double click the desired test, or single click to highlight the test and click [View/Edit]
 To add a new RATA, click [Add New]
 To run a report, click to select the desired test and click [Report] (only 1 RATA report at a time)
 To filter the list of tests, use the optional filters at bottom left

Qtr, Year	Unit/Stack	System	P/B	Date	Test Number	Lvl	Normal	Low	Mid	High	Result
Qtr 2 - 2008	MB	FLOW (113)	P	04/08/2008	50	2				4.08	Pass
Qtr 2 - 2008	MB	NOXC (111)	P	04/08/2008	46	1				7.89	Pass
Qtr 2 - 2008	MB	O2 (112)	P	04/08/2008	47	1				3.9	Pass
Qtr 2 - 2008	MB	NOXC (114)	RB	04/08/2008	48	1				10.57	Pass
Qtr 2 - 2008	MB	FLOW (113)	P	04/08/2008	45	2			4.89		Pass
Qtr 2 - 2007	MB	FLOW (113)	P	04/04/2007	43	3			3.22		Pass
Qtr 2 - 2007	MB	FLOW (113)	P	04/03/2007	41	3		5.83			Pass
Qtr 2 - 2007	MB	NOXC (111)	P	04/03/2007	35	1				3.78	Pass
Qtr 2 - 2007	MB	O2 (112)	P	04/03/2007	36	1				7.6	Pass
Qtr 2 - 2007	MB	FLOW (113)	P	04/03/2007	38	3				2.42	Pass
Qtr 2 - 2007	MB	NOXC (114)	RB	04/03/2007	39	1				0.72	Pass
Qtr 2 - 2006	MB	NOXC (111)	P	05/12/2006	32	1				5.97	Pass
Qtr 2 - 2006	MB	O2 (112)	P	05/12/2006	33	1				7.76	Pass
Qtr 2 - 2006	MR	NOXC (114)	RR	05/12/2006	34	1				9.47	Pass

Unit/Stack Filter:
 System Filter:
 Quarter/Year Filter:

Double-click any row in the list to view/edit the results on the *RATA* form (see section 4.4.1).

Filters Use the drop-down boxes at bottom left to filter the list of RATAs on the desired criterion.

[Report] Open a report in preview mode for the selected RATA(s).

[View/Edit] View results of the selected test on the RATA form (shown below).

[Add New] Start the RATA wizard – follow the prompts to create a new test.

Filter RATAs

Because the list of tests may be quite long, filters are provided to make it easier to find specific tests.

To filter the RATA list, supply a *Unit/Stack Filter*, *System Filter* or *Quarter/Year Filter* by selecting from the drop down lists. The filter is applied as soon as you make your selection. To remove a filter, select the blank line at the top of the drop down list or click the *Remove All Filters* button.

View/Edit an Existing RATA

To view or edit an existing test, double click the test. Alternatively, you may single click to select the test and click the [View/Edit] button. Either method opens the *Part 75 RATA* form.

RATA

EDR Site ID MonitoringSystem Load Levels Group

Enabled Reason For RATA Reference Method Aborted Test Indicator
 Test Number Frequency Code Grace Period Indicator

Comment

RT 610-11

RATA Runs Dbl-click to edit run

Run	Lvl	Start Time	Duration	Load	CEM Value	RM Value	RM-CEM	Use Run
1	H	04/08/2008 15:25	22	993	135.2	127.5	-7.7	Yes
2	H	04/08/2008 16:07	22	990	129.6	122.3	-7.3	Yes
3	H	04/08/2008 16:49	22	1022	154.7	147.0	-7.7	Yes
4	H	04/08/2008 17:32	22	969	164.0	151.2	-12.8	Yes
5	H	04/08/2008 18:09	22	1016	143.4	140.8	-2.6	Yes
6	H	04/08/2008 18:49	22	969	183.2	172.6	-10.6	Yes
7	H	04/08/2008 19:33	22	1026	157.2	145.8	-11.4	Yes
8	H	04/08/2008 20:13	22	1038	151.7	141.9	-9.8	Yes
9	H	04/08/2008 20:57	22	1005	167.7	154.4	-13.3	-
10	H	04/08/2008 21:45	22	975	177.2	165.2	-12.0	Yes

RATA Results Dbl-click to edit (select bias factor or select relative accuracy versus mean of difference)

Lvl / Load	Ref Method	CEMs Mean	RM Mean	Difference Mean	Std Deviation	T value	Conf Coeff	Alt Spec	Rel Acc	Result	Bias Factor
H / 1000	7E	155.133	146.033	-9.100	3.153	2.306	2.424	Yes	7.89	Pass	1.000 (Pass)

The overall test Result (Pass/Fail) is show at bottom right. You may modify the information above the RATA Runs list (Enabled, Test Number, Units, etc.) and save using the [Ok] button or by clicking the [X] at top right.

Double-click a run in the *RATA Runs* list...

Run	Lvl	Start Time	Duration	Load	CEM Value	RM Value	RM-CEM	Use Run
1	H	03/01/2005 08:00	21	110	1.083	1.232	0.149	Yes
2	H	03/01/2005 08:25	21	135	1.291	1.344	0.053	Yes
3	H	03/01/2005 08:50	21	129	1.238	1.232	-0.006	Yes
4	H	03/01/2005 09:15	21	125	1.208	1.199	-0.009	Yes

... to open the *Edit RATA Run* form. From here, you may edit any and all information pertaining to the run.

Edit RATA Run ✖

Operating Level **H** Run Number **2**

Default Time Between Runs **25** (minutes from start of one run to start of next run)

Start Date/Time **03/01/2005 8:25** ...

Duration (minutes) **21**

Run Status Flag **Run Used in RATA Calculation**

Reference Value **1.344**

CEMs Value **1.291** Retrieve **U4_NOx_LbPerMBtu_1M**

Load Value **135** Retrieve **U4_Load_MWe_1M**

Double-click a RATA Results row...

Lvl / Load	CEMs Mean	RM Mean	Difference Mean	Std Deviation	T value	Conf Coeff
H / 128	1.231	1.252	0.021	0.054	2.306	0.041

...to open the *RATA Results* form. Use this form to select the alternate specification when the RATA test failed using the primary specification.

RATA Result ✖

End Date/Time **04/01/2005 16:46** Group **4**

RATA Test

Calculation Method	Limit	Result
<input checked="" type="radio"/> Primary Relative Accuracy 6.1	10	Pass
<input type="radio"/> Alternate Relative Accuracy 6.4	5	Fail

You may also select one of several options for the bias factor. For example, if the stack tester's calculated bias factor is different than RegPerfect's, you may manually enter and click the *Manually Entered Value* radio button to use the stack tester's value.

RATA Result (RT611)
 Operating Level: H End Date/Time: 03/01/2005 11:41 Group: 4

RATA Test
 Indicator of Normal Load: [N] ▾

Calculation Method	Semi-Annual		Annual		Overall Result
	Limit	Result	Limit	Result	
<input checked="" type="radio"/> Relative Accuracy	4.98	10 Pass	7.5	Pass	Pass
<input type="radio"/> Mean of Difference	0.021	0.02 Fail	0.02	Fail	Fail

Bias Test

Calculated Value: 1.000 Result: Pass
 Manually Entered Value: 0.000 Selected Bias Factor: As Calculated
 1.000 (Use always for CO2, O2, H2O) Bias Factor: 1.000
 1.111 (low emitter only) Multi-Load Bias Factor: 0.000

Buttons: Cancel, Ok

Edit RATA Tags

While it is perfectly acceptable to manually enter the CEMS value for each run from the stack tester's results, you may alternatively configure a CEMS and/or load tag so that RegPerfect can calculate the average value of each run for you automatically. There are two places to configure these tags.

First, on the Main Window, at the bottom of the RATA tab, the [Edit RATA Tags] button opens a form showing the configured RATA tags for all Part 75 monitoring systems.

RATA CEMs and Load Tags Browser

To change the tags used to retrieve CEMs and Load values during RATA entry, double-click the monitoring system ID

Unit / Stack ID	Monitoring System ID	System Parameter Monitored	RATA CEMs Values Tag	RATA Load Values Tag
U3	FLW	FLOW	U3_StackFlow_scfh_1M	U3_Load_MWe_1M
U3	NOX	NOX	U3_NOx_LbPerMBtu_1M	U3_Load_MWe_1M

To change the tags, double click any field on the row of the monitoring system you wish to change. This opens the *Select RATA Tags* form which allows you to select the CEMS and Load tags from drop down lists.

A second [Edit RATA Tags] button is located at the bottom of the *Part 60 RATA Detail* form. This button also opens the *Select RATA Tags* form.

Select RATA Tags

Unit/Stack ID: U3
 System ID / Parameter: FLW FLOW

CEMs Values Tag: U3_StackFlow_scfh_1M
 Load Values Tag: U3_Load_MWe_1M

Buttons: Cancel, Ok

Enter/View Protocol Gas Verification Program Data

Single click to select a test and click the [Protocol Gas] button to open the *Protocol Gas Data* form from which you may enter/view Protocol Gas Verification Program data for the selected test.

Report a Protocol Gas Data record for each cylinder of gas used during the test.

Unit/Stack/Pipe ID Test End Date
 Parameter (ID) Reference Method

Test Type	Gas Level	Gas Type	Cylinder ID	Vendor ID	Expiration Date
<input type="text"/>	<input type="text" value="v"/>	<input type="text" value="v"/>	<input type="text"/>	<input type="text" value="v"/>	<input type="text"/>

Enter/View Air Emission Testing Body Data

Single click to select a test and click the [Air Emission Testing] button to open the *Air Emission Testing Data* form from which you may enter/view Air Emission Testing Body data for the selected test.

Report a record for each on-site Qualified Individual from an Air Emission Testing Body who conducted or oversaw the test:

Unit/Stack/Pipe ID Test Date
 Parameter / System ID Reference Method

Test Type	Qualified Inspector Name			Air Emissions Testing Body (AETB)			Provider of Qualification Exam			
<input type="text"/>	First	<input type="text"/>	Name	<input type="text"/>	Name	<input type="text"/>	MI	<input type="text"/>	EMail	<input type="text"/>
	Last	<input type="text"/>	Phone	<input type="text" value="(xxx-xxx-xxxx)"/>	Exam Date	<input type="text"/>				

Add New Part 75 RATA

To add a new RATA, click the [Add New] button to start the *RATA Wizard*.

Select a Unit/Stack and monitoring system, then click [Next].

Enter values for all blank fields and review all defaulted values.

For Flow RATAs, be sure to correctly select Num Load Levels (1, 2 or 3). Click the [Single-Level Flow RATA Analysis] button to open the *Single Load Flow RATA Analysis* form which shows whether you qualify for a single load RATA using the default analysis interval (last Flow RATA through end of previous day relative to PC clock time).

Change the analysis dates and/or min/max load if needed, and click the [Recalculate] button to re-compute results.

When you are satisfied with the analysis, click [Done] to return to Step 2 of the wizard (above). Adjust the Num Load Levels if necessary and click [Next] to proceed to Step 3.

If you qualified for a single load RATA based on the analysis, you will be prompted later about having a single load qualification record entered automatically.

Operation Level	Percent	Hours	of	Total Hours	Operating Hours with load	>	and <=	Load Range
Low Operation	1.2	42	of	3482	operating hours with load	>=	95	and <= 126
Mid Operation	6.1	213	of	3482	operating hours with load	>	126	and <= 157
High Operation	92.7	3227	of	3482	operating hours with load	>	157	and <= 199

Enter the Start Time of the first run, the Duration and the Reference Value. Click the two [Retrieve] buttons to calculate the average CEMs and load values from RegPerfect's 1-minute data (you may alternatively enter the values manually).

If you know about how long each run should last, enter it in the Default Time Between Runs – it will be used each time you add a new run to default the run duration.

Review the information. You may use the [Back] button to make corrections if necessary.

Click [Done] to save the RATA.

If you qualified for a single-load Flow RATA based on the analysis form, you will be prompted whether you want the Test Qualification record to be saved.

If you click [Yes], the Test Qualification will be inserted and can be viewed later on the *Qualification* tab.

RATA Test Qualification (formerly RT695)										
Enabled	RATA Test Number	Unit / Stack ID	System ID	Test Claim Code	Begin Date	End Date	Low Lvl Usage	Mid Lvl Usage	High Lvl Usage	
<input checked="" type="checkbox"/>	[Dropdown]	LM1	111	SLC [Dropdown]	04/30/07	04/30/07	85	5	10	

Use the [Add Run] button to add additional runs until RATA entry is complete.

RATA

EDR Site ID | 1 | MonitoringSystem | FLOW | P | 10F | Load Levels | 1 | Group | 412

Enabled Reason For RATA | QA | Reference Method | 2 | Aborted Test Indicator
 Test Number | 46 | Frequency Code | | Grace Period Indicator

Comment |

RATA Runs/Summary

Runs Runs Dbl-click to edit run

Run	Lvl	Start Time	Duration	Load	CEM Value	RM Value	RM-CEM	Use Run
1	H	07/02/2009 12:22	8	190	31539000	32813000	1274000	Yes

Add Run

Change the defaulted Start Date/Time, Duration and Run Status Flag if needed. Enter the Reference Value and use the Retrieve buttons to calculate the average CEMs and Load Values.

The *Edit RATA Run* form is identical except for the addition of a [Delete] button.

Add RATA Run

Operating Level | H | Run Number | 2

Default Time Between Runs | 30 | (minutes from start of one run to start of next run)

Start Date/Time | 07/02/09 12:52 | ... |

Duration (minutes) | 8 |

Run Status Flag | Run Used in RATA Calculation |

Reference Value | 31224000 |

CEMs Value | 32456000 | Retrieve | U1_StackFlow_scth_1M

Load Value | 184 | Retrieve | U1_Load_MWe_1M

Cancel Ok

Part 75 RATA Report

To run a RATA Report, select a single RATA from the Main Window, then click the Report button.

Linearity RATA RATA Test Qualification

Part 75 RATAs

To view/edit test detail, double click the desired test, or single click to highlight the test and click [View/Edit]
 To add a new RATA, click [Add New]
 To run a report, click to select the desired test and click [Report] (only 1 RATA report at a time)
 To filter the list of tests, use the optional filters at bottom left

Qtr, Year	Unit/Stack	System	P/B	Date	Test	Lvls	Normal	Low	Mid	High
Qtr 2 - 2007	U7	NOX (711)	P	05/03/2007	4	1				6.11
Qtr 2 - 2007	U5	NOX (511)	P	05/02/2007	4	1				12.52
Qtr 2 - 2007	U6	NOX (611)	P	05/02/2007	4	1				4.75

The report opens in preview mode with a toolbar that allows you to print, alter the page setup, or export to Word, Notepad (Excel format not available).

NOX RATA Report

Unit/Stack ID: LM5 Bias Test Result: Pass Test Date: 05/02/07
 System Type: NOX RATA Result: Pass Test Number: 4
 System ID: 511 Test Reason: QA

Op Lvl	Run	Start Date/Time	End Time	Use Run	Load	Reference Value	CEMS Value	Difference
H	1	05/02/07 13:12	13:33	Y	54	0.065	0.069	-0.004
H	2	05/02/07 13:40	14:01	Y	53	0.070	0.071	-0.001
H	3	05/02/07 14:08	14:29	Y	53	0.067	0.073	-0.006
H	4	05/02/07 14:37	14:58	Y	53	0.065	0.075	-0.01
H	5	05/02/07 15:05	15:26	Y	53	0.065	0.076	-0.011
H	6	05/02/07 15:36	15:57	Y	53	0.069	0.074	-0.005
H	7	05/02/07 16:06	16:27	Y	53	0.069	0.074	-0.005
H	8	05/02/07 16:37	16:58	Y	53	0.068	0.074	-0.006
H	9	05/02/07 17:07	17:28	Y	53	0.068	0.075	-0.007
H	10	05/02/07 17:38	17:59	N	53	0.066	0.076	-0.01
Summary for Level H				Mean Values:	53	0.067	0.073	-0.006
				Std Deviation:	0.003		Alt Specification?	Yes
				CC:	0.002		Relative Accuracy:	12.52
				T-Value:	2.306		Bias Factor:	1.000

Multiple Load Flow RATAs

Some users are in the habit of entering multiple load RATAs in a way contrary to the intended method. A programming quirk in earlier versions of RegPerfect allowed these "incorrectly" entered RATAs to be reported correctly on the EDR. However, beginning with beta versions of XML software and continuing with RegPerfect v5.0, multiple load RATAs must be entered correctly to be reported correctly.

On the *RATA* form, ***an incorrectly entered 3-load RATA appears as 3 separate rows in the list:***

Qtr, Year	Unit/Stack	System	P/B	Date	Test Num	Lvls	Normal	Low	Mid	High	Result
Qtr 4 - 2007	U2	FLOW (20F)	P	10/18/2007	35	3		1.4			Pass
Qtr 4 - 2007	U2	FLOW (20F)	P	10/18/2007	33	3			0.93		Pass
Qtr 4 - 2007	U2	FLOW (20F)	P	10/17/2007	31	3				3.31	Pass

You can see from the Date and Lvls columns that this is actually a single 3-load RATA, not 3 separate RATA tests. The problem is that this RATA was entered using the RATA Wizard three times. The first time, only the High level runs were entered. The second time, only the Mid level runs were entered, and finally on the third, only the low level runs were entered.

Here is how a 3-load RATA test *should* appear in the list:

Qtr, Year	Unit/Stack	System	P/B	Date	Test Num	Lvls	Normal	Low	Mid	High	Result
Qtr 4 - 2007	U1	FLOW (10F)	P	10/19/2007	40	3		0.84	2.23	3.8	Pass

To get the desired result, you must enter all the runs (low, mid and high) on the *Rata* form as shown at right. Each time you add a run, the Operating Level and Run Number default to the same level and next run number.

If you are entering a multiple load Flow RATA, change the Operating Level after you have entered all runs at one level and are ready to enter runs at the next level.

RATA Runs/Summary		
Runs	Runs	dbl-click to
Run	Lvl	Start Time
9	H	10/18/2007 21:40
10	H	10/18/2007 21:50
1	M	10/18/2007 23:25
2	M	10/18/2007 23:31
3	M	10/18/2007 23:44
4	M	10/18/2007 23:51
5	M	10/19/2007 00:25
6	M	10/19/2007 00:31
7	M	10/19/2007 00:36
8	M	10/19/2007 00:42
9	M	10/19/2007 00:49
1	L	10/19/2007 02:17
2	L	10/19/2007 02:23
3	L	10/19/2007 02:29

When you change the Operating Level, the Run Number will automatically reset to 1 and begin incrementing from there with subsequent runs for that level.

Enter the runs in the order in which they actually occurred: if mid level runs came first, enter them first (and so on).

8.3 RATA Test Qualification

The Qualification tab shows all the single-load RATA qualifications for the unit. The tests are sorted to show the most recently added at the top of the list.

There are three ways to enter a RATA Test Qualification record:

1. When you use the wizard on the *RATA* tab to enter a Flow RATA, you can click a button to automatically do the analysis and enter the record
2. If you have performed the calculations outside of RegPerfect, for example in a spreadsheet, you may simply type in the values on the empty row at the bottom of the list.
3. Use the [Single-Level Flow RATA Analysis] button at bottom right of the Qualification tab

You can use the [Load Analysis Wizard] button at the bottom of this form to help determine (in advance) whether you qualify for a single load flow RATA. If you do, you may choose to insert a partial qualification record with a blank RATA test number (which you can fill in after later entering the RATA), or you can wait and perform the analysis again at the time you enter the RATA.

[Load Analysis Wizard] Click to open the *Single Load Flow Analysis* form.

Change the analysis dates and/or min/max load if needed, and click the [Re-calculate] button to re-compute results.

When you are satisfied with the analysis, click [Done]. You'll be prompted whether to insert the results as a "partial" qualification record – partial because you'll have to return later to enter the RATA test number and flow system ID.

9. Sorbent Trap App K

The *Sorbent Trap App K* tab allows for entry and analysis of Hg sorbent trap results using calculations based on the vacated Part 75 Appendix K rule – this methodology was adopted by a few states.

Note: this tab was formerly named *Hg Sorbent Trap*. If you are not sure whether to use this tab or the new *Sorbent Trap* tab, which follows PS 12B, contact the Call Center.

The form below shows each Hg Sorbent Trap test sorted by test time with the most recent test at the top of the list. For ease of viewing when the list gets large, there are optional filters near the bottom left corner of the form to allow viewing of tests by monitoring site and calendar quarter.

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Sorbent Trap Analysis (Alternate App K)

To view/edit test detail, double click any component of the desired test, or single click to highlight the test and click [View/Edit]
 To add a new Sample Train test, click [Add New]
 To run a report, click to select the desired tests (use Shift-Click or Ctrl-Click for multiples), and click [Report]
 To filter the list of tests, use the optional filters at bottom left

Quarter-Year	Unit-Stack ID	Hg Monitoring System ID	Begin Test	End Test	Is Test QA?	Hg oz Written to C	^
Qtr 2 - 2015	CS3	HG1	06/23/2015 13:06	07/01/2015 07:21	Yes	Yes	
Qtr 2 - 2015	CS3	HG1	06/16/2015 13:04	06/23/2015 07:17	Yes	Yes	
Qtr 2 - 2015	CS3	HG1	06/10/2015 12:56	06/16/2015 12:19	No	Yes	
Qtr 2 - 2015	CS3	Hg1	06/09/2015 16:56	06/09/2015 17:26	Yes	Yes	
Qtr 2 - 2015	CS3	Hg1	06/09/2015 16:11	06/09/2015 16:41	Yes	Yes	
Qtr 2 - 2015	CS3	Hg1	06/09/2015 15:22	06/09/2015 15:52	Yes	Yes	
Qtr 2 - 2015	CS3	Hg1	06/09/2015 14:30	06/09/2015 15:03	Yes	Yes	
Qtr 2 - 2015	CS3	Hg1	06/09/2015 13:44	06/09/2015 14:14	Yes	Yes	
Qtr 2 - 2015	CS3	Hg1	06/09/2015 12:19	06/09/2015 12:51	No	NO	
Qtr 2 - 2015	CS3	Hg1	06/09/2015 07:04	06/09/2015 07:34	No	Yes	
Qtr 2 - 2015	CS3	Hg1	06/03/2015 13:05	06/09/2015 06:21	Yes	Yes	
Qtr 2 - 2015	CS3	Hg1	05/28/2015 08:56	06/03/2015 12:15	Yes	Yes	
Qtr 2 - 2015	CS3	Hg1	05/21/2015 10:07	05/28/2015 08:18	No	Yes	
Qtr 2 - 2015	CS3	Hg1	05/14/2015 08:40	05/21/2015 09:36	Yes	Yes	
Qtr 2 - 2015	CS3	Hg1	05/06/2015 14:00	05/14/2015 08:13	Yes	Yes	
Qtr 2 - 2015	CS3	Hg1	04/30/2015 13:19	05/06/2015 13:08	No	Yes	
Qtr 2 - 2015	CS3	Hg1	04/22/2015 10:43	04/30/2015 12:45	No	Yes	
Qtr 2 - 2015	CS3	Hg1	04/15/2015 08:40	04/22/2015 10:05	No	Yes	
Qtr 2 - 2015	CS3	Hg1	04/08/2015 08:45	04/15/2015 07:48	Yes	Yes	

Unit/Stack Filter
 Quarter/Year Filter

Note: this tab is visible only at sites where at least one Part 75, sorbent trap monitoring system has been configured (see the EDR Setup manual for information on Part 75 monitoring systems).

9.2 View/Edit Tests

From the Hg Sorbent Trap tab, select any test and click the [View/Edit] button to examine the paired trap data. If no tests are selected, the latest test will be displayed. The top half of the View/Edit form allows for test data entry. This is where the laboratory data is entered as well as site observed QA status and explanation. The bottom portion of the form displays calculated test and QA values after the [Save/Calculate] button is clicked. Toggle the Evaluate QA checkbox to see QA status. If any of the calculated fields are zero or blank, typically the cause is that one or more of the data entry fields in the upper part of the display was not entered.

Hg Sample Train Test Data Entry

Sample Train Data Entry

Unit: U1 Monitoring System ID: 1HG Test Enabled

Begin Test	<input type="text" value="05/27/10 0:00"/>	End Test	<input type="text" value="06/24/10 0:00"/>	Operating Time	<input type="text" value="673.00"/>
------------	--	----------	--	----------------	-------------------------------------

SORBENT TRAP 1		SORBENT TRAP 2	
Trap Component ID	HgA	Trap Component ID	HgB
Sorbent Trap Serial Number	<input type="text" value="67881"/>	Sorbent Trap Serial Number	<input type="text" value="67887"/>
Spike Reference Value, ng	<input type="text" value="1600"/>	Spike Reference Value, ng	<input type="text" value="0"/>
Sorbent Trap Hg, ng	<input type="text" value="7.9"/>	Sorbent Trap Hg, ng	<input type="text" value="7.7"/>
Breakthrough Trap Hg, ng	<input type="text" value="1.4"/>	Breakthrough Trap Hg, ng	<input type="text" value="1.9"/>
Spike Trap Hg, ng	<input type="text" value="1685"/>	Spike Trap Hg, ng	<input type="text" value="0"/>
Sample Flow Total, dscm	<input type="text" value="0.276"/>	Sample Flow Total, dscm	<input type="text" value="0.279"/>
Post Leak Check Pass?	<input type="text" value="Pass"/>	Post Leak Check Pass?	<input type="text" value="Pass"/>
Train QA Test Pass?	<input type="text" value="Pass"/>	Train QA Test Pass?	<input type="text" value="Pass"/>

Sample Damage Explanation (if any)

Evaluate QA

Calculated Values

		U1_HgMDL	<input type="text" value="3"/>
Hg Total Mass,ug	<input type="text" value="0.009"/>	Hg Total Mass,ug	<input type="text" value="0.010"/>
Hg Concentration, ug/dscm	<input type="text" value="0.033"/>	Hg Concentration, ug/dscm	<input type="text" value="0.036"/>
Percent Breakthrough	<input type="text" value="17.7"/>	Percent Breakthrough	<input type="text" value="24.7"/>
Percent Spike Recovery	<input type="text" value="105.3"/>	Percent Spike Recovery	<input type="text" value="100.0"/>
Stack Flow / Sample Flow Ref.	<input type="text" value="0.0"/>	Stack Flow / Sample Flow Ref.	<input type="text" value="0.0"/>

Paired Trap Agreement

Hourly Hg Written to DB?

9.3 Add New Test

From the Hg Sorbent Trap tab, click the [Add New] button.

Select an Hg monitoring system listed.

Change the default Begin Test date/time as necessary by manually typing over the default date or by using the date time selection dialog (click on the ellipses). The *Begin Test* time must be unique for each monitoring system test.

Click [Select] to open a new test data entry form.

The [Cancel] button will return to the previous screen without adding a new test.

Unit-Stack ID	Monitoring System ID
U1	1HG

Begin Test: 12/01/10 0:01

Data Entry Form

Enter the Date and Hour for the end of the test. Once the *End Test* time is entered, the total test period *Operating Time* from the database is displayed.

Enter the test data results for each sample train.

The *Post Leak Check* and *Train QA Test* status for each sample train defaults to "Pass" and can be modified using the dropdown selections.

If any trap damage occurred, a new *Sample Damage Explanation* can be typed or a past damage description can be selected with the drop down arrow.

Evaluation of QA status is optional and can be turned on or off by toggling the *Evaluate QA* checkbox.

Note that the *Sample Flow Total* fields will be available for data entry only if no Sample Flow Meter hourly tags have been configured. The top right *Test Enabled* checkbox is intended for future federal reporting.

Unit: U1 Monitoring System ID: 1HG Test Enabled

Begin Test: 12/01/10 0:01 End Test: Operating Time:

SORBENT TRAP 1		SORBENT TRAP 2	
Trap Component ID	HgA	Trap Component ID	HgB
Sorbent Trap Serial Number		Sorbent Trap Serial Number	
Spike Reference Value, ng		Spike Reference Value, ng	0
Sorbent Trap Hg, ng		Sorbent Trap Hg, ng	
Breakthrough Trap Hg, ng		Breakthrough Trap Hg, ng	
Spike Trap Hg, ng		Spike Trap Hg, ng	
Sample Flow Total, dscm		Sample Flow Total, dscm	
Post Leak Check Pass?	Pass	Post Leak Check Pass?	Pass
Train QA Test Pass?	Pass	Train QA Test Pass?	Pass

Sample Damage Explanation (if any)

Evaluate QA

U1_HgMDL: 3

Calculated Values	
Hg Total Mass, ug	
Hg Concentration, ug/dscm	
Percent Breakthrough	
Percent Spike Recovery	
Stack Flow / Sample Flow Ref.	0.0

Paired Trap Agreement: No

Write Hg oz. to Hourly Tag

Buttons: Delete, Close, Save/Calculate

Selecting the [Delete] button (and confirmation) permanently deletes the test data and returns to the previous screen.

Selecting the help [?] button displays a form which details Sorbent Trap Hg Test calculations (see below).

Selecting the [Close] button returns to the main tab without preserving recent changes.

Selecting the [Save/Calculate] button saves the latest test data to the database and recalculates results.

Help Display:

40 CFR 75 Appendix K Sorbent Trap Hg Test Calculations

******* TEST PERIOD DATA ENTRY *******

Ms = Spike Reference mass for each Trap, ng
M1 = Sorbent Trap Hg mass for each Trap, ng
M2 = BreakThrough Trap Hg mass for each Trap, ng
M3 = Spike Trap Hg mass for each Trap, ng
*Vt = Total Sample Flow Meter volume for the test period for each Trap, dscm
*Total Sample Flow Meter volume may be entered on the test form or may be calculated from the hourly database rate

******* DATABASE VALUES *******

Qh =Hourly Stack Flow volume adjusted for Bias if necessary, dscf/hr
Qref = First hour of test Stack Flow volume adjusted for Bias if necessary, dscf/hr
*Fh = Hourly Sample Flow Meter volume for each Trap, dscm/hr (optional)
*Fref = First hour of test Sample Flow Meter volume for each Trap, dscm/hr (optional)
OperatingTime = Hourly Operating Time, % (percentage of hour the unit was operating)
Bws = Average of Constant or Hourly Moisture content, %

******* Hg FORMULAS *******

M = Total Hg Catch, $\mu\text{g} = (M1 \text{ from Trap 1} + M1 \text{ from Trap 2}) / 1000$
(K-5) C = Unadjusted Hg Concentration, $\mu\text{g}/\text{dscm} = M / Vt$
(K-4) BT = Breakthrough, $\% = (M2 / M1) \times 100$
(K-3) SR = Spike Recovery, $\% = (M3 / Ms) \times 100$ (For M30B, Trap 2 Spike is non-applicable)
(K-6) RD = Relative Deviation or Paired Trap Agreement = $|(C1 - C2) / (C1 + C2)| \times 100$
Where C1 = C from Trap 1, and C2 = C from Trap 2
(K-2) Rh = Hourly Ratio of Stack Flow to Sample Flow Meter volume, $\% = Qh / *Fh \times K$
Where K = Power of ten multiplier to keep Rref between 1 and 100 (depends on Qh and Fh units of measure)
*Fh = Vt/OperatingTime for each Trap if not calculated hourly in the database
(K-1) Rref = Qref/Fref x K (Rref1 = Qref/Fref x K for Trap 1 and Rref2 = Qref/Fref x K for Trap 2)
*Fref = Vt/OperatingTime for each Trap if not calculated hourly in the database
(F-29) Hg, oz = $9.978 \times 10^{-10} \times ((C1 + C2) / 2) \times Qh \times \text{OperatingTime} \times ((100 - Bws) / 100)$
(M30B)Hg, oz = $9.978 \times 10^{-10} \times ((C1 + BT1 \text{ if } > \text{MDL}) + C2 + BT2 \text{ if } > \text{MDL}) / 2 \times Qh \times \text{OperTime} \times ((100 - Bws) / 100)$

******* QA TESTS *******

- Post-Test Leak Check passes QA if status set to "Pass" for both Trap 1 and Trap 2
- Train Check passes QA if status set to "Pass" for both Trap 1 and Trap 2
- Breakthrough passes QA if:
(BT Trap1 \leq standard) and (BT Trap2 \leq standard)
- Spike Recovery passes QA if: (For M30B, Trap 2 Spike is non-applicable)
(SR Trap1 \geq 100-standard) and (SR Trap2 \geq 100-standard)
- Relative Deviation or Paired Trap Agreement passes QA if:
(RD \leq std)
- Flow Proportional Sampling (StackFlow to SampleFlow Ratio) passes QA if, for at least 95% of test operating hours:
 $((\text{Rref Trap1} \times (100 - \text{standard}/100)) \leq \text{Rh Trap1} \leq \text{Rref Trap1} \times (100 + \text{standard}/100))$ and
 $((\text{Rref Trap2} \times (100 - \text{standard}/100)) \leq \text{Rh Trap2} \leq \text{Rref Trap2} \times (100 + \text{standard}/100))$

Close

Calculated Data Example

To evaluate QA status, toggle the *Evaluate QA* checkbox in the lower half of the form. QA Status can be evaluated for Post Leak Check, Sample Train, Hg Breakthrough, Spike Recovery, Paired Trap Agreement, and Stack Flow to Sample Flow Meter Ratio.

Note: If some, but not all, of the QA tests are to be ignored, the QA standard for those tests to ignore may be set to 100% (see QA Details section below).

After all test values are entered, click the [Save/Calculate] button to calculate (or re-calculate) and view the test values and QA Status.

Hg Sample Train Test Data Entry
X

Sample Train Data Entry

Unit: U1
Monitoring System ID: 1HG
Test Enabled

Begin Test
End Test
Operating Time

SORBENT TRAP 1

Trap Component ID	HgA
Sorbent Trap Serial Number	<input type="text" value="12345A"/>
Spike Reference Value, ng	<input type="text" value="60"/>
Sorbent Trap Hg, ng	<input type="text" value="92.0"/>
Breakthrough Trap Hg, ng	<input type="text" value="0.4"/>
Spike Trap Hg, ng	<input type="text" value="61"/>
Sample Flow Total, dscm	<input type="text" value="3.962"/>
Post Leak Check Pass?	<input type="text" value="Fail"/>
Train QA Test Pass?	<input type="text" value="Pass"/>

SORBENT TRAP 2

Trap Component ID	HgB
Sorbent Trap Serial Number	<input type="text" value="12345A"/>
Spike Reference Value, ng	<input type="text" value="0"/>
Sorbent Trap Hg, ng	<input type="text" value="98.0"/>
Breakthrough Trap Hg, ng	<input type="text" value="0.2"/>
Spike Trap Hg, ng	<input type="text" value="0"/>
Sample Flow Total, dscm	<input type="text" value="3.962"/>
Post Leak Check Pass?	<input type="text" value="Pass"/>
Train QA Test Pass?	<input type="text" value="Pass"/>

Sample Damage Explanation (if any)

Post Leak Check was questionable - leakage rate and vacuum were well over the 4% margin of error allowed.

Evaluate QA
Calculated Values

	QA Status		QA Status
Hg Total Mass,ug	<input type="text" value="0.092"/>	Hg Total Mass,ug	<input type="text" value="0.098"/>
Hg Concentration, ug/dscm	<input type="text" value="0.023"/>	Hg Concentration, ug/dscm	<input type="text" value="0.025"/>
Percent Breakthrough	<input type="text" value="0.4"/> Pass	Percent Breakthrough	<input type="text" value="0.2"/> Pass
Percent Spike Recovery	<input type="text" value="101.7"/> Pass	Percent Spike Recovery	<input type="text" value="100.0"/> Pass
Stack Flow / Sample Flow Ref.	<input type="text" value="24427.1"/> Pass	Stack Flow / Sample Flow Ref.	<input type="text" value="24427.1"/> Pass
Qref scfh <input type="text" value="17099000"/>		Paired Trap Agreement	<input type="text" value="4.2"/> Pass
Fref1 dscm <input type="text" value="0.007"/>		Hourly Hg Written to DB?	<input type="text" value="Yes"/>
Fref2 dscm <input type="text" value="0.007"/>			
<input type="text" value="100000"/>			

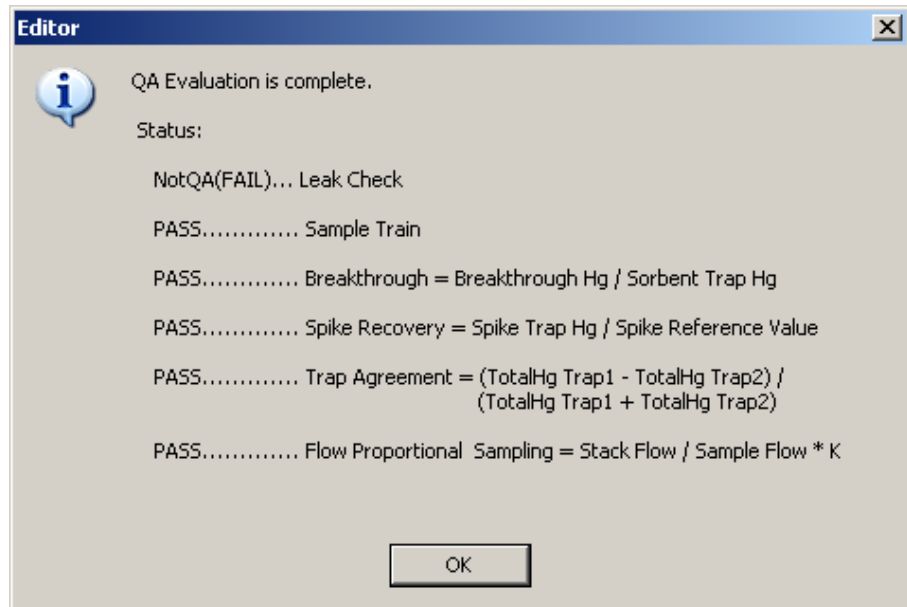
?

Writing the Test Results to the Hourly Hg, oz. Tag

The RegPerfect configuration includes an hourly tag that stores mercury values in ounces. Unlike most RegPerfect tags which are calculated based on clock time, this tag's values are supplied historically from the sampling train test results.

When satisfied with the test results, click [Write Hg, oz to Hourly Tag] to calculate and insert hourly Hg, oz. values to the database for all operating hours within the test period. Writing to the database can be performed as many times as desired, but will overwrite any previous data in the test period.

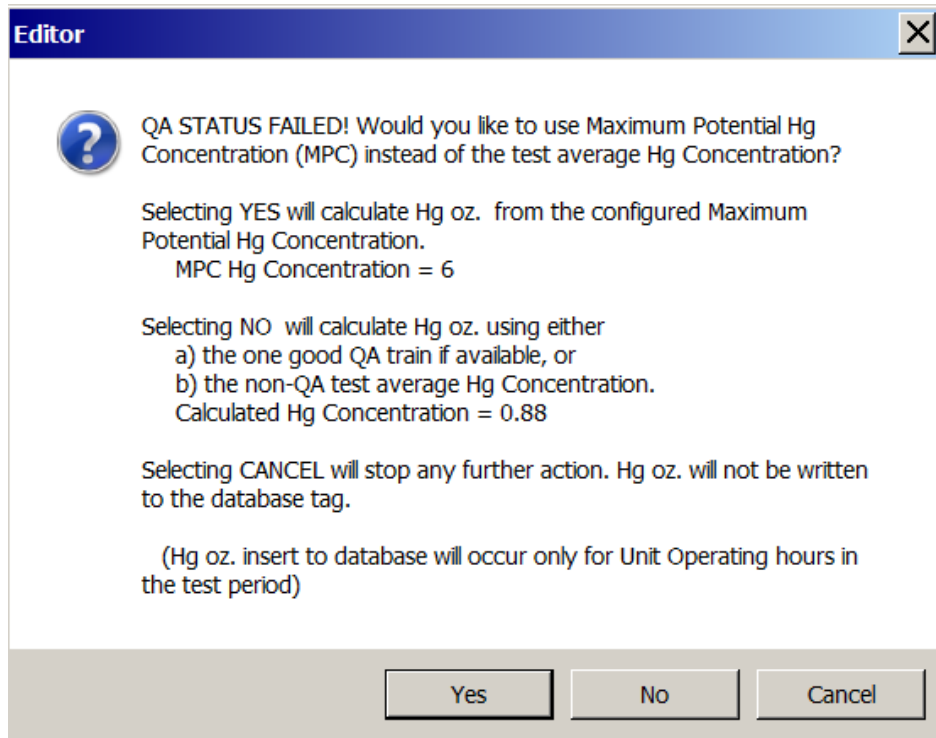
If *Evaluate QA* is checked, the PASS/FAIL status of each test is displayed.



If any of the QA tests have failed, the following options are available for the Hg concentration basis of calculation:

- use a maximum potential concentration value (if a maximum potential concentration constant has been configured),
- use one QA train value, or use a non-QA average value,
- cancel

(At this time, Failed QA status will not affect the validity of the Hg, oz. hourly value.)



9.4 Import Test Data

From the Hg Sorbent Trap tab, click the [Import Test Data] button to browse for an import test data file. The file must be an ASCII flat file containing only ASCII characters. The data fields for each test must be comma delimited in the order shown. The record columns are:

<i>*(mandatory)</i>	EDR Site ID,
<i>*(mandatory)</i>	Hg Monitoring System ID,
<i>(mandatory)</i>	Begin Test Time,
<i>(may be null)</i>	End Test Time,
<i>(may be null)</i>	Sample Damage Explanation, (limited to 256 characters)
<i>*(mandatory)</i>	Trap1 Component ID,
<i>(may be null)</i>	Trap1 Serial Number,
<i>(mandatory)</i>	Trap1 Sorbent Hg Mass,
<i>(mandatory)</i>	Trap1 Breakthrough Hg Mass,
<i>(mandatory)</i>	Trap1 Spike Hg Mass,
<i>(mandatory)</i>	Trap1 Spike Reference Value,
<i>(may be null)</i>	Trap1 Sample Flow Meter Value,
<i>(may be null)</i>	Trap1 Post Leak Check Result Code, (PASS or FAIL)
<i>(may be null)</i>	Trap1 Train QA Status Code, (PASS or FAIL)
<i>*(mandatory)</i>	Trap2 Component ID,
<i>(may be null)</i>	Trap2 Serial Number,
<i>(mandatory)</i>	Trap2 Sorbent Hg Mass,
<i>(mandatory)</i>	Trap2 Breakthrough Hg Mass,
<i>(mandatory)</i>	Trap2 Spike Hg Mass,
<i>(mandatory)</i>	Trap2 Spike Reference Value,
<i>(may be null)</i>	Trap2 Sample Flow Meter Value,
<i>(may be null)</i>	Trap2 Post Leak Check Result Code, (PASS OR FAIL)
<i>(may be null)</i>	Trap2 Train QA Status Code, (PASS OR FAIL)

*Note that EDR Site ID, Hg Monitoring System ID, and Trap Component IDs must exactly match the RegPerfect EDR configuration. Trap1 and Trap2 Component IDs must be unique within the Hg monitoring system. Tests earlier than 2009 cannot be imported. (There should be no line feed within a test row).

Example import data file contents:

REM Comment Line Here – Example File Contents - First Line starts with comment "REM"
REM Three paired trap tests can be imported from data below

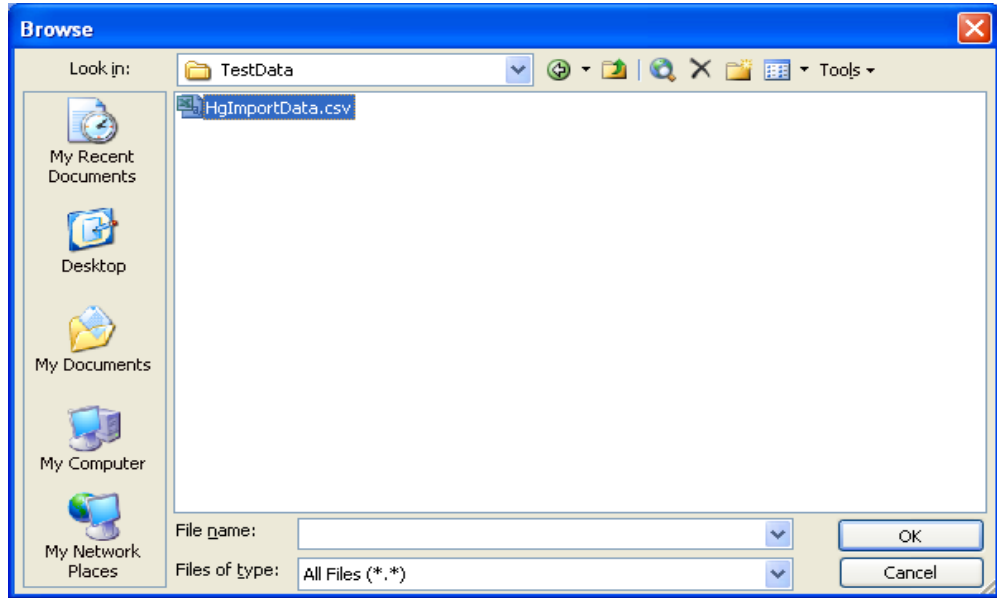
U1,1HG,10/14/10 00:01,10/21/10,,HgA,67877A,2168,1.2,1589,1600,2.444,PASS,PASS,HgB,67877B,2168,1.2,1589,1600,2.444,PASS,PASS

U1,1HG,10/21/10 00:01,10/29/10,,HgA,67861A,1384,7.2,1644,1600,2.244,PASS,PASS,HgB,67861B,1384,7.2,1644,1600,2.244,PASS,PASS

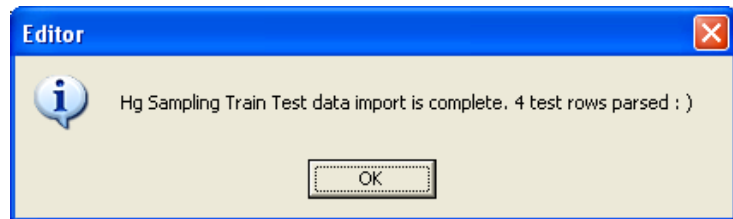
U1,1HG,11/3/10,11/4/10,"No Damage.",HgA,47320A,16.2,0.7,61,60,2.004,PASS,PASS,HgB,47320B,41.9,0.5,61,60,2.000,PASS,PASS

After selecting the [Import Test Data] button, use the File Dialog to find and select the import data file.

Once the file is selected, the import process automatically starts.

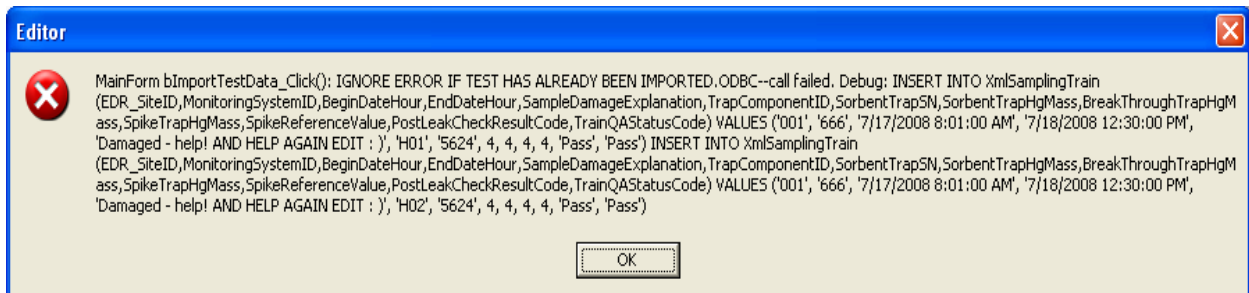


When the import is complete a status message confirms the number of tests processed (which should be the same as the number of data lines in the file).



If there are any errors importing data, a message is displayed indicating the error and the record data. Then, the import will resume for the next test record.

Common errors include that the test data has already been imported or exists for the test time, or that the EDR Site ID, Hg Monitoring System ID, and Trap Component IDs don't match the RegPerfect EDR configuration.



After import is complete, the main tab will reflect the new tests. For each test, review the imported data and Calculate the test values. Select QA Evaluation as desired, and Write the Hg mass into the database. Refer back to the Calculated Data Example for detail.

10. Sorbent Trap

The *Sorbent Trap* tab allows for entry and analysis of Hg sorbent trap results using calculations based on PS12B for compliance with NESHAP-40CFR63, Subpart LLL (Cement MACT), Subpart UUUUU (MATS), etc.

Note: this tab is visible only at sites where at least one Part 75, sorbent trap monitoring system has been configured (see the EDR Setup manual for information on monitoring systems).

The form below shows each Hg Sorbent Trap test sorted by test time with the most recent test at the top of the list. For ease of viewing when the list gets large, there are optional filters near the bottom left corner of the form to allow viewing of tests by monitoring site and calendar quarter.

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Edit Samples Recalculate Edit Constants Calibrations Part 60 QA/QC Part 75 QA/QC Sorbent Trap App K Sorbent Trap PI Data PM Correlation

PS 12-B Sorbent Trap Analysis To view/edit analysis detail, double click the desired trap, or single click to highlight the trap and click [View/Edit]
 To add a new analysis, click [Add New]
 To run a report, click to select the desired trap analysis (use Shift-Click or Ctrl-Click for multiples), and click [Report]
 To filter the list of trap analyses, use the optional filters at bottom left

Qtr - Year	Unit/Stack	System ID	Start	End	Written	Hg Value	Method of Determination
Qtr 2 - 2015	CS3	HG1	Jun-23 13:06	Jul-01 07:21	Y	0.176	(01) Primary Monitoring System
Qtr 2 - 2015	CS3	HG1	Jun-16 13:04	Jun-23 07:17	Y	0.204	(01) Primary Monitoring System
Qtr 2 - 2015	CS3	HG1	Jun-10 12:56	Jun-16 12:19	Y	0.532	(33) Hourly Hg from sorbent trap with higher concentration
Qtr 2 - 2015	CS3	HG1	Jun-03 13:05	Jun-09 06:21	Y	0.864	(01) Primary Monitoring System
Qtr 2 - 2015	CS3	HG1	May-28 08:56	Jun-03 12:15	Y	0.783	(01) Primary Monitoring System
Qtr 2 - 2015	CS3	HG1	May-21 10:07	May-28 08:18	Y	0.992	(32) Hourly Hg from single sorbent trap x 1.111
Qtr 2 - 2015	CS3	HG1	May-14 08:40	May-21 09:36	Y	0.599	(01) Primary Monitoring System
Qtr 2 - 2015	CS3	HG1	May-06 14:00	May-14 08:13	Y	0.765	(01) Primary Monitoring System
Qtr 2 - 2015	CS3	HG1	Apr-30 13:19	May-06 13:08	Y		(34) Hourly concentration missing or invalid
Qtr 2 - 2015	CS3	HG1	Apr-22 10:43	Apr-30 12:45	Y		(34) Hourly concentration missing or invalid
Qtr 2 - 2015	CS3	HG1	Apr-15 08:40	Apr-22 10:05	Y	0.648	(32) Hourly Hg from single sorbent trap x 1.111

Unit/Stack Filter
 System Filter
 Quarter/Year Filter

Each row represents one run (two sampling trains) and shows the **Qtr-Year**, **Unit/Stack**, Monitoring **System ID** and run **Start/End** dates/times. The remain columns in each row are:

Written A value of Y indicates that this trap's Hg Value and MODC have been written to the 1-hour Hg ug/dscm tag.

Hg Value The calculated Hg ug/dscm for the run, or blank if the run was invalid or hasn't yet been calculated.

MODC The method of determination code for the run.

10.1 Add New Analysis

To add a new run, click *[Add New]*. On the Add New popup, select a unit/stack/system, enter the run start and end dates/times, and click *[Add]*.

Unit/Stack ID	System ID	P/B	End Date/Hour of Last Analysis
CS3	HG1	P	01/15/2016 07:05

Sample Collection Period Start: 01/15/2016 8:14

Sample Collection Period End: 01/23/2016 9:33

Buttons: Cancel, Add

Sample Collection Period Start/End

The start and end date/times of the run.

Note: Do not just enter the times that you installed and removed the trap. Instead, enter the times that sample flow through the trap started and stopped.

Accurately entering these times may make the difference between passing or failing the trap's Sample-Flow-to-Stackflow-Ratio (SFSR) quality assurance check.

After clicking *[Add]*, the *Sorbent Trap Analysis* form opens.

On this form, enter the lab analysis results for each sampling train in the blank fields that have a white background (fields with grey backgrounds are calculated).

Sorbent Trap Analysis ☒

Unit/Stack ID **Monitoring System** **Enabled**

Sample Collection Period: Start ... End ...

Data Locked APS Code
 Results Written to Hourly Hg Tag

Sampling Train A		Sampling Train B	
Sampling Train Component ID	<input type="text" value="216"/>	Sampling Train Component ID	<input type="text" value="217"/>
Trap Serial Number	<input type="text" value="OL280742"/>	Trap Serial Number	<input type="text" value="OL280746"/>
Hg Section 1 - Main (ng)	<input type="text" value="613.00"/>	Hg Section 1 - Main (ng)	<input type="text" value="575.00"/>
Hg Section 2 - Breakthrough (ng)	<input type="text" value="0.00"/>	Hg Section 2 - Breakthrough (ng)	<input type="text" value="1.70"/>
Hg Section 3 - Spike (ng)	<input type="text" value="2460.00"/>	Hg Section 3 - Spike (ng)	<input type="text" value="2752.00"/>
Spike Reference Value (ng)	<input type="text" value="3000.00"/>	Spike Reference Value (ng)	<input type="text" value="3000.00"/>
Total Sample Volume (dscm)	<input type="text" value="0.9300"/>	Total Sample Volume (dscm)	<input type="text" value="0.9300"/>
Reference SFSR Ratio	<input type="text" value="49.5"/>	Reference SFSR Ratio	<input type="text" value="49.5"/>
Sample Damage Explanation	<input type="text"/>	Sample Damage Explanation	<input type="text"/>
QA/QC Criteria (PS-12B)		QA/QC Criteria (PS-12B)	
Laboratory QA/QC	<input type="text" value="PASSED"/>	Laboratory QA/QC	<input type="text" value="PASSED"/>
Post-Monitoring Leak Check	<input type="text" value="PASSED"/>	Post-Monitoring Leak Check	<input type="text" value="PASSED"/>
SFSR Check <input type="text" value="1"/> (<= 177 hrs)	<input type="text" value="PASSED"/>	SFSR Check <input type="text" value="0"/> (<= 177 hrs)	<input type="text" value="PASSED"/>
Breakthrough <input type="text" value="0.0"/> (<= 5%)	<input type="text" value="PASSED"/>	Breakthrough <input type="text" value="0.3"/> (<= 5%)	<input type="text" value="PASSED"/>
Spike Recovery <input type="text" value="82.0"/> (+/- 25%)	<input type="text" value="PASSED"/>	Spike Recovery <input type="text" value="91.7"/> (+/- 25%)	<input type="text" value="PASSED"/>
Hg Total Mass (ug)	<input type="text" value="0.613"/>	Hg Total Mass (ug)	<input type="text" value="0.5767"/>
Hg Concentration (ug/dscm)	<input type="text" value="0.659"/>	Hg Concentration (ug/dscm)	<input type="text" value="0.62"/>
Train QA Status	<input type="text" value="PASSED"/>	Train QA Status	<input type="text" value="PASSED"/>

Paired Trap Agreement % (RelativeDeviation <= 20%)
 Hg System Concentration **ug/dscm**
Method of Determination

Use and reporting of sorbent traps is a complex subject that deals with numerous calculations and quality assurance criterion that determine the overall Hg and whether the run is usable or not usable. Many of the details of these calculations are documented elsewhere and are beyond the scope of this manual.

Readers who need more information should consult PS12B, 40CFRPart63 subparts LLL or UUUUU, and the XML EDR Instructions for elements HourlyGFMDData, MATSMonitorHourlyValueData, MATSDerivedHourlyValueData, SorbentTrapData and SamplingTrainData.

The [?] help button at the bottom, center of the form provides good, base instructions for the 6 steps needed to enter sorbent trap data, calculate results and write them to the database.

Sorbent Trap Analysis Help

Adding a Sorbent Trap Analysis

The Sorbent Trap Analysis form opens after you select a monitoring system and enter the dates for a new analysis.

Note: when entering the analysis start and end times, it is important to be as accurate as possible. Do not round to even hours – if a trap stopped collecting data at 12:13, enter 12:13 rather than round to 12:00.

1. Fill in the lab analysis results for Trains A and B

In the Sampling Train A and B sections of the form, the fields with white backgrounds must be manually entered: Serial Number, Hg in nanograms for sections 1, 2, 3 and the Spike Reference, and Total Sample Volume.

The Lab QA/QC and Post-Monitoring Leak check always default to PASSED and must be manually changed to FAILED when appropriate.

NOTE: special handling is required for a trap with no lab analysis results

 - If the trap was lost or broken, set "Laboratory QA/QC" to failed and leave Hg sections 1 to 3 and the spike reference blank
 - If the trap was not analyzed for any other reason, e.g. it failed the post leak check, enter zeros for Hg sections 1 to 3 and the spike reference
2. Click the [Calculate] button

All fields with a grey background will be calculated. You may manually overwrite the calculated values (not recommended), but note that clicking [Calculate] afterward will overwrite your edits. If you must manually edit values, click the [Data Locked] checkbox as soon as you're done to prevent accidental recalculation.

NOTE: If measured Hg concentration is greater than or equal to 10% of the Hg Limit equivalent concentration, PercentBreakthrough will be blanked. Hg Limit equivalent concentration is configured in "Hg MATS EmissionsLimit ugPerScm" combo box in XmlSystem screen of EDR Setup application when the Sorbent Trap Monitoring System is created. A constant, whose values have been converted to ugPerScm units should be picked in this combo box. If no constant is picked, PercentBreakthrough calculation will not be affected by Hg Limit equivalent concentration.
3. If the calculated results indicate Method of Determination 33 (use hourly Hg from the train with the highest concentration), you may optionally change the method to 34 to select invalid Hg instead.
4. Click the [Write Results] button to open the Write Results form.
5. Do a final review of the analysis results and, if applicable, the transition hour.
6. Click the [Write Results] button which automatically ...
 - sets the Hg ug/dscm hourly tag to the indicated Hg value/status/MODC for the analysis period
 - inserts a request for CalcEngine to recalculate all down-stream tags
 - sets the [Data Locked] property on the Sorbent Trap form to prevent accidental edits

Modifying a Sorbent Trap Analysis

Double-click the desired trap analysis from the list, uncheck the [Data Locked] checkbox near the top of the form, and proceed with the above steps for adding an analysis.

Note: you may modify a sorbent trap analysis as many times as needed so long as you remember to [Write Results] when you're done.

Calculation Formulas and QA Check Limits

Almost all of the labels and fields for calculated values have tool tips. For example, hover the mouse over the label "SFSR Check" to see the formula or over the result (PASSED/FAILED) to see the QA criterion.

The manually entered Hg values have tooltips that show the values converted to micrograms and rounded to 3 significant digits – i.e. the value that will be reported on the EDR.

Close

Note: The complexity of Hg sorbent trap regulations requires an equally complex configuration in RegPerfect which is not documented here and is created for you by Teledyne. As a result, configuration issues can result in errors when you try to add and analyze traps. If you are unable to correct these errors yourself, contact the Call Center for help.

Main objectives for the Sorbent Trap Analysis and Write Results forms

- The data from each sampling train must be used, along with some auto calculated data such as the reference SFSR ratio, to calculate an overall Hg concentration and MODC (method of determination code).

Do this by entering the fields with white backgrounds and then clicking [Calculate].

- That calculated Hg concentration and MODC must be written to an hourly mercury tag – a tag named something like *U1_HgST_ugPerScm_1H* – for the every hour of the entire duration of the run so that additional, downstream tags may be calculated including the compliance tags which are the 30 or 90 day rolling averages.

Do this by clicking [Write Results] which opens a new form of the same name for a final review, then clicking [Write Results] again. The needed recalculation of downstream tags occurs automatically and, invisibly.

So ... enter the values from the lab analysis here:

Sampling Train A		Sampling Train B	
Sampling Train Component ID	HGA	Sampling Train Component ID	HGB
Trap Serial Number	247404	Trap Serial Number	247441
Hg Section 1 - Main (ng)	1006.00	Hg Section 1 - Main (ng)	1075.00
Hg Section 2 - Breakthrough (ng)	0.10	Hg Section 2 - Breakthrough (ng)	8.20
Hg Section 3 - Spike (ng)	888.00	Hg Section 3 - Spike (ng)	917.00
Spike Reference Value (ng)	1000.00	Spike Reference Value (ng)	1000.00
Total Sample Volume (dscm)	1.1600	Total Sample Volume (dscm)	1.2700

Click [Calculate] and view the results here:

<input type="button" value="Calculate"/>	Paired Trap Agreement	0.81	% (RelativeDeviation <= 20%)
<input type="button" value="Write Results"/>	Hg System Concentration	0.864	ug/dscm
	Method of Determination	(1) Primary Monitoring System	

If you're satisfied with the results, click [Write Results] to open the Write Results form.

Have a last look at your results and the data value being reported for a transition hour (if applicable). Accept the defaults unless you think there's something wrong, and click [Write Results] to finish up.

Write Results

Review the results of the sorbent trap analysis and, if applicable, the transition hour between this trap and the previous trap.

Click [Write Results] to update your hourly Hg ug/scm tag with these results. This operation will be saved immediately.

Sorbent Trap Analysis Results

Sample Collection Interval: 06/03/15 13:05 to 06/09/15 6:21

Hourly Hg Tag: CS3_HgST_ugPerScm_1H

Monitoring System ID: HGT

Hg Value/Modc/Status: 0.864 | 1 | Valid

Transition Hour with Previous Trap

Transition Hour Occured between New and Old Traps

Sample collection for the old and new traps did not occur in the same clock hour

Valid Data Minutes During Transition Hour:

Old Trap:

New Trap:

Time Weighted Average:

Transition Hour MODC: 41

Automatically create a recalculation request

Selected Field Descriptions and/or Tips: Sorbent Trap Analysis form

Not all details are included for every field, and those that are included are accurate as of Jan 2016 but are subject to change.

Sample Collection Period Start/End	You can change these so long as you don't make the run overlap with another run already in the database, but if you do, everything gets recalculated.
Data Locked	When this is checked, you can't edit anything else on the form unless you uncheck it. Set this to prevent accidental edits after you're done with a sorbent trap. Note that it's automatically checked after you write the results.
Results Written	Once you've written the results, this stays checked and is not editable.
Enabled (top right)	This only controls whether the sorbent trap is included on the EDR.
Sections 1, 2, 3 & Spike Reference	You enter them in nanograms, but they are rounded and reported in micrograms and these rounded values are the ones used in calculations. So if you try to hand verify the calculations, use the rounded values which you can see in tool tips when you hover the cursor over these fields.
Total Sample Volume	As of the Dec 16, 2016 EDR Submission Instructions, this value is rounded and reported to 4 decimal places. You are allowed to use 2 or 3 digits if you wish, but you'll have to enter the rounded value manually. For example, if the value is 2.173419, enter 2.1700 or 2.1730 if you wish to use 2 or 3 digits precision.
Reference SFSR	This is calculated automatically when you first add the analysis. It uses 1-minute sample flow tags and stackflow tags that are configured for other applications.
Lab QA/QC	Manually set this to FAILED if the sample couldn't be analyzed for any reason
Post Leak Check	Manually set this to FAILED when appropriate
SFSR Check	The details get quite complicated, but the concept is that the ratio of StackFlow/Sampleflow must stay consistent (+/- 25%) throughout the run.
Breakthrough	Section 2 must be < 5% of Section 1 (or 10% if Hg concentration <= 0.5)
Spike Recovery	Has to be 75 to 125% of the spike reference
Hg concentration (individual train)	Section 1 + Section 2 converted to micrograms and rounded, divided by Total Sample Volume
Paired Trap Agreement	Limit: <10% if Hg > 1.0; <=20% if Hg <= 1.0; Alt Limit: HgA - HgB < .03
Hg System Concentration	The average of Hg from trains A and B (or the higher of the two, or the only one of the two that is valid)
Method of Determination	If it is calculated as 33 (use the higher of the 2 trains Hg because the paired trap agreement is too high), you may optionally choose to invalidate the entire run by changing the MODC to 34.

Selected Field Descriptions and/or Tips: Write Results form

The Analysis Results section simply restate the results of the analysis for your review.

If *Transition Hour Occurred* is checked, it indicates that this trap was installed and began sample collection in the same clock hour that the previous trap was removed (according to the run start and end date/times you've entered).

For transition hours, RegPerfect auto calculates the hourly mercury value for that hour using a time weighted average of the old and new traps. You may override these results by editing them (not recommended).

Write Results

Review the results of the sorbent trap analysis and, if applicable, the transition hour between this trap and the previous trap.

Click [Write Results] to update your hourly Hg ug/scm tag with these results. This operation will be saved immediately.

Sorbent Trap Analysis Results

Sample Collection Interval	06/03/15 12:54	to	06/09/15 6:21
Hourly Hg Tag	CS3_HgST_ugPerScm_1H		
Monitoring System ID	HG1		
Hg Value/Modc/Status	0.868	1	Valid

Transition Hour with Previous Trap

Transition Hour Occured between New and Old Traps

Sample collection for the old trap occurred in the same clock hour as the current trap through minute 15 (Hg = 0.783)

Valid Data Minutes During Transition Hour:

Old Trap	16
New Trap	6
Time Weighted Average	0.80600
Transition Hour MODC	41

Automatically create a recalculation request

Close Write Results

Transition Hour MODC

Leave this at the default value of 41 to indicate a transition hour ***unless the transition occurred during a RATA, in which case, change it to 42.***

Automatically create a recal request

Leave this box checked (the default) to ensure downstream calculations are performed after you click [Write Results]

[Write Results]

Click this button to actually write the Hg value, MODC and status to the hourly Hg tag from the start of the sample collection period through the end.

10.2 View/Edit Analysis

To view/edit an existing run, dbl-click the run in the list or single click to select it and then click [View/Edit]. Any of these actions open the Sorbent Trap analysis form. For field level instructions, see the previous section.

Note: if the [] Data Locked checkbox is checked, you cannot edit any data on this form until you uncheck it.

Note: if you change data on this form that causes changes to the Hg System Concentration or Method of Determination, you should also click the [Write Results] buttons on this and the ensuing Write Results form to update the hourly Hg tag and its downstream calculations.

Sorbent Trap Analysis			
Unit/Stack ID	CS3	Monitoring System	HG1 (P) Enabled <input checked="" type="checkbox"/>
Sample Collection Period: Start	06/03/2015 12:54	<input type="checkbox"/> Data Locked	
End	06/09/2015 6:21	<input checked="" type="checkbox"/> Results Written to Hourly Hg Tag	
Sampling Train A		Sampling Train B	
Sampling Train Component ID	HGA	Sampling Train Component ID	HGB
Trap Serial Number	247404	Trap Serial Number	247441
Hg Section 1 - Main (ng)	1016.00	Hg Section 1 - Main (ng)	1075.00
Hg Section 2 - Breakthrough (ng)	0.10	Hg Section 2 - Breakthrough (ng)	8.20
Hg Section 3 - Spike (ng)	888.00	Hg Section 3 - Spike (ng)	917.00
Spike Reference Value (ng)	1000.00	Spike Reference Value (ng)	1000.00
Total Sample Volume (dscm)	1.1600	Total Sample Volume (dscm)	1.2700
Reference SFSR Ratio	21.4	Reference SFSR Ratio	20.2
Sample Damage Explanation		Sample Damage Explanation	
QA/QC Criteria (PS-12B)		QA/QC Criteria (PS-12B)	
Laboratory QA/QC	PASSED	Laboratory QA/QC	PASSED
Post-Monitoring Leak Check	PASSED	Post-Monitoring Leak Check	PASSED
SFSR Check	2 (<= 7 hrs) PASSED	SFSR Check	1 (<= 7 hrs) PASSED
Breakthrough	0.0 (<= 5%) PASSED	Breakthrough	0.8 (<= 5%) PASSED
Spike Recovery	88.8 (+/- 25%) PASSED	Spike Recovery	91.7 (+/- 25%) PASSED
Hg Total Mass (ug)	1.0201	Hg Total Mass (ug)	1.0882
Hg Concentration (ug/dscm)	0.879	Hg Concentration (ug/dscm)	0.857
Train QA Status	PASSED	Train QA Status	PASSED
<input type="button" value="Calculate"/>	Paired Trap Agreement	1.27	% (RelativeDeviation <= 20%)
<input type="button" value="Write Results"/>	Hg System Concentration	0.868	ug/dscm
	Method of Determination	(1) Primary Monitoring System	
<input type="button" value="Delete"/>	<input style="border: none; background-color: #f0f0f0; padding: 2px 10px;" type="button" value="?"/>	<input type="button" value="Cancel"/>	<input type="button" value="Ok"/>

10.3 Import Sorbent Trap Lab Analysis

You can import sorbent trap analysis results from a comma delimited text file rather than enter them manually. Click the [?] help button for details on the required format of the text file to be imported.

Click [*Import Test Data*] to open the Import Sorbent Trap Tests form.

Import Sorbent Trap Tests

Click [Load File] and select a file to perform pre-import validation checks on format and contents
Click [Import] to attempt to import all rows in the list with a status of "ok"

File Validation Results:

|--|--|--|

? Load File Import Close

- [?]** Opens a help window with instructions on how to use this form to import data
- [Load File]** Opens a tree view of the file system. Navigate to and dbl-click the text file you wish to import. When the file is loaded, its contents are immediately checked for errors and are displayed in the list.
- [Import]** Attempt to import the lines in the file that show a status of "ok".

A file is checked for errors when it is loaded, and its contents are displayed in the list box. Each line of the file is assigned a status of "Error" or "ok". Lines with a status of "Error" have a description describing the problem. Before importing, you may edit the file to attempt to resolve errors and reload it to see if you have succeeded.

Import Sorbent Trap Tests

Click [Load File] and select a file to perform pre-import validation checks on format and contents
Click [Import] to attempt to import all rows in the list with a status of "ok"

File Validation Results:

Line	Status	Description
1	Error	[CS4] is not a valid unit/stack ID for this facility
2	ok	CS3 · HG1 · 1/1/16 7:30 · 1/7/16 7:05 · HGA · 123A · 413.2 · 1.1 · 801.1 · 811.2 · 1.92 · pass · pass · HGB · 12
3	ok	CS3 · HG1 · 1/7/16 7:30 · 1/15/16 7:05 · HGA · 124A · 414.2 · 1.2 · 802.1 · 812.2 · 1.93 · pass · pass · HGB · 1
4	ok	CS3 · HG1 · 1/7/16 7:30 · 1/15/16 7:05 · HGA · 124A · 414.2 · 1.2 · 802.1 · 812.2 · 1.93 · pass · pass · HGB · 1
5	Error	Monitoring system [HG2] is not a valid sorbent trap system ID for unit/stack 'CS3'
6	Error	Component [HGZ] is not a valid sorbent trap component for monitoring system HG1 on unit/stack CS3
7	Error	This row contains 21 data columns -- 22 are required

However, it is not *necessary* to resolve all errors before importing. If just one (or more) of the lines in the file have a status of "ok", the [Import] button at the bottom of the form will be enabled; click it to attempt to import all lines with status "ok". The list will be updated to show which lines were successfully imported:

Click [Import] to attempt to import all rows in the list with a status of "ok"

File Validation Results:

Line	Status	Description
2	Imported	CS3 · HG1 · 1/1/16 7:30 · 1/7/16 7:05 · HGA · 123A · 413.2 · 1.1 · 801.1 · 811.2 · 1.92 · pass · pass · HGB · 12
3	Imported	CS3 · HG1 · 1/7/16 7:30 · 1/15/16 7:05 · HGA · 124A · 414.2 · 1.2 · 802.1 · 812.2 · 1.93 · pass · pass · HGB · 1

Using the examples above, lines 1, 5, 6 and 7 had errors and were ignored. An attempt was made to import lines 2, 3 and 4, but only lines 2 and 3 were actually imported because line 4 is a duplicate of line 3 (same unit/stack, monitoring system, components and run dates/times).

After importing, close the form and the imported sorbent traps will appear in the list with blank Hg Value and MODC – as shown below on the top two, highlighted rows:

Edit Samples	Recalculate	Edit Constants	Calibrations	Part 60 QA/QC	Part 75 QA/QC	Sorbent Trap App K	Sorbent Trap	PI
------------------------------	-----------------------------	--------------------------------	------------------------------	-------------------------------	-------------------------------	------------------------------------	------------------------------	--------------------

PS 12-B Sorbent Trap Analysis To view/edit analysis detail, double click the desired trap, or single click to highlight the trap and
 To add a new analysis, click [Add New]
 To run a report, click to select the desired trap analysis (use Shift-Click or Ctrl-Click for multiple)
 To filter the list of trap analyses, use the optional filters at bottom left

Qtr - Year	Unit/Stack	System ID	Start	End	Written	Hg Value	Method of Determination
Qtr 1 - 2016	CS3	HG1	Jan-07 07:30	Jan-15 07:05			
Qtr 1 - 2016	CS3	HG1	Jan-01 07:30	Jan-07 07:05			
Qtr 2 - 2015	CS3	HG1	Jun-23 13:06	Jul-01 07:21	Y	0.176	(01) Primary Monitoring System
Qtr 2 - 2015	CS3	HG1	Jun-16 13:04	Jun-23 07:17	Y	0.204	(01) Primary Monitoring System

Note: To complete the import, dbl-click to open each test – verify the imported values, then click [Calculate] followed by [Write Results].

11. PI Data

The *PI Data* tab lets you work with RegPerfect's Plant Interface (PI) driver. This tab is visible if a PI controller has been added to your configuration, but only for RP_ADMINS and RP_MANAGERS.

Editor: Main Window

Current User: JHGILMER

Edit Samples Recalculate Edit Constants Calibrations Part 60 QA/QC Part 75 QA/QC Hg Sorbent Trap **PI Data**

PI Output File Path: D:\RegPerfect\PIData

Real-time Output File Name: PIRealtimeReport.csv

Historical Output File Name: PIHistoricalReport.csv

Maximum Number of Days to Attempt Historical Recovery of Missing Data: 7

Tag Type	PI Tag Name	RegPerfect Tag	Alarm Limit	Exclusion Limit	Historical Recover
AVG	PHNOxRate	U2_NOx_LbPerMBtu_1M			Yes
ALRM	PHNOxRate	U2_NOx_LbPerMBtu_1M	>= 5		-
STAT	PHNOxRate	U2_NOx_LbPerMBtu_1M			-
AVG	PHOpac	U2_Opac_Pct_6M			Yes
STAT	PHOpac	U2_Opac_Pct_6M			-
UnitOn	PHUnitOn	U2_UnitOn_TF_1M			Yes
Watchdog	PHWatchdog				-

Tag Type Filter: [v]
RP Tag Name: [v]
Remove All Filters

Sort by Tag Type, PI Tag Name
 Sort by PI Tag Name
 Sort by RegPerfect Tag Name

Add New PI Tag Missing Data Recover Historical Data

The PI Driver exports 1-minute, 6-minute and/or hourly data from RegPerfect tags to the *Real-time Output File Name* and *File Path* configured at the top of the form. A copy of the file is created with the name *yyyymmdd_hhmmss.txt*. This file is read and processed by your PI system, then renamed and eventually deleted (these actions are the responsibility of the client).

When RegPerfect data is missing for one or more tags in real time, the tag ID and time are remembered for 7 days (or fewer as configured above in *Maximum Number of Days to Attempt Historical Recovery of Missing Data*). The PI driver periodically checks to see if any of the missing data have "arrived" and, if so, outputs them to *yyyymmdd_hhmmss_Historical.txt*. As with real-time files, historical files are processed, renamed and deleted by your PI system.

The content of the output file is determined by the *PI Tags* list shown in the middle of the above form. Each row in the list represents a single PI tag which corresponds to a line in the output file. The boxes below the list allow you to sort or filter the list of PI tags – select a Tag Type and/or RegPerfect (RP) tag name to immediately apply the filter.

Note: While RegPerfect uses start time to timestamp sample values, PI uses end time. For example, the 6-minute RegPerfect opacity value for 07:48 is labeled 07:54 in the PI output file.

11.1 Add/Edit PI Tags

From the *PI Data* tab, double-click a PI tag in the list to edit that tag. To add one or more new tags, click the [Add New PI Tag] button. Both these actions open the *Edit Pi Tag* form.

Tag Type	PI Tag Name	RegPerfect Tag	Alarm Limit	Exclusion Limit	Historical Recover
AVG	PH-NOxRate	U2_NOx_LbPerMBtu_1M			Yes
ALRM	PH-NOxRate	U2_NOx_LbPerMBtu_1M	>= 5		-
STAT	PH-NOxRate	U2_NOx_LbPerMBtu_1M			-
AVG	PI-Opac	U2_Opac_Pct_6M			Yes
STAT	PI-Opac	U2_Opac_Pct_6M			-

Alarm Configuration							Historical Recovery Enabled
PI Tag Type	PI Tag Name	RegPerfect Tag	Inequality	Limit	Limit Tag	Exclusion Limit	
ALRM	PI-Opac	U2_Opac_Pct_6M	>=	30		40	<input type="checkbox"/>
UnitOn							<input type="checkbox"/>
Watchdog							<input type="checkbox"/>
STAT							<input type="checkbox"/>
ALRM							<input type="checkbox"/>
AVG							<input type="checkbox"/>

There are 5 PI Tag Types:

- **AVG** reports value and a numerical status
- **ALRM** reports whether or not the parameter has exceeded its alarm limit
- **STAT** reports textual status of the parameter
- **Watchdog** reports an alternating 0/1
- **UnitOn** reports a textual unit operating indicator

Select a PI Tag Type and enter the PI Tag Name. For all types except the Watchdog, select the RegPerfect tag that will provide the data for the PI tag.

For tags of type ALRM only, enter the alarm inequality, limit – either a static value or a RegPerfect tag – and optional Exclusion limit (only for 6-minute opacity). Click the [?] buttons for help with alarm limits.

To make the driver automatically attempt to recover this tag's data when it is missed in real-time, click to check the Historical Recovery Enabled checkbox.

The same RegPerfect tag is typically mapped to 2 or 3 PI tags – an AVG tag, a STAT tag and perhaps an ALRM tag. The PI tag name is appended with .AVG, .ALRM or .STAT when it is written to the output file.

Tip: To enable historical recovery, you need only check the box on one row in cases where multiple rows have the same RegPerfect tag. Check the box on the AVG tag's row (if one exists for that RegPerfect tag).

To delete a PI tag, click to select the record selector at far left of the row and press the [Del] key. After editing/adding the PI tag(s), click [Ok] to close the window. Your edits will be reflected in the PI Tags list on the *PI Data* tab.

PI Tags

Tag Type	PI Tag Name	RegPerfect Tag	Alarm Limit	Exclusion Limit	Historical R
AVG	PHNOxRate	U2_NOx_LbPerMBtu_1M	>= 100		Yes
ALRM	PHNOxRate	U2_NOx_LbPerMBtu_1M			-
STAT	PHNOxRate	U2_NOx_LbPerMBtu_1M			-
AVG	PI-Opac	U2_Opac_Pct_6M	> 30	40	Yes
STAT	PI-Opac	U2_Opac_Pct_6M			-
ALRM	PI-Opac	U2_Opac_Pct_6M			-
UnitOn	PI-UnitOn	U1_UnitOn_TF_1M			Yes
Watchdog	PI-Watchdog				-

The real-time output file, based on the above configuration, would look like something like this:

```

PI-Watchdog,14-Jul-2009 15:30:00,1
PI-UnitOn.STAT,14-Jul-2009 15:32:00,CanEmit
PI-NOxRate.ALRM,14-Jul-2009 15:32:00,OK
PI-NOxRate.AVG,14-Jul-2009 15:32:00,1.096,0
PI-NOxRate.STAT,14-Jul-2009 15:32:00,OK
PI-Opac.ALRM,14-Jul-2009 15:30:00,OK
PI-Opac.AVG,14-Jul-2009 15:30:00,9.6,0
PI-Opac.STAT,14-Jul-2009 15:30:00,OK
    
```

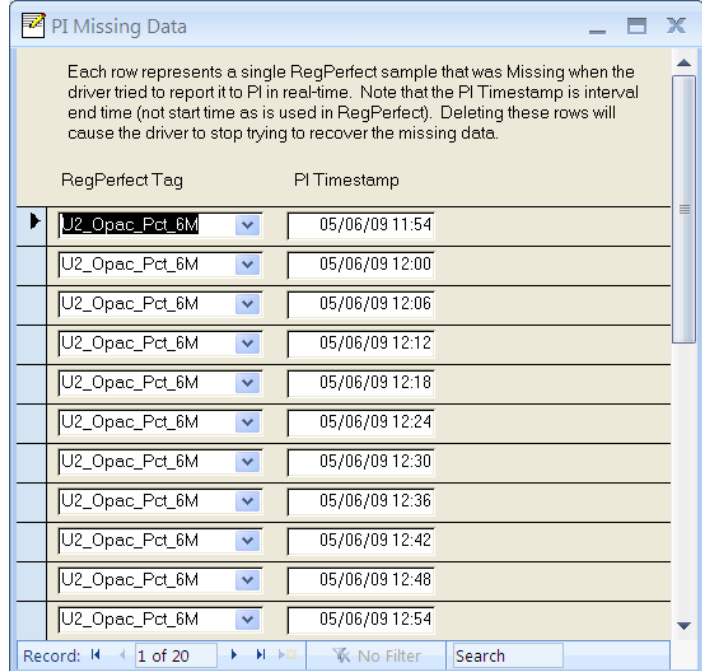
11.2 Manually Review/Recover Missed Data

When the PI driver runs in real-time and finds that the data it is configured to report is missing in RegPerfect, the tag ID and time are inserted into a list (a database table).

Click the **[Missing Data]** button on the *PI Data* tab to view the "current" list of missing data items.

If you view this list and know that a large block of data will never be recovered, you may delete it. Click the record selector (at far left of each row) and press the [Del] key. You may use Shift-Click or Ctrl-Click to select multiple records.

The PI Driver periodically checks all the data in the list to see if it has been obtained or calculated or even manually edited (anything but missing). If found, the data is removed from the list and written to a historical PI output file.



There may be times that you need to recover older data that has been automatically purged from the missing list. Suppose, for example, that you have to manually edit opacity values a few weeks in arrears. If it is important that the values be output to the PI system, click the **[Recover Historical Data]** button to begin.

All RegPerfect tags mapped to one or more PI tags are shown in the list. Select one or more tags, supply the interval and click [Ok].

Note: the From and Through time must be expressed as PI timestamps, not RegPerfect timestamps. Specify times as the end time of the tag interval rather than start time. For a 6-minute tag, this means you must enter a time of 00:12 to recover the 00:06 RegPerfect data.

The data for the selected tags and interval will be added to the PI missing data list. If you are very quick, you can see the added items by clicking the [Missing Data] button.

An attempt to recover the data is made immediately and will take only a few seconds unless you selected many tags or a very long interval.

Whether or not the data is recovered, the times/tags are removed from the list of missing items.

There are two ways to tell whether the attempt to recover the data is complete.

1. Click the [Missing Data] button repeatedly until the data you requested no longer appears in the missing list.
2. Look in the configured PI output path for the historical file *yyyymmdd_hhmmss_Historical.txt*.

Base on the above example, the contents of the historical output file might look like this:

```

PI-Opac.ALRM,01-Apr-2009 00:06:00,OK
PI-Opac.AVG,01-Apr-2009 00:06:00,12.9,0
PI-Opac.STAT,01-Apr-2009 00:06:00,OK
PI-Opac.ALRM,01-Apr-2009 00:12:00,OK
PI-Opac.AVG,01-Apr-2009 00:12:00,13.6,0
PI-Opac.STAT,01-Apr-2009 00:12:00,OK
PI-Opac.ALRM,01-Apr-2009 00:18:00,OK
PI-Opac.AVG,01-Apr-2009 00:18:00,14.2,0
PI-Opac.STAT,01-Apr-2009 00:18:00,OK
PI-Opac.ALRM,01-Apr-2009 00:24:00,OK
PI-Opac.AVG,01-Apr-2009 00:24:00,11.9,0
PI-Opac.STAT,01-Apr-2009 00:24:00,OK
PI-Opac.ALRM,01-Apr-2009 00:30:00,OK
PI-Opac.AVG,01-Apr-2009 00:30:00,13.5,0
PI-Opac.STAT,01-Apr-2009 00:30:00,OK

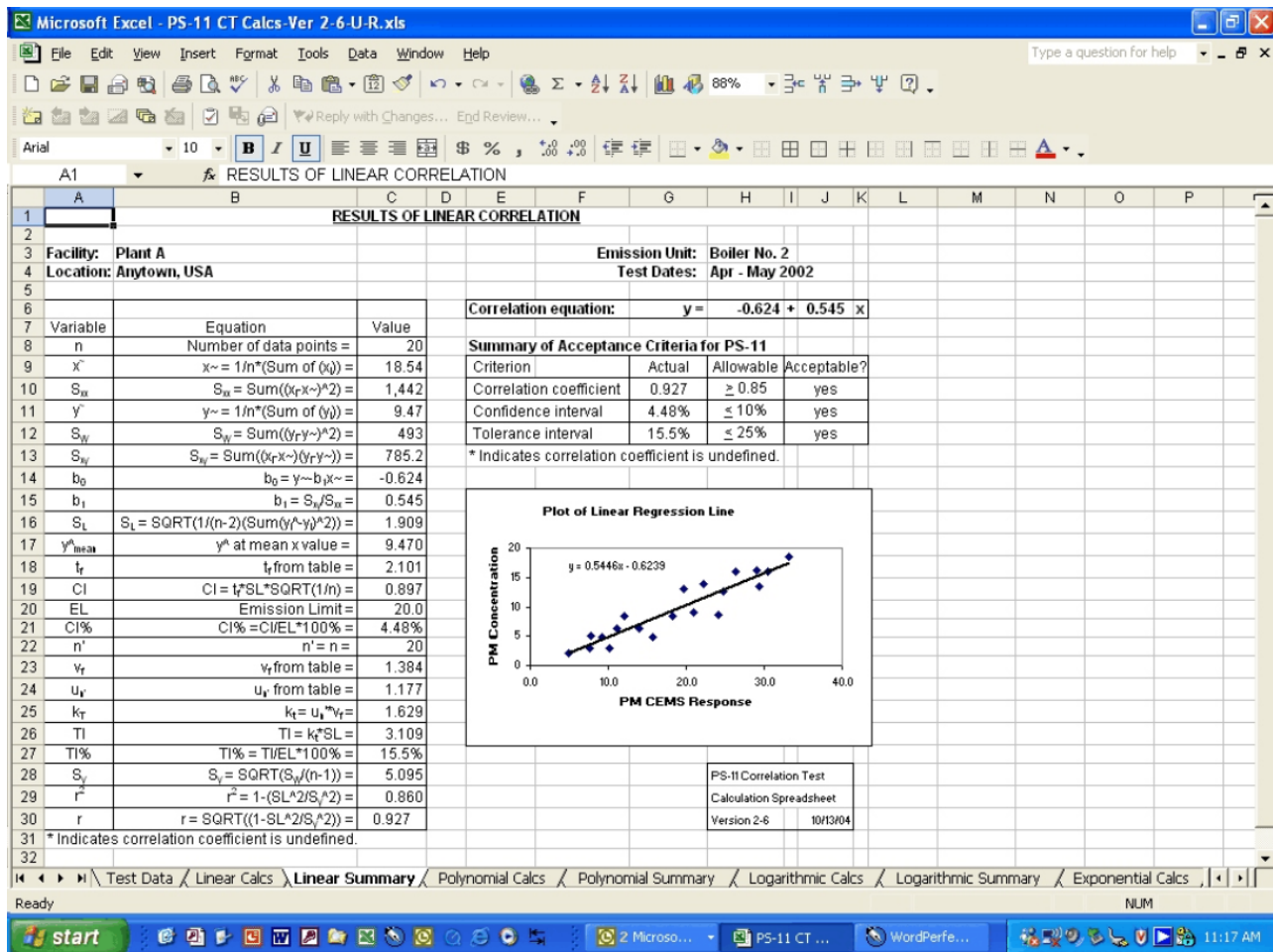
```

12. PM Correlation

If you are using a particulate instrument to demonstrate compliance to an emission standard, EPA regulation requires the instrument to be tested and configured using 40CF60, Appendix B, Performance Specification 11. PS11 states:

- You must determine the primary relationship for correlating the output from your PM CEMS to a PM concentration, typically in units of mg/acm or mg/dscm of flue gas, using the calculations and data analysis
- Correlate by performing an appropriate regression analysis between your PM CEMS response and your reference method data

An example PS11 linear correlation test result, from a testing company, may look like this:



RegPerfect has the ability to compute the correlated data using the *PM Correlation* tab of Editor and a new tag scripting function called `ComputePMValue()`.

The *PM Correlation* tab allows you to view, add or edit particulate mass (PM) correlation test results. This tab is only visible if one or more Part 75 PM monitoring systems have been configured using the EDR Setup application.

Note: A calculated, 1-minute PM tag can optionally be scripted to read these PM test results and use the appropriate PM correlation formula by comparing the calculation time to the Effective From and Through times of the tests.

The PM Correlation screen shows a list of existing PM correlation tests sorted by System ID and then by the most recent test first. From this form, you can view, edit or add tests.

The screenshot shows the 'PM Correlation' tab in the EDR application. The main area displays 'PM CEMS Correlation Data' with a table of test records. The table has the following data:

System ID	Test Date	Test Reason	Correlation Type	Correlation Equation Text	Effective From	Effective Through
PM1	01/21/16 00:00	RECERT	LOG	$Y = 3 + 6 * \text{LN}(X)$	01/21/16 00:00	
PM1	01/11/16 00:00	RECERT	POLY	$Y = 1 + 2 * X + 3 * X ** 2$	01/11/16 00:00	01/20/16 23:59
PM1	01/01/16 00:00	RECERT	LINEAR	$Y = 1 + 2 * X$	01/01/16 00:00	01/10/16 23:59
PM2	03/01/15 00:00	RECERT	LINEAR	$Y = 4 + 8 * X$	03/01/15 00:00	
PM2	02/01/15 00:00	RECERT	EXP	$Y = 2 * E ** (4 * X)$	02/01/15 00:00	02/28/15 23:59
PM2	01/01/15 00:00	RECERT	POWER	$Y = .5 * X ** 1.5$	01/01/15 00:00	01/31/15 23:59

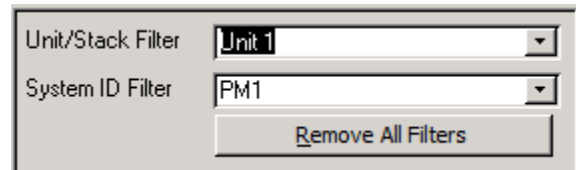
Below the table, there are filter controls: 'Unit/Stack Filter' and 'System ID Filter' (both dropdown menus), and a 'Remove All Filters' button. To the right of the filters are 'View/Edit' and 'Add New' buttons.

Note: currently, the PM correlation screens and fields are based on draft XML elements that may, in future, be reported on the EDR. However, whether or not these records are eventually reported, the correlation formulas that are entered and stored here may be retrieved and used in a 1-minute calculated PM tag script so that ***the correlation computation can be completely controlled by these records, which are easily visible and changeable, without the need to edit RegPerfect tag calculation scripts or constants.***

Filter PM Correlation Tests

Because the list of tests may be quite long, filters are provided to make it easier to find specific tests.

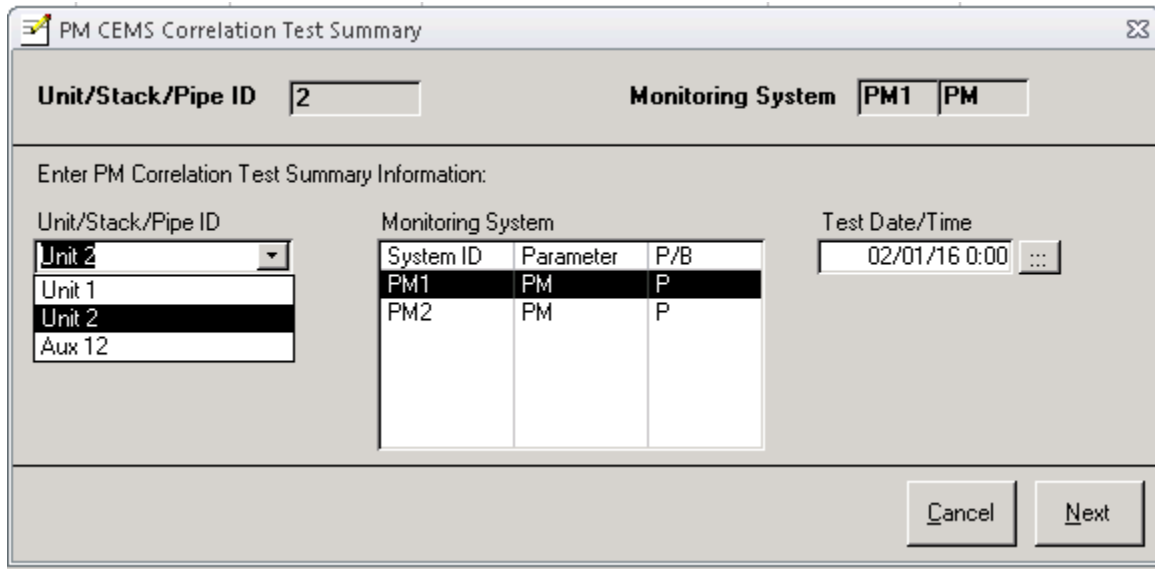
Supply a *Unit/Stack Filter* or *System ID Filter* by selecting from the drop down lists. The filters are applied to the list as soon as you make your selection(s). To remove a filter, select the blank line at the top of the drop down list or click the *Remove All Filters* button.



Unit/Stack Filter: Unit 1
System ID Filter: PM1
Remove All Filters

12.1 Add a New PM Correlation Test

To add a new PM Correlation test, click the [Add New] button to start the *PM CEMS Correlation Test Summary* wizard.



Unit/Stack/Pipe ID: 2 Monitoring System: PM1 PM

Enter PM Correlation Test Summary Information:

Unit/Stack/Pipe ID: Unit 2
Monitoring System:
Test Date/Time: 02/01/16 0:00

System ID	Parameter	P/B
PM1	PM	P
PM2	PM	P

Cancel Next

Select a Unit/Stack first – this will change the list of monitoring systems to those applicable to the selected unit or stack. Next, select the desired PM monitoring system. Finally, enter the test date/time and click [Next] to open the data entry form.

The Unit/Stack, System ID and test date selected on the wizard are displayed at the top of the form – these fields are not editable (if any mistakes were made with these values, close the form, delete this test and start over).

PM CEMS Correlation Test Summary

Unit/Stack ID: 2

System ID: PM1

Test Date/Time: 02/01/16 0:00

Enabled:

PM Reference Method: []

Correlation Type / Equation: [] Y = [] + [] * X

Effective From Date/ Time: []

Correlation Coefficient: []

Correlation Units: []

Confidence Interval <= 10%: [] %

Alt Zero Point Indicator:

Tolerance Interval <= 25%: [] %

APS Indicator:

Close

Supply values for all the fields. There are a few special considerations:

Enabled This field will be used in future to include or exclude the test from being reported on the XML EDR. Tag calculations are NOT affected by this field, so unchecking this will not cause the test to be ignored by a tag script that uses the ComputePMValue() function.

Effective From Date/Time If your site has been configured to use these PM test results to control PM correlation calculations, this is a very important field.

1-minute PM tag calculations will use the formula and coefficients from this test to calculate PM values for date/times that are >= the value of this field (and < the Effective From Date/Time of the next correlation test, if any).

When you add a new test, this field defaults to the same value you entered for the Test date/time.

When you have entered all the data, click *Close* to save the test and return to the PM Correlation Summary screen. Your new test will be shown in the list – at the very top if you entered the most recent

test. To make it easier to see the intervals of time for which each test determines the 1-minute PM calculations, values for the *Effective Through* column are automatically calculated and displayed in the list.

PM CEMS Correlation Data		To view/edit test detail, double click the desired test, or single click to highlight the test and click [View/Edit] To add a new correlation test, click [Add New]				
System ID	Test Date	Test Reason	Correlation Type	Correlation Equation Text	Effective From	Effective Through
PM1	02/01/16 00:00	RECERT	POWER	$Y = 2 * X ** 6$	02/01/16 00:00	
PM1	01/21/16 00:00	RECERT	LOG	$Y = 3 + 6 * LN(X)$	01/21/16 00:00	01/31/16 23:59
PM1	01/11/16 00:00	RECERT	POLY	$Y = 1 + 2 * X + 3 * X ** 2$	01/11/16 00:00	01/20/16 23:59
PM1	01/01/16 00:00	RECERT	LINEAR	$Y = 1 + 2 * X$	01/01/16 00:00	01/10/16 23:59

Example of calculated, 1-minute PM correlation tag script

If you enter all your PM test results and appropriate Effective From dates/times, the ComputePMValue() function can be used in a script like the one below to convert raw 1-minute input PM values using the appropriate correlation formula. The Effective From dates/times entered with the tests make a script like this work for both real-time and historical calculations, and end users only ever have to enter new test results (no editing of constant values or tag scripts).

```
Function U2_PMCorrelated_mgPerAm3_1M(TagName, TagID, Time)
  Log.Log("Starting " & TagName)

  SystemID = "PM1"
  Set inputPM = GSF.GetData("U2_PM_mgPerAm3_1M", Time)

  Set outputPM = GSF.ComputePMValue(inputPM, SystemID)
  outputPM.TagID = TagID
  outputPM.Time = Time
  GSF.PutData(outputPM)

  Log.Log("Setting " & TagName & " to " & outputPM.Value)
End Function
```

The ComputePMValue() function looks up the appropriate PM correlation test for the calculation time and monitoring system. If you make changes to any of your existing correlation tests (described in the next section), this function will see those changes the next time the tag is calculated – there is no need to stop/restart Calc Engine.

NOTE: The correlation curve can also be configured in a LaserHawk 360 Instrument's ERP so be absolutely certain you do not correlate the data twice by using both the instrument ERP and RegPerfect. If you configure RegPerfect to correlate the data, the instrument correlation must be disabled.

12.2 View/Edit an Existing PM Correlation Test

To view or edit an existing test, double click the test. Alternatively, you may single click to select the test and click the [View/Edit] button. Either method opens the *PM CEMS Correlation Test Summary* form on which you may edit or delete test results.

The screenshot shows a software window titled "PM CEMS Correlation Test Summary". The form contains the following fields and controls:

- Unit/Stack ID:** Text input field containing "1".
- System ID:** Text input field containing "PM1".
- Test Date/Time:** Date and time input field containing "01/11/16 0:00" with a calendar icon.
- Enabled:** Checkmark box that is checked.
- PM Reference Method:** Dropdown menu showing "5".
- Correlation Type / Equation:** Dropdown menu showing "POLY" and a mathematical equation editor showing $Y = 1 + 2 * X + 3 * X ** 2$.
- Effective From Date/ Time:** Date and time input field containing "01/11/16 0:00" with a calendar icon.
- Correlation Coefficient:** Text input field containing "0.88".
- Correlation Units:** Dropdown menu showing "MG/ACM @ 320 DEG F".
- Confidence Interval <= 10%:** Text input field containing "8" followed by a percent sign.
- Alt Zero Point Indicator:** Unchecked checkbox.
- Tolerance Interval <= 25%:** Text input field containing "18" followed by a percent sign.
- APS Indicator:** Unchecked checkbox.

At the bottom of the window, there are two buttons: "Delete" on the left and "Close" on the right.

13 Menu Bar Options

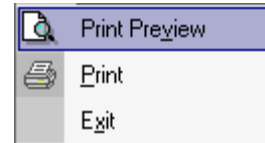
This section describes Editor's Menu Bar options. The Menu Bar is located at the top left of the window just under the application title.



13.1 File Menu

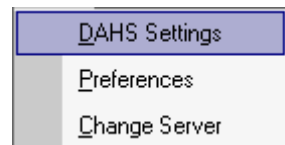
Click *File* on the Menu Bar to open the File Menu.

Print Preview opens a preview of the current window being displayed in the Editor application. *Print* sends the current window to the default printer. *Exit* closes the Editor application.



13.2 Tools Menu

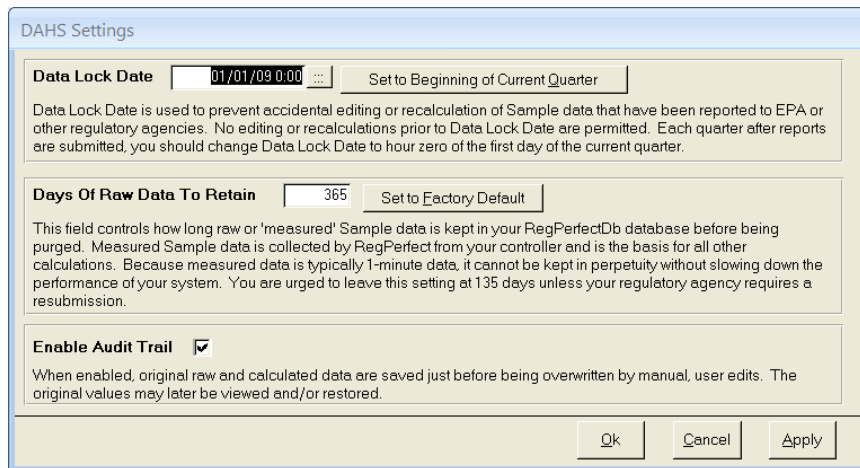
Click *Tools* on the Menu Bar to open the Tools Menu.



DAHS Settings

Click *DAHS Settings* to open the DAHS Settings form.

Data Lock Date should be set to hour zero, day one of the current calendar quarter to prevent accidental modifications to historical data. You should reset Data Lock Date each quarter *after* you have submitted your reports to regulatory agencies. Click the *Set to Beginning of Current Quarter* button to automatically set Data Lock Date, then click *Ok* or *Apply* to save.



Days of Raw Data to Retain controls how long 1-minute data is retained in your database. The default of 135 days (roughly 4 quarters) gives you some leeway should a regulatory agency require corrections and a resubmission. While Teledyne Monitor Labs urges you leave this setting at 135 days, you may increase it if necessary, but bear in mind that the larger the number, the slower your RegPerfect® system will operate.

Tip: Never set Days of Raw Data to Retain to a value less than 135 days!!!

Enable Audit Trail should be checked if you wish to be able to view and restore original measured and calculated values that have been overwritten by manual edits.

Preferences

Click *Preferences* to open the Preferences form.

This form allows you to change and save preferences. The *Current User* box at the top of the screen shows your login name, and your preferences are saved separately from all other users.

The top box on the form allows you to customize how much data is shown on the Sample Editor spreadsheet for tags of different averaging intervals.

The bottom box allows you to tweak the size of the Sample Editor spreadsheet or, if you prefer, to make all forms to open using all available screen space by checking **Maximize Forms**. Feel free to experiment with different settings – these options are purely cosmetic.

Check the **Spreadsheet Flags Enabled** checkbox if you want flag symbols to be shown on the Sample Editor Spreadsheet.

The **Default Recalc Type** determines which recalculation method is shown as the default when you are working on the Recalculate tab of the Main Window.

If you change some or all of these settings and don't like the result, click the *Reset to Defaults* button and then *Ok* or *Apply* to restore the factory defaults.

The button near the bottom labeled **Assign Alternate Names to Customizable Status Flags** opens the *Customize Status Flags* form. At some sites, one or more of the status flags named Status38, Status39, ..., Status48 have been used in scripting for some special purpose. For example, a site might need a flag to indicate Cold Startup or some other condition not covered by the "standard" list of status flags. At such sites, an alias can now be assigned to these flags.

Preferences

Current User Administrator

Select the maximum interval of data to be displayed on the Sample Editing Spreadsheet for each type of Sample. Making the maximum intervals too large will result in slow performance when viewing/editing:

24	Hour(s) of 1-Minute Samples	(Max Rows = 1440)
1	Day(s) of 6-Minute Samples	(Max Rows = 240)
1	Day(s) of 15-Minute Samples	(Max Rows = 96)
1	Day(s) of 1-Hour Samples	(Max Rows = 24)
30	Day(s) of 1-Day Samples	(Max Rows = 30)

The Sample Editor Spreadsheet form should ideally take virtually all available window space. On different monitors, the available space will be different. Customize width and height for your monitor or make all forms take up the entire screen by checking "Maximize Forms":

Width 15415 twips (1440 twips = 1 inch)

Height 9800 twips (1440 twips = 1 inch)

Maximize Forms

Spreadsheet Flags Enabled

Default Recalc Type Recalc Selected Tags and Dependencies

Auto Recalc Enabled

When checked (enabled), the Editor application will automatically force the recalculation of data affected by your edits. This takes place immediately following each edit or block edit. You are urged to leave this feature enabled to ensure that all necessary recalculations are performed after manual edits.

Assign Alternate Names to Customizable Status Flags

Reset to Defaults Ok Cancel Apply

On this form, you can assign an alias and description to one or more of the customizable status flags (Status38 through Status48).

Symbol	Flag Name	Alias	Description
38	Status38	ColdStart	The unit is in cold startup
39	Status39	WarmStart	The unit is in warm startup
40	Status40		
41	Status41		
42	Status42		
43	Status43		
44	Status44		
45	Status45		
46	Status46		
47	Status47		
48	Status48		

The alias name will be shown, and the description will be used as a tool tip, on forms in Editor that show flag names. For example, the alias names appear in on the *Sample Editor Filter* form. If you look just below the "Interference" label in the 3rd column of status flags, you'll see ColdStart and WarmStart:

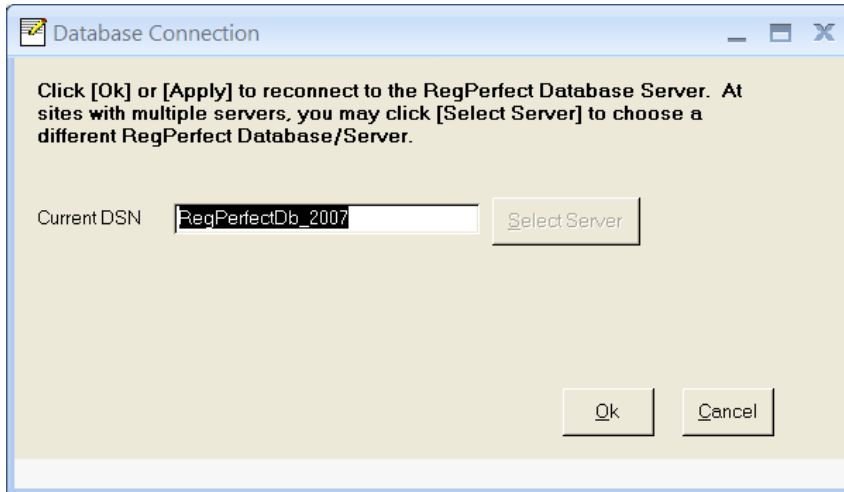
Boolean Operator: Or And

Click the check boxes below to toggle between the 3 status flag filters: On/True, Off/False, or Don't Care. Clear All

SampleInvalid	InterferenceTestNotQA	ExceedsScale	Status43
EditedValue	ZeroCalError1X	ShortSample	Status44
EditedStatus	ZeroCalError2X	NonFatalFault	Status45
EditedSourceCode	ZeroCalError4X	BackupMonitor	Status46
Missing	HighCalError1X	XPatternA	Status47
InCalibration	HighCalError2X	XPatternB	Status48
OutOfService	HighCalError4X	LowRange	Floor Limit
FatalFault	FiveDayCalDrift	HighRange	Analog Input Fault
OOC_Daily	InZeroTest	Interference	Min/Max Limit
OOC_Manual	InLowTest	ColdStart	Offline
NotQualityAssured	InMidTest	WarmStart	Power Fault
TooFewSamples	InHighTest	Status40	Startup
InterferenceTest	CalOccurred	Status41	Shutdown
InterferenceTestFailed	Data Approved	Status42	

Change Server

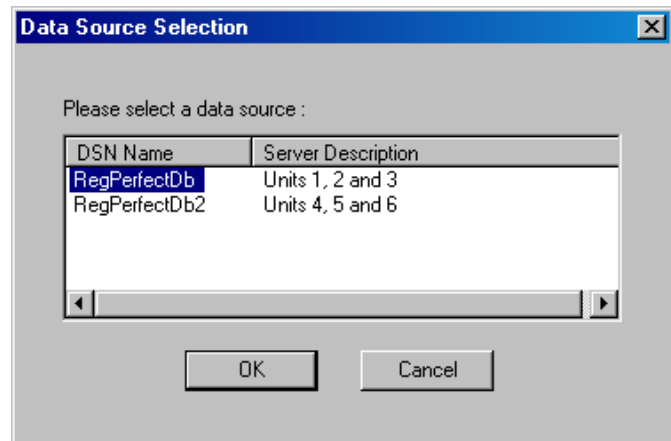
Click *Change Server* to open the Database Connection form.



This form allows you to switch RegPerfect® servers without stopping and restarting the Editor application.

Current DSN is the name of the Data Source being used. As sites with multiple servers, click the *Select Server* button to open the Data Source Selection form.

Click on the desired Data Source, and click OK to continue.

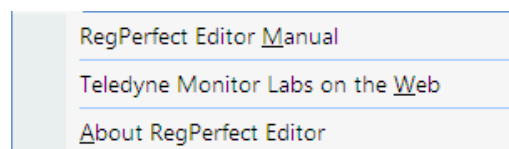


Help Menu

Click *Help* on the Menu Bar to open the Help Menu.

Click *RegPerfect Editor Manual* to open the manual in Adobe Acrobat.

Click *Teledyne Monitor Labs on the Web* to visit our web site.



Click *About RegPerfect Editor* for version information.

Message Queue

Click *Queue* on the Menu Bar to open the Calc Engine Message Queue form.

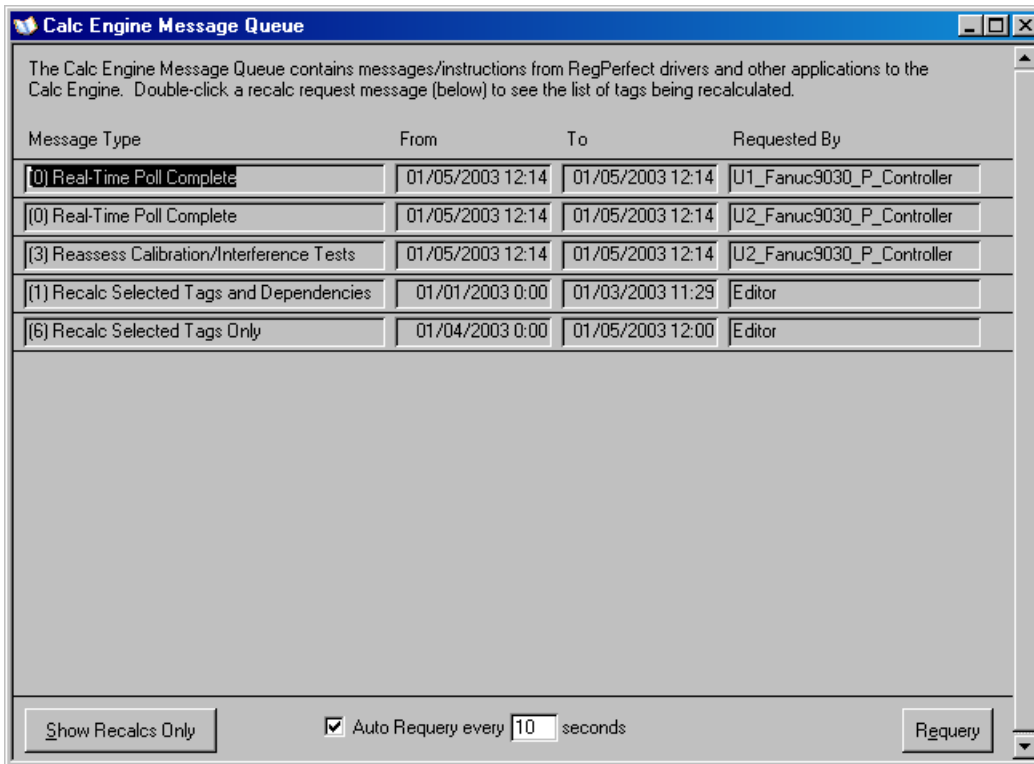
Recalculation Type	From	To	Requested By
(1) Recalc Selected Tags and Dependencies	01/01/2003 0:00	01/03/2003 11:29	Editor
(6) Recalc Selected Tags Only	01/04/2003 0:00	01/05/2003 12:00	Editor

This form shows you the queue of pending messages for the RegPerfect® [Calculation Engine](#). You can use this form to see when your recalculation and calibration reassessment requests have been completed.

Each row in the list on the form is a single command for the Calculation Engine. Some messages are put in the queue by RegPerfect® software – for example, the drivers that collect data from external controllers add type 0 messages instructing Calc Engine that real-time data has been collected and that calculations based on that data can begin. Other messages are added to the queue at your request, such as the two shown in the above example.

Since Calc Engine deletes the messages after it has finished processing them, you can tell when your requests have been completed when they disappear from the list on the form.

When you open this form, only commands/messages instigated by you are shown – those where the *Request By* column value is "Editor" meaning they originated in the Editor application. To view all messages in the queue, click the *Show All Messages* button. This removes the filter and shows the entire queue contents regardless of where the command originated.

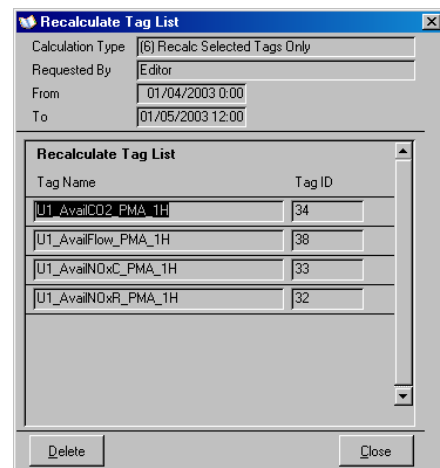


Note that the name of the *Show All Messages* button is also changed to *Show Recalcs Only*, so you know whether you are looking at the filtered list of the entire list. Click *Show Recalcs Only* to return to the filtered view.

By default, the list of messages is automatically requeryed every 10 seconds while you keep the form open. You can stop this by unchecking the *Auto Requery* box or alter the frequency. You can also force a manual requery any time you wish by clicking *Requery*.

Finally, if you want more information on a particular message, double click any field in that message's row to open the Recalculate Tag List form.

This form shows you the list of tags that will be recalculated when the message gets processed by Calc Engine. You may delete the entire message by clicking the *Delete* button.





RegPerfect® Reports

User Manual and Help Documentation

Updated: August 2020

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9.0 Introduction

9.1 Overview

RegPerfect Reports delivers browser-enabled reporting functionality for selecting and previewing reports, modifying report parameters, scheduling, and printing reports. The information contained with the reports is generated from data stored in the RegPerfect database.

9.2 What's New in RegPerfect® Reports

The RegPerfect Reports application represents major improvements over any previous version of the RegPerfect Report Generator application.

Some of the key features of RegPerfect Reports are:

- Uses SQL Server 2005 Reporting Services
- Eliminates Crystal Reports
- Provides a server- and browser-based reporting platform
- Provides a middle-tier server that runs under Microsoft Internet Information Services (IIS)
- You can build a wide range of reports that combine the strengths of Web-based features and traditional reporting
- Parameterized reports can be used to filter data based on values that are provided at run time
- Reports can be rendered in both desktop and Web-oriented formats
- You can choose from a variety of viewing formats to render reports on demand in preferred formats for data manipulation or printing
- Server-based and thus provides a way to centralize report storage and management, provide secure access to reports and folders, control how reports are processed and distributed, and standardize how reports are used
- Choose a presentation format when you open the report, or after you open the report
- You can choose Web-oriented, page-oriented, and desktop application formats (Formats include MHTML, PDF, and Excel.)
- Use a browser to navigate a folder hierarchy to find and work with reports and other items
- You can store and manage reports in a personal workspace
- Automate report delivery through a standard subscription and set report presentation preferences.

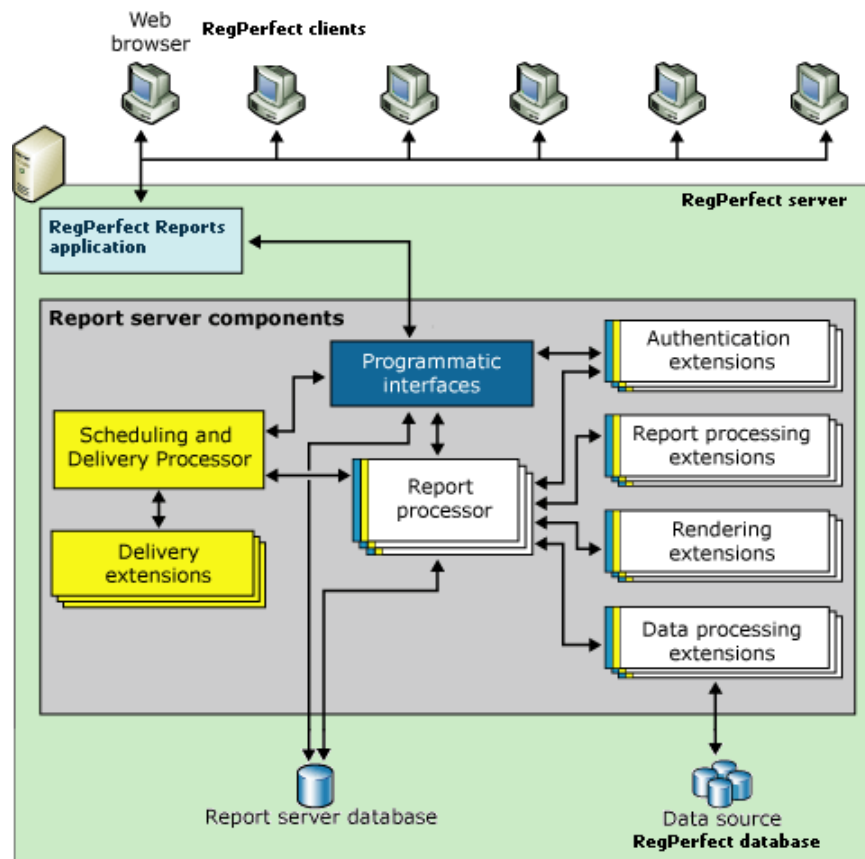
... just to name a few.

The next two sections provide background information, general concepts, and definitions of the RegPerfect Reports system. Read these two sections if you would like to understand more details of how RegPerfect Reports works. If you would rather get started using the system, skip ahead to the Getting Started section.

10.0 RegPerfect® Reports Architecture

RegPerfect Reports processing is distributed across multiple components. Central and specialized processors are used to retrieve data, process report layout, render presentation formats, and deliver to target destinations. Presentation processing occurs after the data is retrieved and is decoupled from data processing, allowing multiple users to review the same report simultaneously in formats designed for different devices or quickly change the viewing format of the report, from HTML to PDF or Microsoft Excel, with a single click. The modular architecture is designed for extensibility.

The following diagram shows the SQL Server 2005 Reporting Services and RegPerfect Reports components and tools. The diagram also shows how custom tools fit into the overall design. It shows the flow of requests and data among the server components and which components send and retrieve content from a data store.



10.1 Report Server

The report server is the main component of SQL Server 2005 Reporting Services and RegPerfect Reports. The report server is implemented as a Microsoft Windows service and as a Web service that provides an optimized and parallel processing infrastructure for processing and rendering reports. The Web service exposes a set of programmatic interfaces that client applications can use to access report servers. The Windows service provides initialization, scheduling and delivery services, and server maintenance. The services work together and constitute a single report server instance.

Through its subcomponents, the report server processes report requests and makes reports available for on-demand access or scheduled distribution. Report server subcomponents include processors and extensions. Processors are the hub of the report server. The processors support the integrity of the reporting system and cannot be modified or extended. Extensions are also processors, but they perform very specific functions.

10.1.1 Processors

The report server includes two processors that perform preliminary and intermediate report processing, and scheduled and delivery operations. The Report Processor retrieves the report definition or model, combines layout information with data from the data processing extension, and renders it in the requested format. The Scheduling and Delivery Processor processes reports triggered from a schedule, and delivers reports to target destinations.

10.1.1.1 *Report Processor*

When a report processing request is made for a published report, the Report Processor gets the report definition from the report server database, initializes parameters and variables that are in expressions, and performs other preliminary processing that prepares the report for data. The data processing extension then connects to the data source and retrieves the data. The Report Processor combines the report data with the report layout from the report definition. Data is processed by row for each section. Sections include the report header and footer, group headers and footers, and detail. Aggregate functions and expressions are also processed at this time. During the rendering stage, the rendering extension paginates the report and processes expressions that cannot be processed during the execution stage. The report is then rendered in the appropriate device-specific format.

10.1.1.2 *Scheduling and Delivery Processor*

A Scheduling and Delivery Processor component is also included to support scheduled operations and drive the delivery extensions used to push reports to e-mail inboxes or shared folder destinations. Events are created for scheduled operations that trigger report processing. The Scheduling and Delivery Processor runs in the Report Server Windows service and uses SQL Server Agent to generate scheduled events.



Note: How SQL Server Agent is Used in Reporting Services. For the schedule engine, RegPerfect Reports uses SQL Server Agent. The SQL Server instance that hosts the report server database provides the SQL Server Agent service that is used by the report server.

A report server uses SQL Server Agent to create a schedule event. When you define a schedule in RegPerfect Reports, the report server creates a job in SQL Server Agent that is triggered off the date and time values you specify in the schedule. When the job runs, SQL Server Agent adds an event to a queue that is kept in the report server database. The Scheduling and Delivery Processor polls the queue at regular intervals to determine whether an event exists and what corresponding action is required for that event. All events that are in the queue are processed immediately, in the order in which they were created.

10.1.2 Extensions

The report server supports custom authentication extensions, data processing extensions, report processing extensions, rendering extensions, and delivery extensions. A report server requires at least one authentication extension, data processing extension, and rendering extension. Delivery and custom report processing extensions are optional, but necessary if you want to support report distribution or custom controls.

10.2 Understanding Processor Integration with Other Services

10.2.1 Effects of Stopping the SQL Server Agent

Scheduled report processing uses SQL Server Agent by default. If you stop the service, no new processing requests are added to the queue. When you restart the service, the jobs that create report processing requests are resumed. The report server does not try to recreate report processing jobs that might have occurred in the past, while SQL Server Agent was offline. Thus, if you stop SQL Server Agent for a week, all scheduled operations are lost for that week.

10.2.2 Effects of Stopping the Report Server Windows Service

If you stop the Report Server Windows service, SQL Server Agent continues to add report processing requests to the queue. Status information from SQL Server Agent indicates that the job succeeded. However, because the Report Server Windows service is stopped, no report processing actually occurs. The requests will continue to accumulate in the queue until you restart the Report Server Windows service. Once you restart the Report Server Windows service, all report processing requests that are in the queue are processed in order.

11.0 RegPerfect® Reports Concepts

The following list briefly defines key terms used in the RegPerfect Reports application and documentation.

Report definition

The blueprint for a report before the report is processed or rendered. A report definition contains information about the query and layout for the report.

Rendered report

A fully processed report that contains both data and layout information, in a format suitable for viewing (such as HTML).

Parameterized report

A published report that accepts input values through parameters.

Linked report

A report that derives its definition through a link to another report.

Folder hierarchy

A bounded namespace that uniquely identifies all reports, folders, data source items, and resources that are stored in and managed by a report server.

11.1 Reports and Report Definitions

RegPerfect Reports uses a variety of terms to describe a report in different states, including the initial definition, the published report, and the viewed report as it appears to the user.

11.1.1 Report Definition (.rdl) Files

A report definition file is a master report. A report definition is a file that is created in a report designer. It provides a complete description of data source connections, queries used to retrieve data, expressions, parameters, images, textboxes, tables, and any other design-time elements that you might include in a report.

Report definitions are rendered at run time as a processed report. Although report definitions can be complex, at a minimum they specify a query and other report content, report properties, and a report layout.

Report definitions are written in XML that conforms to an XML grammar called the Report Definition Language (RDL). RDL describes the XML elements, encompassing all possible variations that a report can assume.

11.1.2 Published Reports

After a master report (an .rdl file) is created, it is published to a report server by deploying it to the report server. A published report is an item that is stored in a report server database and managed on a report server. The report is stored in a partially compiled intermediate format that prepares it for report user access.

Published reports are accessed through the RegPerfect Reports application. Published reports cannot be edited or saved back to a report server.

11.1.3 Rendered Reports

A rendered report is a fully processed report that contains both data and layout information in a format suitable for viewing (such as HTML). Until a report is rendered into an output format, it cannot be viewed. Report rendering is performed by the report server. You can render a report by doing either one of the following things:

- Open a published report using the RegPerfect Reports application.
- Schedule a report, which is delivered to an e-mail inbox or a file share in an output format that you specify.

The default rendering format for reports in RegPerfect Reports is PDF. In addition to PDF, reports can be rendered in a variety of output formats, including Excel and HTML. As with published reports, rendered reports cannot be edited or saved back to a report server.

11.2 Parameterized Reports

A parameterized report uses input values to complete report or data processing. With a parameterized report, you can vary the output of a report based on placeholder values that are set when the report runs.

11.2.1 Using Parameters

Parameters can be used to complete a query that selects report data, to filter the result set that the query returns, or to drive layout properties used for showing and hiding parts of a report. You can use parameters with linked reports by pairing a specific parameter with each linked report to change the outcome. Specific parameter values can be stored with the report so that users do not have to type values.

Not all parameters may be visible in the report at run time.

11.3 Linked Reports

A linked report is a report server item that provides an access point to an existing report. Conceptually, it is similar to a program shortcut that you use to run a program or open a file. For RegPerfect Reports, a linked report is simply a configured report that is created from a master report.

A linked report is derived from an existing report and retains the original's report definition. A linked report always inherits report layout and data source properties of the original report. All other properties and settings can be different from those of the original report, including security, parameters, location, subscriptions, and schedules.

You can create a linked report when you want to create additional versions of an existing report.

Although linked reports are typically based on parameterized reports, a parameterized report is not required. You can create linked reports whenever you want to deploy an existing report with different settings.

11.4 Report Server Folder Namespace

The report server folder namespace is a hierarchy that contains predefined and user-defined folders. The namespace uniquely identifies reports and other items that are stored in a report server. It provides an addressing scheme for specifying reports in a URL.

Conceptually, this folder hierarchy is similar to the folder hierarchy in the Windows file system. In RegPerfect Reports, however, the folders you work with are virtual folders that are accessed over a Web connection. Neither the folders nor their contents actually exist in a file system. Instead, they exist on a report server, and they appear as folders and items when you access the report server through a browser or a Web-enabled application. When you select or locate a report, the path becomes part of the URL for that report.

Predefined folders are reserved by RegPerfect Reports; they cannot be moved, renamed, or deleted. Additionally, the My Reports folder provides a personal workspace for each user.

12.0 Getting Started with RegPerfect® Reports

RegPerfect Reports is a server-based reporting platform that you can use to manage reports that contain data from the RegPerfect database. The reports that are available can be viewed and managed over a browser-based connection.

12.1 How to Launch RegPerfect® Reports

RegPerfect Reports is installed during setup on the same server computer as the rest of RegPerfect and SQL Server 2005 Reporting Services.

To launch RegPerfect Reports from a browser:

- Open Microsoft Internet Explorer 6.0 or later.
- In the address bar of the Web browser, type the URL to your desired installation of RegPerfect Reports. On a server, the URL is `http://localhost/RegPerfectReports/`. On a workstation, the URL is `http://<ServerName>/RegPerfectReports/`.

Once launched, you will see the RegPerfect Reports home page. The Reports page is the home page for RegPerfect Reports.



Note: The first time the application is accessed, it may take a few seconds to load the home page. This situation is normal and can occur if SQL Server 2005 Reporting Services has not been used for a while. After the first time access RegPerfect Reports, thus accessing SQL Server 2005 Reporting Services, the home page should load quickly.



Note: If you are a site that has multiple servers, you can link to and open the RegPerfect Reports application on each server by simply opening a new browser window and typing in the URL pointing to each server.

12.2 RegPerfect Reports Home Page

12.2.1 RegPerfect Reports Home Page – No Reports

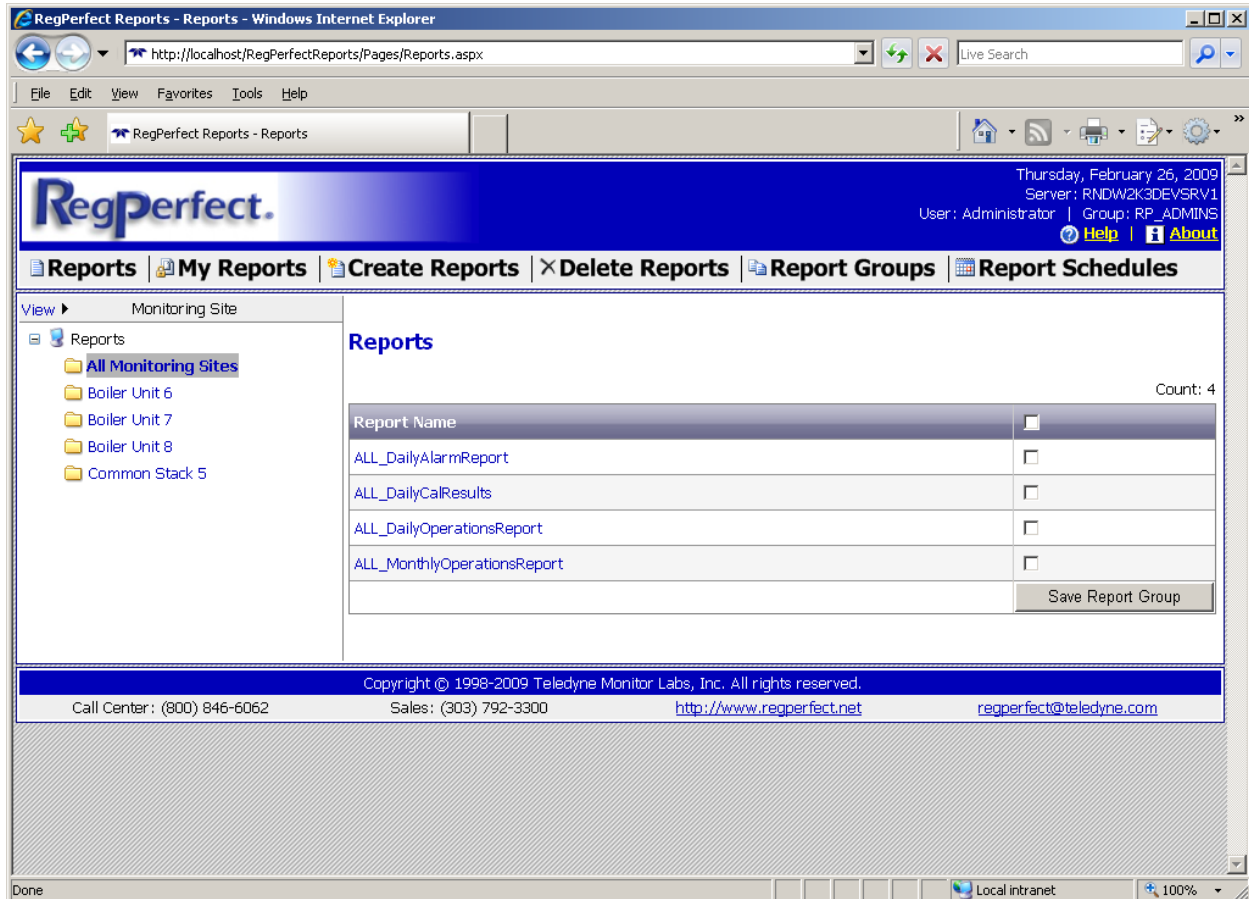
The image below shows the RegPerfect Reports home page when there has been no reports created. If there are no reports in the system, the application will give you a message indicating that there are no reports and a list cannot be created.



12.2.2 RegPerfect Reports Home Page – with Reports

The image below shows the RegPerfect Reports home page when there has been at least one report created.

When there is at least one report created, the left-hand pane will display the list of report categories and/or monitoring sites in which the reports are categorized. The right-hand pane will display the list of reports in the selected report category or monitoring site (depending on what is selected in the left-hand pane).



12.3 Navigating to the Home Page

You can always navigate to the home page by clicking the RegPerfect logo in the header.



Warning: Returning to the home page while you are in the middle of a multi-step process (for example, creating reports), will interrupt the process before all the steps are completed.

12.4 Menu Bar

The RegPerfect Reports menu bar is located in the header of every page and provides a quick means of navigating the application.

 **Reports** |  **My Reports** |  **Create Reports** |  **Delete Reports** |  **Report Groups** |  **Report Schedules**

RegPerfect Reports has six menus – Reports, My Reports, Create Reports, Delete Reports, Report Groups, and Report Schedules.

Reports

The Reports menu item takes you to the Reports page. The Reports page is the home page. The Reports page provides you the functionality to find and select reports that are viewable by any RegPerfect Reports user.

My Reports

The My Reports menu item takes you to the My Reports page. The My Reports page is similar to the Reports page, except that it shows reports on a per-user basis.

Create Reports

The Create Reports menu item takes you to the Create Reports page. The Create Reports page provides you the functionality to create and configure reports based off master reports.

Delete Reports

The Delete Reports menu item takes you to the Delete Reports page. The Delete Reports page allows you to delete one or more reports. To delete reports, you will need to have appropriate permissions.


Report Groups

The Report Groups menu item takes you to the Report Groups page. The Report Groups page allows you to manage any reports groups that are saved on the system.

Report Schedules

The Report Schedules menu item takes you to the Report Schedules page. The Report Schedules page allows you to manage any report schedules that saved on the system.

12.5 Getting Help

If you need further information or instructions regarding the features and operation of RegPerfect Reports, open the application's help. Clicking the Help link  **Help** in the header of every page will open the help documentation page. The help documentation page provides various resources and information to provide assistance with using the application, configuring the system, and troubleshooting, among other topics.

Additionally, the footer provides contact information, which can be used to obtain help with RegPerfect Reports.

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<http://www.regperfect.net>

regperfect@teledyne.com



Note: The footer only appears for RP_ADMINS and RP_MANAGERS users. It is hidden for RP_OPERATORS and RP_TECHNICIANS users.

12.6 System Information

The header on every page displays system information. The information provided includes the server that is hosting RegPerfect Reports, the user name, and the user's RegPerfect group.



The Help and About links are located under the system information items.

12.7 Version Information

To get the current version information for both the application and the set of master reports, click the About link.

12.8 Navigating Pages



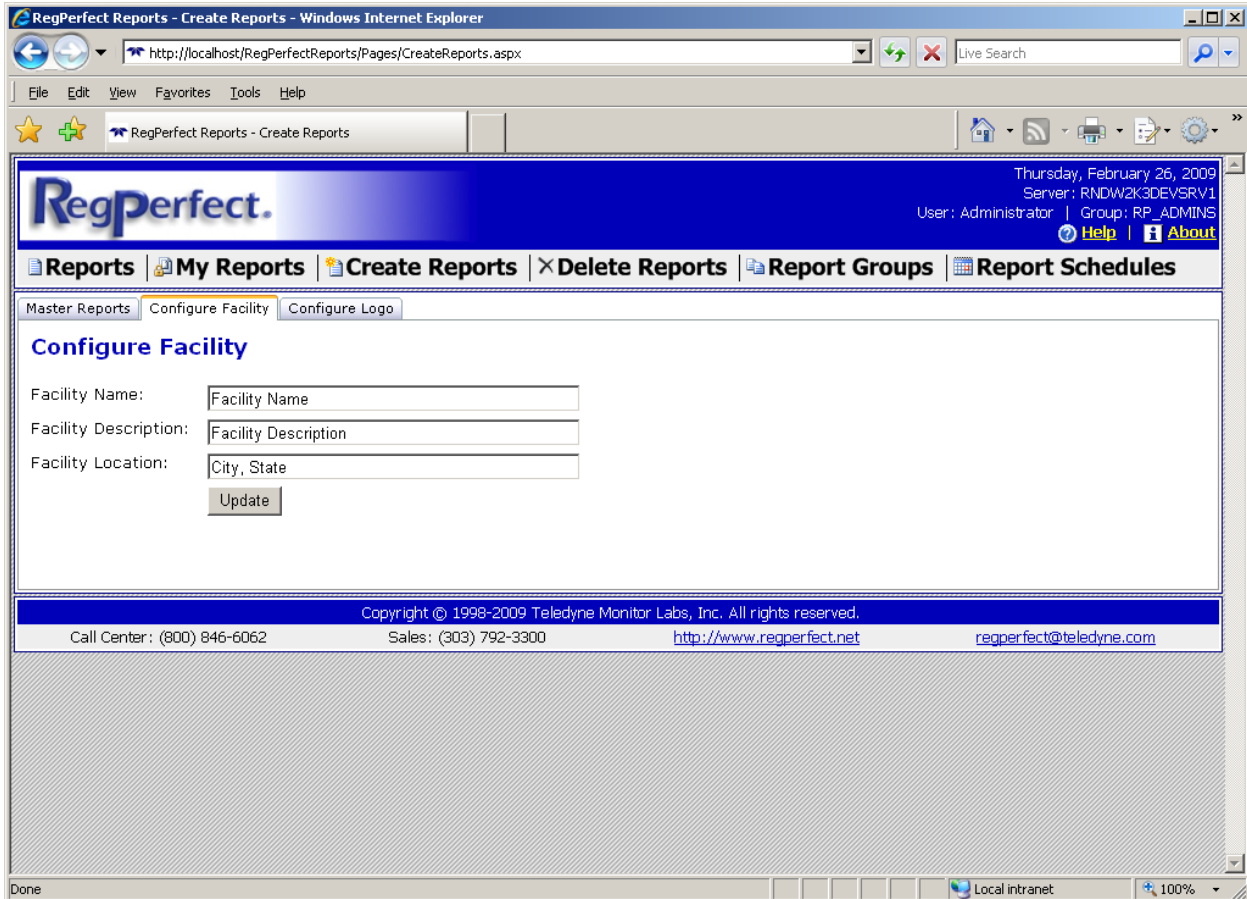
Note: It is **highly recommended** that you use the navigation links (*Next, Back, Preview, etc.*) that are provided in the RegPerfect Reports application, instead of the browser's Back and Forward buttons.

13.0 Using RegPerfect® Reports

13.1 Configuring Facility Information

RegPerfect Reports provides the ability to configure facility information that will be displayed on each report.

To edit the facility information, click the Create Reports menu. Doing so will take you to the Create Reports page. Then click the Configure Facility tab.



The screenshot shows a web browser window titled "RegPerfect Reports - Create Reports - Windows Internet Explorer". The address bar shows "http://localhost/RegPerfectReports/Pages/CreateReports.aspx". The page header includes the "Regperfect." logo, the date "Thursday, February 26, 2009", server information "Server: RNDW2K3DEVSRV1", and user information "User: Administrator | Group: RP_ADMINS". There are links for "Help" and "About". The main navigation menu includes "Reports", "My Reports", "Create Reports", "Delete Reports", "Report Groups", and "Report Schedules". Below this, there are tabs for "Master Reports", "Configure Facility", and "Configure Logo". The "Configure Facility" form contains three input fields: "Facility Name" (with placeholder text "Facility Name"), "Facility Description" (with placeholder text "Facility Description"), and "Facility Location" (with placeholder text "City, State"). An "Update" button is located below the "Facility Location" field. The footer of the page contains copyright information "Copyright © 1998-2009 Teledyne Monitor Labs, Inc. All rights reserved.", contact information "Call Center: (800) 846-6062" and "Sales: (303) 792-3300", and website links "http://www.regperfect.net" and "regperfect@teledyne.com".

Enter a Facility Name, Facility Description, and Facility Location, and click the Update button.



Note: This facility information is only used to be displayed on the reports. The facility information entered here will not show up on any EDR or any other place in RegPerfect.

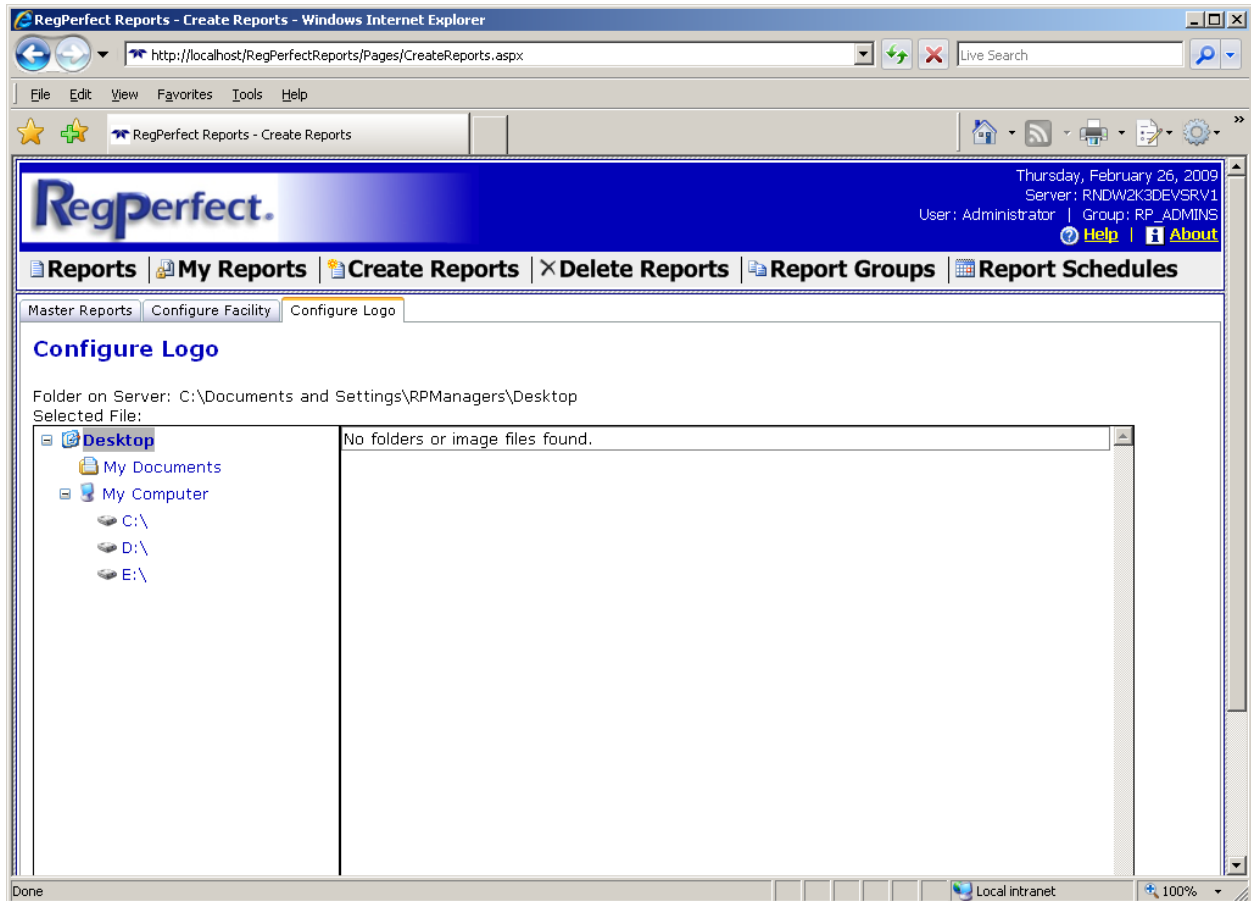


Note: The special characters ? ; @ & = : + \$ \ * > < | . " ' / are not allowed for this information and are considered invalid.

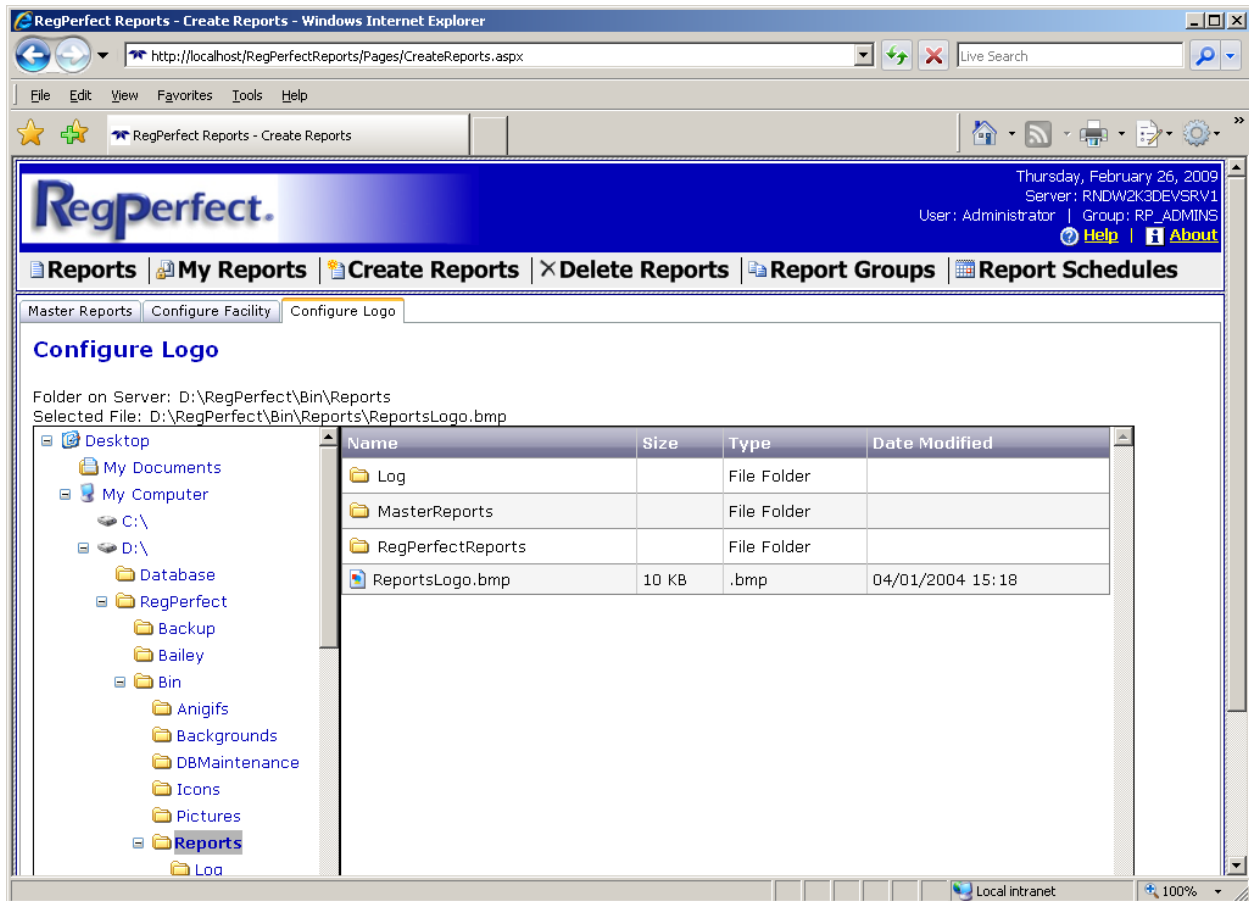
13.2 Configuring the Report Logo

RegPerfect Reports provides the ability to configure the logo that will be displayed on each report.

To edit the logo information, click the Create Reports menu. Doing so will take you to the Create Reports page. Then click the Configure Logo tab.



From the Configure Logo tab, use the Windows Explorer-like browser to locate the logo image file on the server's hard drive.



Once you have navigated to the file, select it by clicking the image file link. Then click the Upload button to store it in the database.



Note: The logo file must be a valid image file. The valid image file types are *.bmp, *.gif, *.jpg, *.png, and *.tif.



Note: The logo browser displays the file system of the server only. The image file should be located on a drive (a local physical drive or a mapped drive) of the RegPerfect server computer.



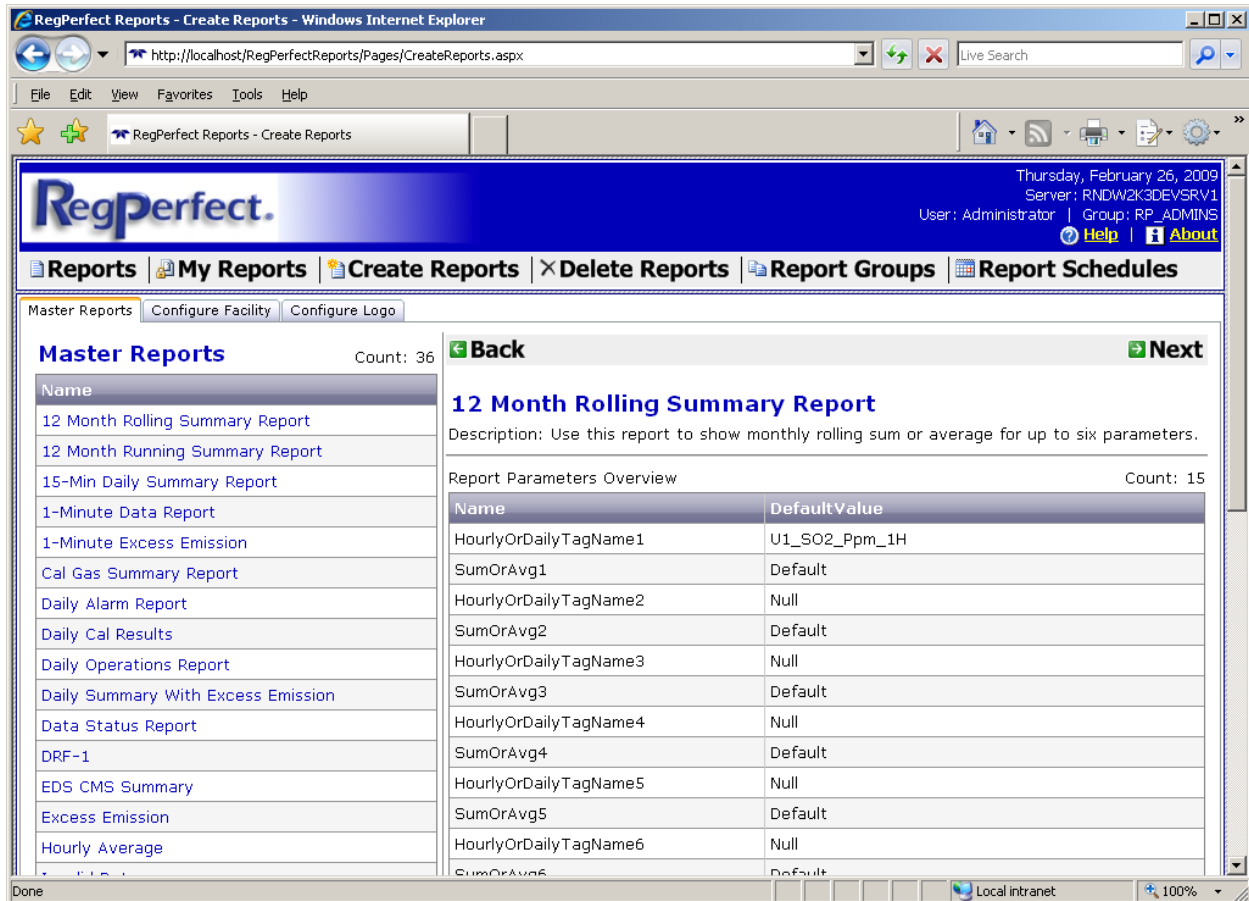
Note: It is not recommended to save your logo image file to the default RegPerfect Reports folder (as shown in the screenshot). This folder will be overwritten as updates are released.

13.3 Creating Reports

RegPerfect Reports comes with a number of master reports. These master reports are a set of predefined report definition files that use the RegPerfect database as a data source. RegPerfect administrators or managers will use the master reports as templates in building reports specific your site.

13.3.1 Create Reports

To begin the create reports process, click the Create Reports menu. Doing so will take you to the Create Reports page.



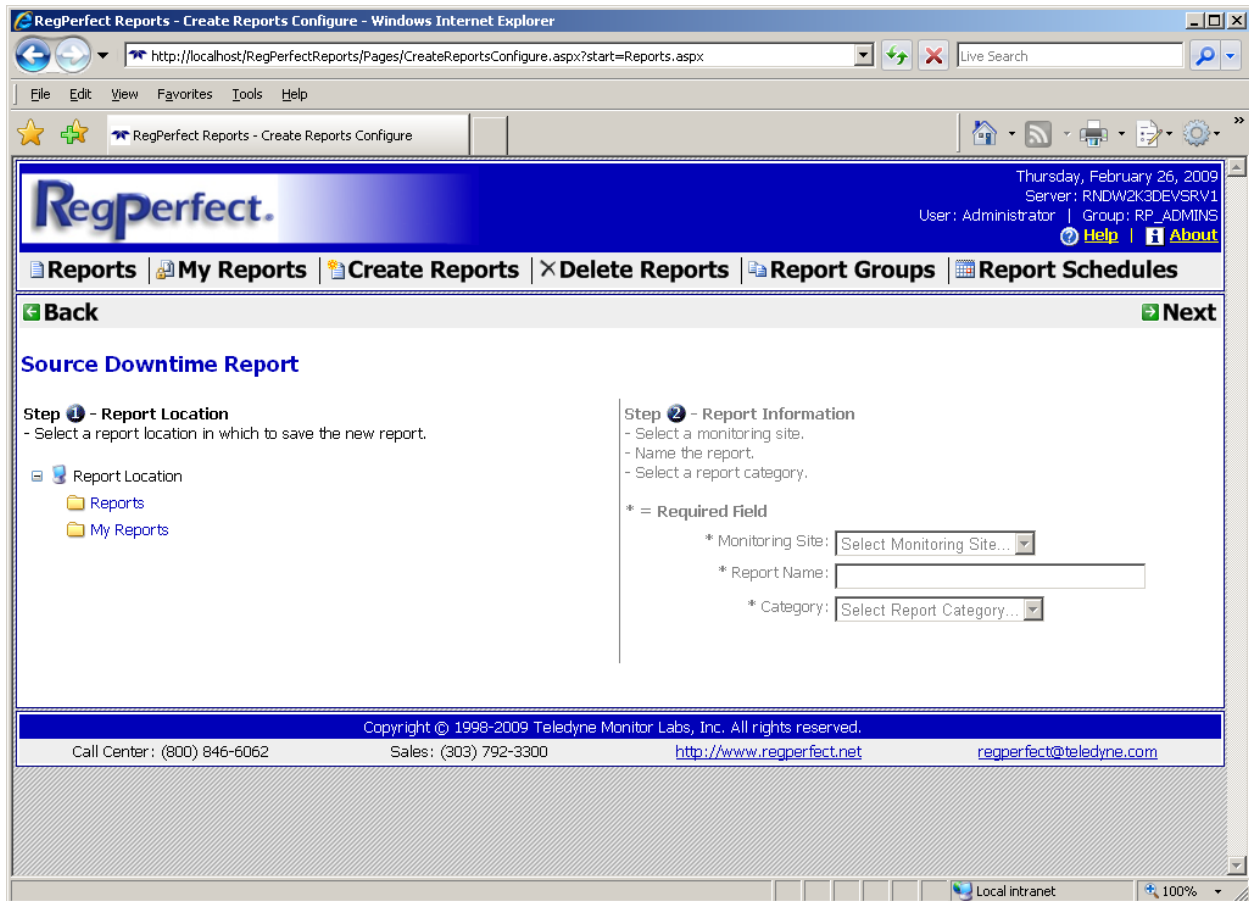
The Create Reports page is the starting point for creating a configured report that is based off one of the master reports. The page, on the Master Reports tab, displays a list of master reports that are installed on the system, as well as detailed information about the master reports and its parameters and properties.

The first step is to select the master report to be used in creating the report. Click the master report name of the needed master report to select it. Clicking the master report name will select the master report for use in creating a new report and display the master report's parameter information in the details section.

Once the master report is selected, click Next in the navigation bar. This will take you to the next page in the create reports process.

13.3.2 Create Reports Configure

The Create Reports Configure page allows you to enter a report name, as well as categorize the report based on a location, monitoring site, and report category.



13.3.2.1 *Report Location*

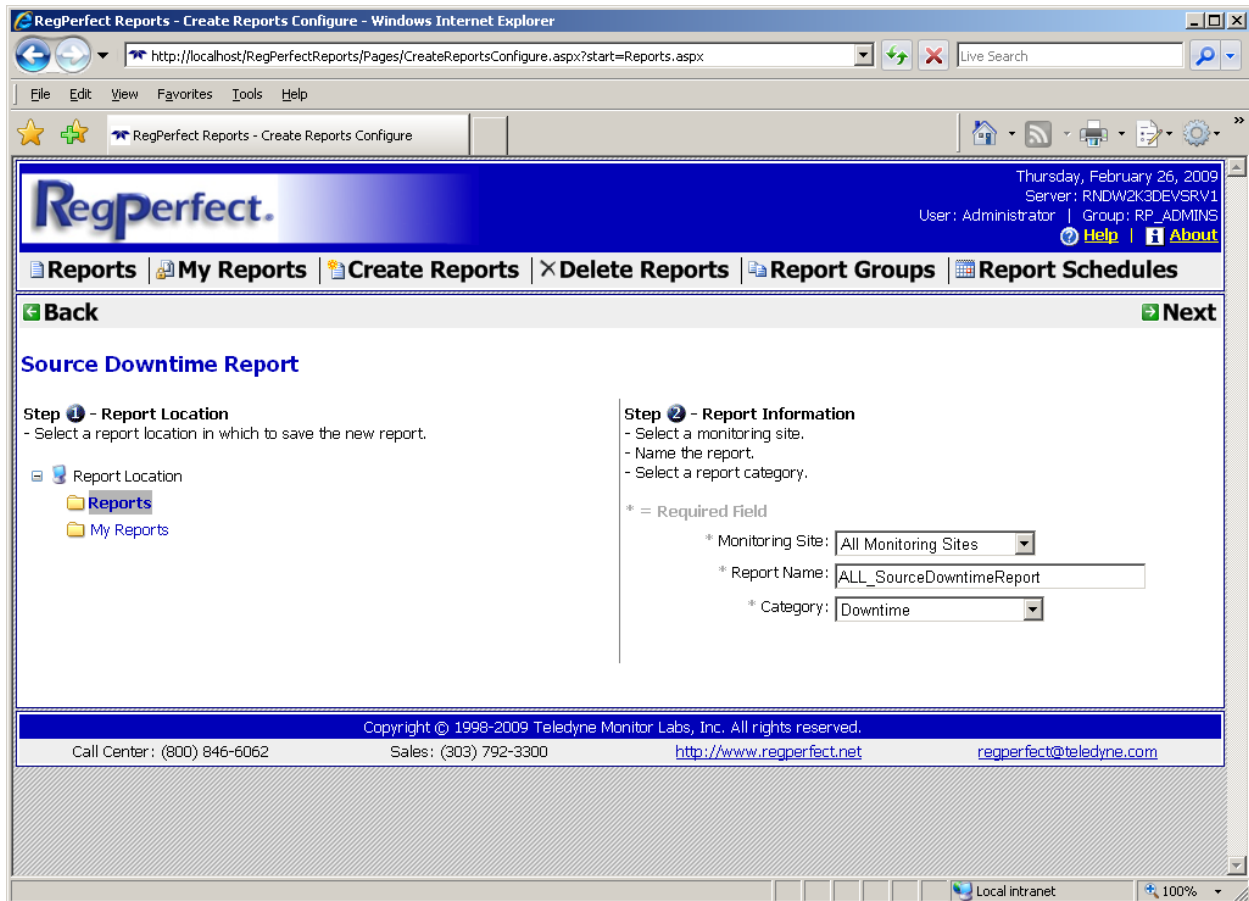
The first step in configuring a report is to select a report location. The two possible choices are Reports and My Reports.



Note: Categorizing a report in the Reports folder makes it available for use by all RegPerfect Reports users. Categorizing a report in the My Reports folder limits the availability of the report to the user who is creating the report. That is, no other RegPerfect Reports user will be able to see and use a report that is saved in someone else's My Reports folder.

13.3.2.2 *Report Information*

After selecting a report location, you must enter the report's information. The report's monitoring site, name, and category are required.



Once you have entered all the required information, click Next to go to the next step in the create reports process.



Note: Selecting a Monitoring Site and Category for the report is simply a means of categorizing the report so that it can be found and used later. Entering a monitoring site and category on the Create Reports Configure page does not affect any parameters in any reports, and, thus, does not affect what data is displayed on the report. These fields are only for categorization of the reports into similar groupings.



Note: Clicking the Next button creates the new report and saves all the information to the database. If you click Next to create a new report and then navigate back to the Create Reports Configure page, you will need to enter a new report name since the report was already created.



Note: The special characters ? ; @ & = : + \$, \ * > < | . " ' / are not allowed for this information and are considered invalid.

13.3.3 Create Reports Configure Parameters

After creating the report, the next step is to configure the report's parameters. The Create Reports Configure Parameter page will display a list of the report's parameters and allow you to configure each parameter value.

The screenshot shows a web browser window titled "RegPerfect Reports - Create Reports Configure Parameters - Windows Internet Explorer". The address bar shows the URL: <http://localhost/RegPerfectReports/Pages/CreateReportsConfigureParameters.aspx?start=Reports.aspx>. The page header includes the RegPerfect logo and navigation links: Reports, My Reports, Create Reports, Delete Reports, Report Groups, and Report Schedules. The main content area is titled "ALL_SourceDowntimeReport" and contains a table with the following data:

Parameter Name	Parameter Value	Sum or Avg?
Operating Tag Name:	B6_UnitOn_TF_1H	
Report Title:	Source Downtime Report	
Report Subtitle:		

Below the table, there are navigation links: Back, Create More Reports, Schedule, Save, and Preview. The footer contains copyright information: Copyright © 1998-2009 Teledyne Monitor Labs, Inc. All rights reserved. Contact information: Call Center: (800) 846-6062, Sales: (303) 792-3300, <http://www.regperfect.net>, and regperfect@teledyne.com.

Using the drop-down lists provided for each parameter, select the parameter value needed. After configuring the parameter values, click Save to save your changes to the database. Once you are done configuring the parameter values, click Preview to finish the create reports process.



Note: Depending on the type of parameter, a textbox could be provided to allow for customizing the parameter value, instead of selecting it from a predefined list. In this case, once you change or enter text into a textbox, you will need to first click out of the textbox before clicking on any of the navigation links. For example, if you were to enter a report subtitle into the Report Subtitle textbox, using the mouse, click in the Report Title textbox before clicking the Save navigation button.



Note: Clicking the Preview link will first save the report and the parameter value selections to the database and then move you to the next page in the create reports process.



Note: Clicking the Create More Reports link will first save the report and the parameter value selections to the database and then move you to the beginning of the create reports process.

Additionally, if you are satisfied with the report you have just created (and its parameter values), you can go directly to scheduling the new report by clicking the Schedule link.



Note: The special characters ? ; @ & = : + \$, \ * > < | . " ' / are not allowed for this information and are considered invalid.

13.3.4 Create Reports Complete

After clicking the Preview link on the Create Reports Configure Parameters page, the report and the configured parameters will be saved to the database and the Create Reports Complete page will be displayed.



Note: When the Create Reports Complete page is first displayed, a message should be shown indicating that the report was successfully created.

Enter Date/Time	Quick Date Selection		
From: 02/26/2009 16:02	Today	Last 24 Hours	Previous Month
To: 02/26/2009 16:02	Yesterday	Last 3 Days	Previous Quarter
	Month to Date	Last 7 Days	Previous 2 Quarters
	Quarter to Date	Last 30 Days	Previous Year
	Year to Date	Last 365 Days	Today's Mill Day
	Current 12 Months	Last 12 Months	Yesterday's Mill Day

From the Create Reports Complete page, a number of actions can be performed. Clicking the Back link will take you back to the Create Reports Configure Parameters page so that you can change the parameter values. Clicking the Create More Reports link will take you back to the Create Reports page so that you can begin creating addition reports. Clicking the Home link will take you to the home page.

Additionally, from the Create Reports Complete page, you can view your newly created report. Using the date/time controls (either enter a date and time in the From and To textboxes or use a Quick Date Selection links), enter a date/time range for the report and click the Generate link. Doing this will generate the report and display it for you.

The screenshot shows a web browser window displaying a report titled "Source Downtime Report". The report details are as follows:

Source Downtime Report


From: 10/01/2008 00:00 To: 12/31/2008 23:59
 Generated: 02/26/2009 16:10
 Facility Name: Columbia Municipal Power Plant
 Location: Columbia, Missouri


Tag Name: 85_Unit01_TF_1H
 Total Report Time: 2208 Hour(s)

Downtime Periods		
Start Time	End Time	Duration in Hour(s)
10/01/2008 00:00	10/17/2008 11:00	396

Operating Time Summary	
Available Data for Report (excludes missing data):	396.00 Hour(s)
Total Downtime:	396.00 Hour(s)
Downtime Percentage:	100.00 %
Total Uptime:	0.00 Hour(s)
Uptime Percentage:	0.00 %

At the bottom of the report, it says "ALL_SourceDowntimeReport" and "1".

 **Note:** The default output format for generated reports is PDF. Using the Output Format drop-down list, you can select a different format for report generation.

 **Note:** RegPerfect Reports requires Adobe Acrobat Reader 7.0 or higher to be installed on your computer to be able to render the reports correctly.

13.4 Generating Reports

Once you have created some reports based on the master reports, you can then generate the reports to view the data and information in your system.

13.4.1 Reports (Home Page)

The Reports page provides you the means of finding and selecting reports for generation. The left pane of the Reports page provides a treeview of report groupings, while the right pane displays a list of reports in the selected report grouping.

The screenshot shows the RegPerfect Reports web application in a Windows Internet Explorer browser. The browser address bar shows the URL <http://localhost/RegPerfectReports/Pages/Reports.aspx>. The page title is "RegPerfect Reports - Reports". The browser's address bar includes a "Live Search" field. The page header features the RegPerfect logo and navigation links: "Reports", "My Reports", "Create Reports", "Delete Reports", "Report Groups", and "Report Schedules". The page content is divided into two panes. The left pane, titled "Monitoring Site", shows a treeview of report groupings: "Reports", "All Monitoring Sites", "Boiler Unit 6", "Boiler Unit 7", "Boiler Unit 8", and "Common Stack 5". The right pane, titled "Reports", displays a table of reports with a "Count: 5" indicator. The table has two columns: "Report Name" and a checkbox column. The reports listed are: "ALL_DailyAlarmReport", "ALL_DailyCalResults", "ALL_DailyOperationsReport", "ALL_MonthlyOperationsReport", and "ALL_SourceDowntimeReport". A "Save Report Group" button is located at the bottom of the table. The footer of the page contains copyright information: "Copyright © 1998-2009 Teledyne Monitor Labs, Inc. All rights reserved." and contact information: "Call Center: (800) 846-6062", "Sales: (303) 792-3300", "http://www.regperfect.net", and "regperfect@teledyne.com".

Report Name	
ALL_DailyAlarmReport	<input type="checkbox"/>
ALL_DailyCalResults	<input type="checkbox"/>
ALL_DailyOperationsReport	<input type="checkbox"/>
ALL_MonthlyOperationsReport	<input type="checkbox"/>
ALL_SourceDowntimeReport	<input type="checkbox"/>

The report grouping in the left pane provides categorization of the reports based on a monitoring site and a report category.

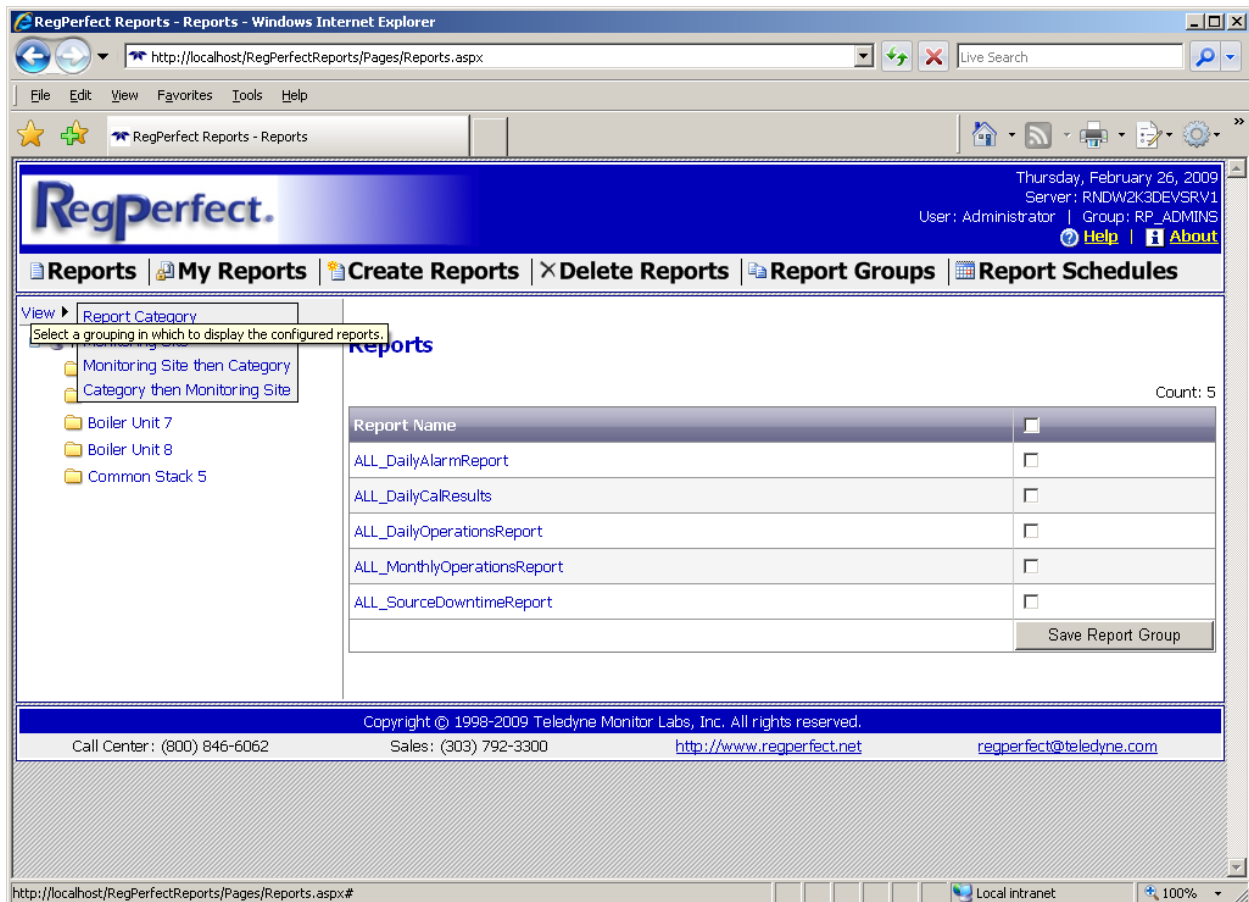


Note: Each report's monitoring site and report category classification were chosen when creating the report.

To easily find the report(s) you are looking for, you can select which categorization scheme works best for you. The categorization views are:

- *Report Category* – Report Category shows only the report categories for the created reports and then groups the reports by those categories.
- *Monitoring Site* – Monitoring Site shows only the monitoring sites for the created reports and then groups the reports by those monitoring sites.
- *Monitoring Site then Category* – Monitoring Site then Category groups all the created reports, first, by monitoring site, then by report category.
- *Category then Monitoring Site* – Category then Monitoring Site groups all the created reports, first, by report category, then by monitoring site.

Changing the categorization of reports, use the View link above the treeview of report categorizations. The text next to the View link displays the current categorization view.



Note: To bring up the report categorization menu, hover your mouse pointer over the View item. The menu will pop-up and allow you to select a different categorization.



Note: Once you select a report categorization, the selected view will be saved so that the next time you open RegPerfect Reports, the last categorization selected will be the default. This is a per-user feature, thus, every RegPerfect Reports user can choose the view that suits them best.

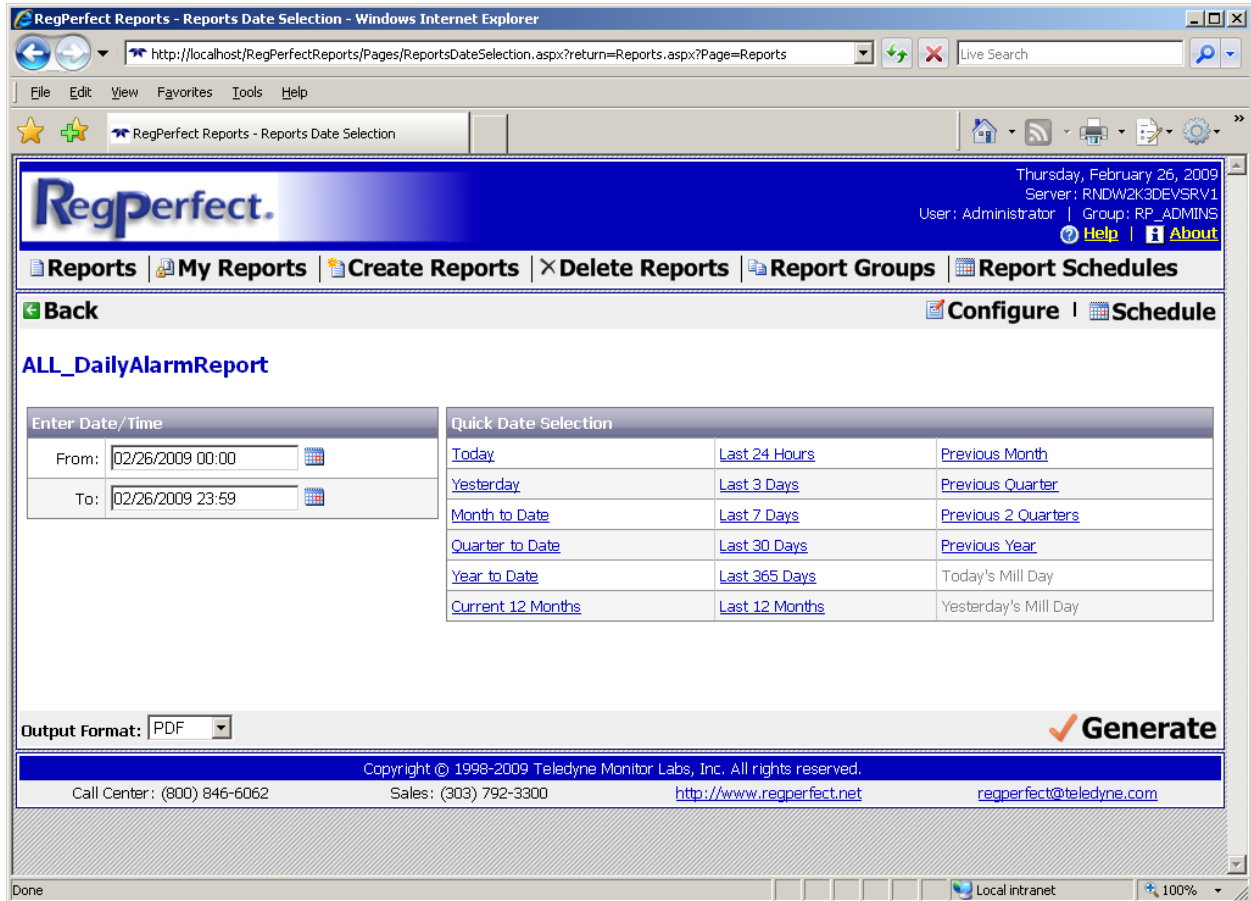
Once you have found the report you wish to use and/or generate, click the name of the desired report in the right pane of the Reports page. Doing so will select the report and take you to the next page.



Note: The My Reports page will look and work exactly as explained for the Reports page. The only difference being is that the My Reports page will only show reports for the specific logged in user, whereas the Reports page will show reports for any/all users.

13.4.2 Reports Date Selection

After selecting a report from either the Reports or My Reports page, the Reports Date Selection page will allow you to enter a date range for the report. Additionally, you will be able to generate the report and view the results.



The left pane of the Reports Date Selection page provides controls to set the From and To dates and times. Using the controls (either typing in the From and To dates/times, or using the calendar controls, or using the Quick Date Selection links), enter From and To dates/times for the reporting period to be queried and displayed.

Once the dates/times are set, click the Generate Report link to generate and view the report.



Note: The From and To dates/times format should be MM/dd/yyyy HH:mm. For example, 01/01/2007 00:00. The Reports Date Selection page will validate that a correct date/time format has been entered.



Note: The default output format for the generated report is PDF. If you would rather have the generated report in a different format, use the Output Format drop-down list to select a format. The available formats are PDF, Excel, and HTML.

From the Reports Date Selection page, you can continue configuring the report's parameters (to view different datasets) or schedule the report for automated generation and delivery. Click the Configure link to further configure the report. Click the Schedule link to schedule the report.



Note: Only RP_ADMINS and RP_MANAGERS users can configure and schedule reports. RP_OPERATORS and RP_TECHNICIANS user cannot configure and schedule reports.

13.4.3 Reports Configure

If you chose to continue configuring the report, the Reports Configure page will allow you to choose and save other/different parameter values. Depending on the report selected, the page will provide drop-down lists of available values for each parameter. If you need/want to change any parameter value, simply select it from the appropriate drop-down list.

RegPerfect Reports - Reports Configure - Windows Internet Explorer

http://localhost/RegPerfectReports/Pages/ReportsConfigure.aspx

Thursday, February 26, 2009
Server: RNDW2K3DEVSRV1
User: Administrator | Group: RP_ADMINS
[Help](#) | [About](#)

[Reports](#) | [My Reports](#) | [Create Reports](#) | [Delete Reports](#) | [Report Groups](#) | [Report Schedules](#)

[Back](#) [Save As](#) | [Save](#) | [Schedule](#)

ALL_DailyAlarmReport

Parameter Name	Parameter Value	Sum or Avg?
Alarm Priority:	All	
Alarm Category:	All	
Monitoring Site Name:	All	
Acknowledged By:	All	
Report Title:	Daily Alarm Report	
Report Subtitle:		

Output Format: PDF [Generate](#)

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Once you have configured the parameters, you have a number of different options as to what to do next. Clicking the Generate link will generate and display the report. Clicking the Save link will save all your parameter value changes to the database. Clicking the Schedule link will save your parameter values to

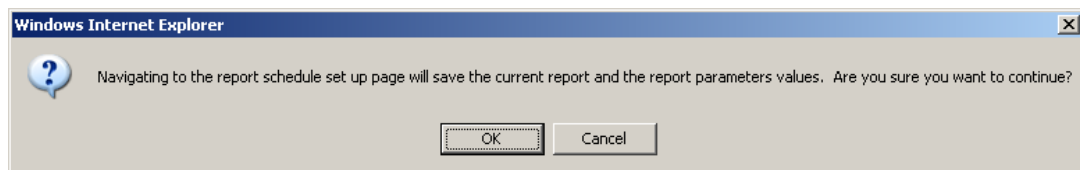
the database and take you to the report scheduling page. Finally, clicking the Save As link will allow you to save the report as a new report (essentially create a copy of the currently selected and configured report, but with a new name and new categorizations, if needed).



Note: Depending on the type of parameter, a textbox could be provided to allow for customizing the parameter value, instead of selecting it from a predefined list. In this case, once you change or enter text into a textbox, you will need to first click out of the textbox before clicking on any of the navigation links. For example, if you were to enter a report subtitle into the Report Subtitle textbox, using the mouse, click in the Report Title textbox before clicking the Save navigation button.



Note: Clicking the Schedule link will ask you for confirmation to save the parameter values and to continue.



If you truly want to save the parameter values and continue on to the report scheduling functionality, click OK. Otherwise, click Cancel.



Note: The special characters ? ; @ & = : + \$, \ * > < | . " ' / are not allowed for this information and are considered invalid.

13.4.3.1 Save As

Clicking the Save As link from the Reports Configure page opens the Reports Save As page. This page allows you to make a copy of an existing report. This functionality is provided as a shortcut way to create reports without having to go through the entire create reports process.

RegPerfect Reports - Reports Save As - Windows Internet Explorer

http://localhost/RegPerfectReports/Pages/ReportsSaveAs.aspx

Thursday, February 26, 2009
Server: RNDW2K3DEVSrv1
User: Administrator | Group: RP_ADMINIS

Reports | My Reports | Create Reports | Delete Reports | Report Groups | Report Schedules

Back | Schedule | Cancel | Save

Reports Save As

New Report Information

- Report Location
 - Reports
 - My Reports

* = Required Field

* Report Name:

Monitoring Site:

Category:

Selected Report Information

Report Name: ALL_DailyAlarmReport
Monitoring Site: All Monitoring Sites
Category: Other Summary
Master Report Name: Daily Alarm Report

Report Parameters Count: 9

Parameter Name	Parameter Value
AcknowledgedBy	All
AlarmCategory	All
AlarmPriority	All
MonitoringSiteName	All
ReportEndDate	12/31/2009 23:59

Done Local intranet 100%

From the Reports Save As page, enter the information (Report Location, Report Name, Description, Monitoring Site, and Category) for the new report and click the Save link to create and save the new report.



Note: The only required piece of information is a new Report Name. You must enter a unique Report Name for the new report. If you do not pick a Report Location or Monitoring Site or Category, the new report will use the same information of the report you are making a copy of.

Additionally, you can schedule the new report by clicking the Schedule link. This creates and saves the new report and takes you to the report scheduling page so that you can schedule the new report for automated generation and delivery.

13.4.4 Reports Schedule

The Reports Schedule page allow you to enter all the necessary pieces of data to schedule the selected report for automatic generation and delivery. Scheduling a report is completed in multiple steps:

- Schedule Details
- Report Delivery Options
- Schedule Processing Options
- Report Period

RegPerfect Reports - Reports Schedule - Windows Internet Explorer
http://localhost/RegPerfectReports/Pages/ReportsSchedule.aspx

Thursday, February 26, 2009
Server: RNDW2K3DEVSRV1
User: Administrator | Group: RP_ADMINS
Help | About

Reports | My Reports | Create Reports | Delete Reports | Report Groups | Report Schedules

Back | Home Cancel | Save

ALL_DailyAlarmReport1

Schedule Details
* = Required Field
* Schedule Name:
Description:

Report Delivery Options
How many delivery destinations? 1 2
Destination 1:
Destination 2:

Report Delivery Options - Printer
* = Required Field
* Printer:
Enter or choose a shared local or network printer.
Local: LocalPrinter - Example: HP LaserJet 1600
Network: \\servername\NetworkPrinter - Example: \\CEMSERVER\LaserJet 900

Schedule Processing Options

Done Local intranet 100%

13.4.4.1 Schedule Details

Each report schedule needs a unique name for the schedule. Optionally, enter a description of the report schedule.

13.4.4.2 Reports Delivery Options

RegPerfect Reports supports delivering a scheduled report to multiple locations. For the Report Delivery Options, first, select the number of delivery destinations. The default is 1.

There are three delivery options in RegPerfect Reports:


1. Printer
2. File
3. E-mail

For each delivery destination selected, choose the delivery option and enter the required information needed to complete the delivery information for the report schedule.




Note: Each delivery option will provide on-screen tips and/or instructions on how to configure it and what information is needed.



Note: For the Printer delivery option, clicking the printer icon  opens another window that lists the printers configured on the system and allows you to choose the desired printer.



Note: For the File delivery option, clicking the folder icon  opens another window that allows you to pick the folder that will be used when RegPerfect Reports creates the report file.



Note: For the File delivery option, you either need to map a drive to a network folder and then pick the mapped drive from the folder picker form, or type in a full UNC path to the network folder.

13.4.4.3 *Schedule Processing Options*

The Schedule Processing Options sections defines when the scheduled report will execute. There are four delivery schedule options:

1. Hourly
2. Daily
3. Weekly
4. Monthly

Depending on the frequency in which you want the report to automatically generate, select one of the delivery schedule options and enter all the necessary information for that option.

Then enter a report generation time. This is the time of day that the report schedule will run and generate the report.

13.4.4.4 *Report Period*

The Report Period section provides a way to define the automatically generated report's date/time range. Essentially, it defines the from and to dates/times for the report.

From the Quick Date Scheduler drop-down list, select one of the predefined report period options.



Note: Once you select a report period option, a description of the Quick Date Scheduler option will be provided, and this description will show you what the from and to dates/times will be when the report schedule executes.

13.4.4.5 *Saving the Report Schedule*

After you enter all the required information to define the report schedule and its delivery and period options, click the Save link to create and save the new report schedule.

Clicking the Cancel link will not create a report schedule and discard the information you have entered.



Note: Only RP_ADMINS and RP_MANAGERS users can create scheduled reports. RP_OPERATORS and RP_TECHNICIANS user cannot create scheduled reports.

13.5 Managing Report Schedules

When you successfully create a new report schedule or if you click the Report Schedules menu on the menu bar, you will be taken to the Report Schedules page. From this page, you can manage all the report schedules that have been created.



Note: Only RP_ADMINS and RP_MANAGERS users can manage scheduled reports. RP_OPERATORS and RP_TECHNICIANS user cannot manage scheduled reports.

From the Report Schedules page, you can perform a number of different operations to manage your scheduled reports. You can:

- Delete one or more report schedules
- Edit a report schedule
- Enable or disable the SQL Server job associated with the report schedule
- Test the report schedule.

RegPerfect Reports - My Schedules - Windows Internet Explorer

http://localhost/RegPerfectReports/Pages/MySchedules.aspx?updatesuccess=true

Thursday, February 26, 2009
Server: RNDW2K3DEVSrv1
User: Administrator | Group: RP_ADMINS
[Help](#) | [About](#)

[Reports](#) | [My Reports](#) | [Create Reports](#) | [Delete Reports](#) | [Report Groups](#) | [Report Schedules](#)

Report Schedules

[Delete](#) | [Edit](#) | [Enable](#) | [Disable](#) Count: 2

<input type="checkbox"/>	Status	Schedule Name	Test Destination(s)	Schedule Description	Report Name	Report Path
<input type="checkbox"/>	Enabled	Test	Test		ALL_DailyAlarmReport1	/Reports/ALL_DailyAlarmReport1
<input type="checkbox"/>	Enabled	Test1	Test	Test1	ALL_DailyCalResults	/Reports/ALL_DailyCalResults

✓ Successfully added or updated the report schedule.

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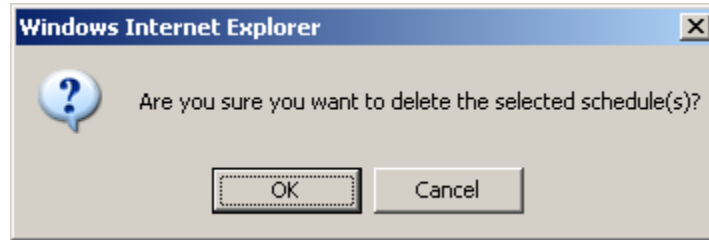
Note: If you came to the Report Schedules page from creating or editing a report schedule, a status message will appear to notify you that your actions completed successfully.



Note: If you choose to send a scheduled report to a network resource as the delivery end-point (i.e., network printer or network folder), you must start SQL Server 2005 Agent using a network user account that has appropriate network permissions to use the network resource.

13.5.1 Deleting Report Schedules

To delete one or more existing report schedules, select the checkboxes next to each report schedule that needs to be deleted, then click the Delete link. A confirmation dialog will appear asking you to verify that you really want to delete.



Click OK to delete the selected report schedules. Clicking Cancel will not delete any report schedules.

13.5.2 Editing Report Schedules

To edit an existing report schedule, select the checkbox next to the report schedule and click the Edit link.



Note: Only one report schedule can be edited at a time. That is, you can only select one report schedule to edit. If you have more than one selected, a message will inform you to only select one report schedule.

Clicking the Edit Report Schedules link will open the My Schedules Edit page, allowing you to change the report schedule definition.

The screenshot shows the 'RegPerfect Reports - My Schedules Edit' page in Internet Explorer. The browser address bar shows the URL: `http://localhost/RegPerfectReports/Pages/MySchedulesEdit.aspx?scheduleName=Test1&reportName=ALL_DailyCalRes`. The page title is 'RegPerfect Reports - My Schedules Edit'. The page content includes the RegPerfect logo, navigation links for Reports, My Reports, Create Reports, Delete Reports, Report Groups, and Report Schedules. The main content area is titled 'Test1' and contains the following sections:

- Schedule Details:** Schedule Name: Test1, Description: Test1.
- Report Delivery Options:** How many delivery destinations? 1. Destination 1: Printer.
- Report Delivery Options - Printer:** * = Required Field. * Printer: HP Color LaserJet 1600.
- Schedule Processing Options:** Delivery schedule: Daily.

The page also shows a 'Back' button, 'Cancel' and 'Save' buttons, and a status bar at the bottom indicating 'Local intranet' and '100%' zoom.

The My Schedules Edit page is pre-populated with all the information that was saved when the report schedule was created. This page is very similar to the create reports schedule page and should be used in the same way.

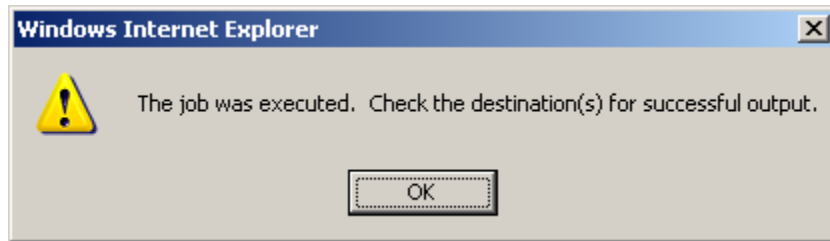
Enter and/or change any of the report schedule sections and click the Save link. See the section on how to create a report schedule for information.

13.5.3 Enabling or Disabling Report Schedules

To enable or disable one or more existing report schedules, select the checkboxes next to each report schedule that needs to be enabled or disabled, then click the Enable or Disable link. This will enable or disable the SQL Server jobs that are associated with the selected report schedules. Once changed, the status column will display the current status of the report schedule.

13.5.4 Testing Report Schedules

To test a report schedule, click the Test button. Doing so will execute the SQL Server job associated with the report schedule. After clicking the Test button, you will see a notification message alerting you to check for the report output based on how you configured the report schedule.



Note: The SQL Server job must be enabled for it to successfully execute and test the report schedule. If the report schedule is disabled, first enable it before testing it.

13.6 Creating Report Groups

A report group is a collection of reports that can be generated as one unit. Rather than generating each individual report needed, you can group a number of reports together in a report group and generate the report group, which in-turn generates each individual report for you.

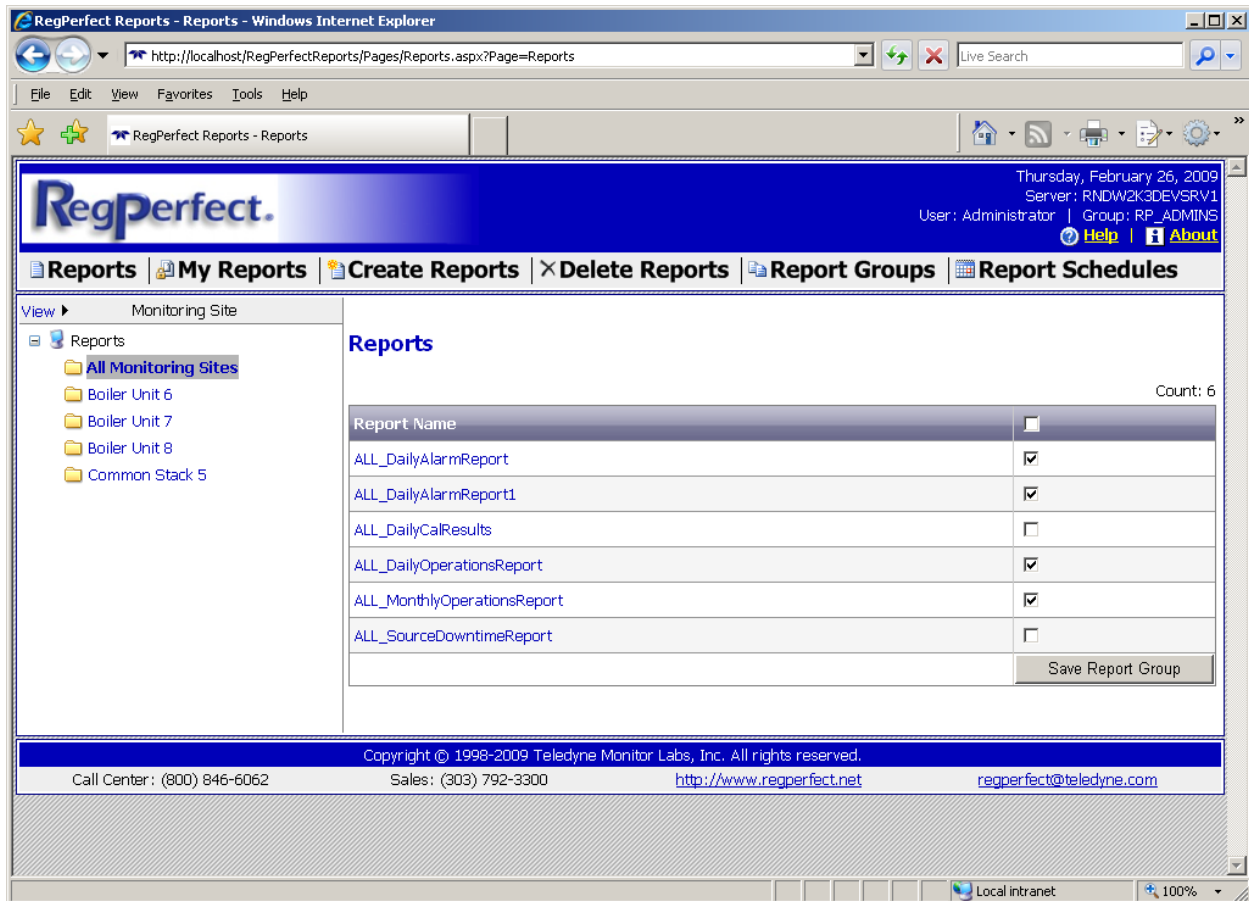
To create a report group, you simply need to select which reports you want in the report group and give the report group a name.

From the Reports (home page) or My Reports page, select the reports for the report group using the checkboxes next to each report.



Note: Only reports that have been given similar report categories can be save in a report group together. That is, all reports in the report group must have the same Report Category.

Once you have all the reports selected, click the Save Report Group button.



Clicking the Save Report Group button opens the Create My Groups page, allowing you to enter a group name and a description.

Thursday, February 26, 2009
Server: RNDW2K3DEVSRV1
User: Administrator | Group: RP_ADMINS
[Help](#) | [About](#)

[Reports](#) | [My Reports](#) | [Create Reports](#) | [Delete Reports](#) | [Report Groups](#) | [Report Schedules](#)

[Back](#) [Cancel](#) | [Save](#)

Group Information

Group Name:
Group Description:

Selected Reports

Count: 4

ReportName	ReportPath	MonitoringSiteName	CategoryName
ALL_DailyAlarmReport	/Reports/ALL_DailyAlarmReport	All Monitoring Sites	Other Summary
ALL_DailyAlarmReport1	/Reports/ALL_DailyAlarmReport1	All Monitoring Sites	Other Summary
ALL_DailyOperationsReport	/Reports/ALL_DailyOperationsReport	All Monitoring Sites	Other Summary
ALL_MonthlyOperationsReport	/Reports/ALL_MonthlyOperationsReport	All Monitoring Sites	Other Summary

[Cancel](#) | [Save](#)

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After entering a group name and description, click the Save link to create the report group. Clicking the Cancel or Back links will discard your changes and not save the report group.

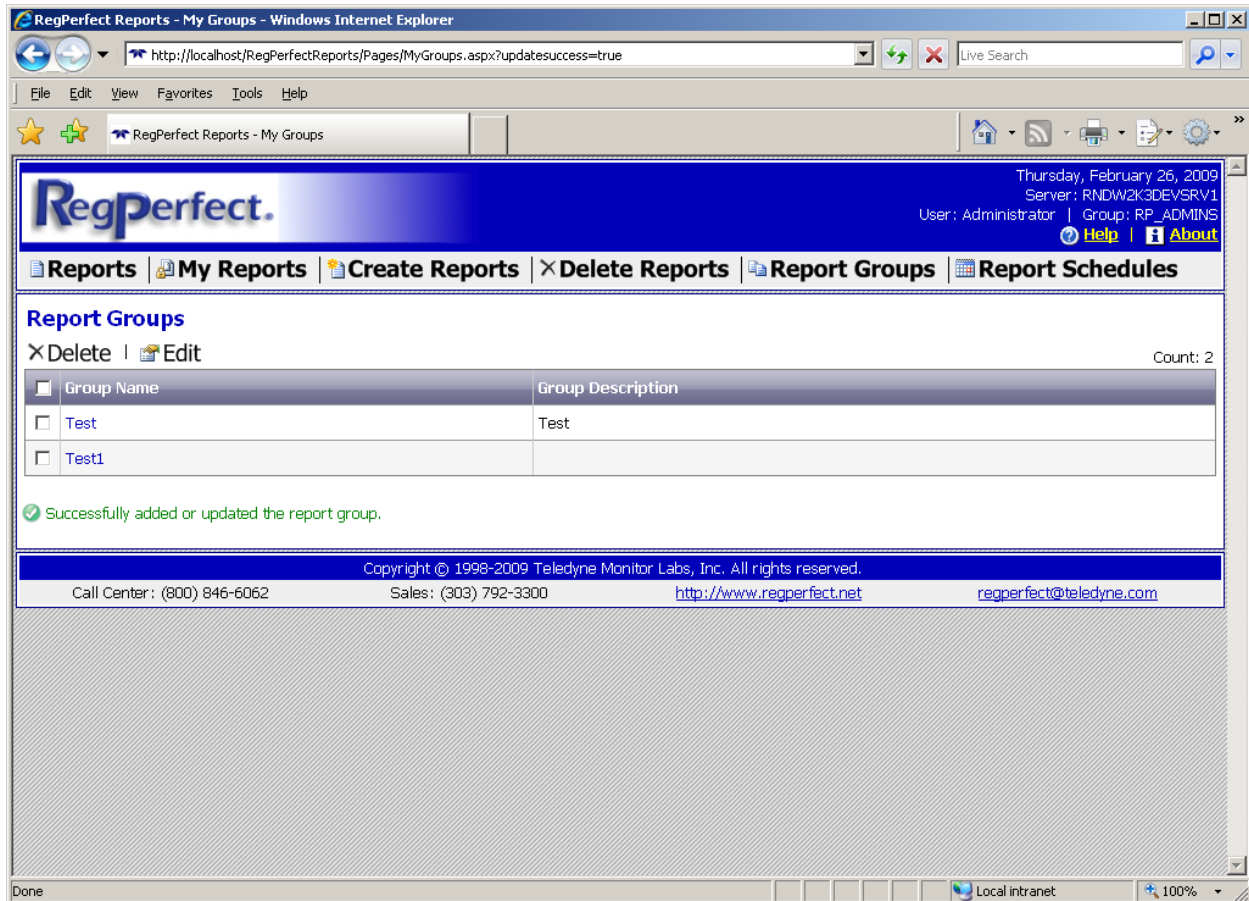


Note: The special characters ? ; @ & = : + \$, \ * > < | . " ' / are not allowed for this information and are considered invalid.

13.7 Managing Report Groups

Creating a new report group or clicking the Report Groups menu item in the menu bar will open the Report Groups page. This page lists all the report groups saved on the system.

From this page, you can delete or edit report groups or select a report group to be executed.



RegPerfect Reports - My Groups - Windows Internet Explorer

http://localhost/RegPerfectReports/Pages/MyGroups.aspx?updatesuccess=true

File Edit View Favorites Tools Help

RegPerfect Reports - My Groups

Thursday, February 26, 2009
Server: RNDW2K3DEVSRV1
User: Administrator | Group: RP_ADMINS
Help | About

Reports | My Reports | Create Reports | Delete Reports | Report Groups | Report Schedules

Report Groups

Delete | Edit Count: 2

<input type="checkbox"/>	Group Name	Group Description
<input type="checkbox"/>	Test	Test
<input type="checkbox"/>	Test1	

Successfully added or updated the report group.

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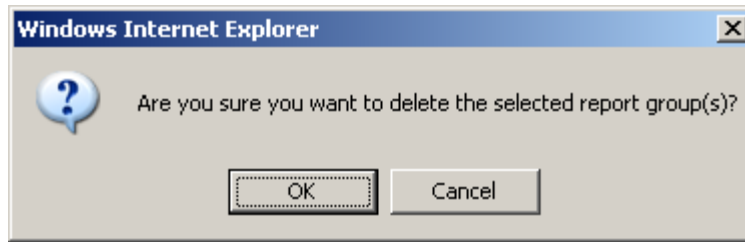
Done Local intranet 100%



Note: If you came to the Report Groups page from creating or editing a report group, a status message will appear to notify you that your actions completed successfully.

13.7.1 Deleting Report Groups

To delete one or more report groups, use the checkboxes next to each report group to select the report groups that you want to delete, then click the Delete link. Clicking the Delete link will open a dialog asking for confirmation that you really want to delete the report groups.



Clicking OK will delete the selected report groups. Clicking Cancel will not delete any report groups.

13.7.2 Editing Report Groups

To edit an existing report group, select the checkbox next to the report group and click the Edit link.



Note: Only one report group can be edited at a time. That is, you can only select one report group to edit. If you have more than one selected, a message will inform you to only select one report group.

Clicking the Edit link will open the My Groups Configure page, allowing you to change the report group definition.

Thursday, February 26, 2009
 Server: RNDW2K3DEVSRV1
 User: Administrator | Group: RP_ADMINS
[Help](#) | [About](#)

Regperfect.

[Reports](#) | [My Reports](#) | [Create Reports](#) | [Delete Reports](#) | [Report Groups](#) | [Report Schedules](#)

[Back](#) [Cancel](#) | [Save](#)

Group Information

Group Name: Test1
 Group Description:

Reports in the Report Group

[Remove All](#) Count: 2


Report Name	Report Path	Group Name
↓ ALL_DailyAlarmReport	/Reports/ALL_DailyAlarmReport	Test1
↓ ALL_DailyAlarmReport1	/Reports/ALL_DailyAlarmReport1	Test1

Reports Available to be Added to the Report Group Count: 6

Report Name	Report Path	Monitoring Site Name	Category Name
↑ ALL_DailyOperationsReport	/Reports/ALL_DailyOperationsReport	All Monitoring Sites	Other Summary
↑ ALL_MonthlyOperationsReport	/Reports/ALL_MonthlyOperationsReport	All Monitoring Sites	Other Summary
↑ B6_DailyAlarmReport	/Reports/B6_DailyAlarmReport	Boiler Unit 6	Other Summary
↑ B7_DailyAlarmReport	/Reports/B7_DailyAlarmReport	Boiler Unit 7	Other Summary

The My Groups Configure page provides you with the capability to change the report group description, remove reports from the report group, and add reports to the report group.

13.7.2.1 *Removing Reports from the Report Group*

If you need or want to remove reports from the report group, you can remove each report one at a time or you can remove all the reports in one action. To remove the reports one at a time, click the down arrow icon  next to the report that you want to remove from the report group.



Note: Removing the report from the report group does not delete the report from the system. The report is still available to be generated or scheduled.



Note: Removing a report from a report group adds the deleted report to the list of available reports that can be added to the report group.

Click the Remove All –  **Remove All** – link to remove all reports from the report group.

13.7.2.2 *Adding Reports to the Report Group*

To add reports to the report group, click the add report icon  next to each report you want or need to add to the report group.



Note: Adding a report to a report group removes the report from the list of available reports that can be added to the report group.

13.7.2.3 *Saving Changes to the Report Group*

Once you have made all the required changes to the report group, click the Save link to save your changes.



Note: You must click the Save link to save the changes you have made to the report group definition. If you do not click the Save link, any reports that you have removed or added to the report group will not be saved.

13.7.3 Generating a Report Group

To generate a report group and execute all the reports contained therein, from the Report Groups page, click the name of the report group. Doing so will take you to the Report Group Date Selection page. On this page, you can set the From and To dates/times for each report in the report group.

The left pane will show a list of all reports contained in the report group.

Use the date/time controls to set the date/time range and click the Generate button.

RegPerfect Reports - My Groups Date Selection - Windows Internet Explorer

http://localhost/RegPerfectReports/Pages/MyGroupsDateSelection.aspx

Thursday, February 26, 2009
Server: RNDW2K3DEVSRV1
User: Administrator | Group: RP_ADMINS
[Help](#) | [About](#)

Reports | **My Reports** | **Create Reports** | **Delete Reports** | **Report Groups** | **Report Schedules**

Reports in the Selected Report Group

- ALL_DailyAlarmReport
- ALL_DailyAlarmReport1

Test1

Enter Date/Time

From: 02/26/2009 00:00

To: 02/26/2009 23:59

Quick Date Selection

Today	Last 24 Hours	Previous Month
Yesterday	Last 3 Days	Previous Quarter
Month to Date	Last 7 Days	Previous 2 Quarters
Quarter to Date	Last 30 Days	Previous Year
Year to Date	Last 365 Days	Today's Mill Day
Current 12 Months	Last 12 Months	Yesterday's Mill Day

Output Format: PDF

Generate

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Note: Each report in the report group will be generated and displayed in its own browser window. Therefore, if your report group has a lot of reports, you could get a lot of individual windows popping up on your screen.



RegPerfect® SpotLight

User Manual and Help Documentation

Updated: August 2020

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1 Introduction

This manual describes the RegPerfect® SpotLight application.

1.1 Summary of Features

SpotLight is a graphical display program that shows the values of data in the RegPerfect® database as they update in real time. SpotLight can read/write PLC registers (AB and GE) and can read instantaneous channel and digital values from a DataLogger. Displays are configured by using the application in design mode. Multiple displays can be designed, saved, and opened as needed. These displays can contain a large variety of graphical items that will update in real time based on data coming in to the RegPerfect® system. Items include:

- Text Box** *Text Box* items are lines of text that you can put on your display. They can be used as titles, labels for other items or for any descriptive text you want to add to your displays.
- Open File Box** The *Open File Box* items are button-like controls that you can put on your display. They can be used to launch other applications or open any files with known associations from your display.
- Server Time Box** *Server Time Box* items display the current poll time in a text style format. The current poll time is the server clock time minus the offset time you have configured. Adding time to a display allows your operators to capture a complete set of information about CEMs operations at a glance, or to file if necessary.
- Status Boxes** *Status Box* items display status of Alarms, Instruments, Message Queue, Services, and Database Connection respectively. The items flash whenever the defined alarm conditions are met. Adding *Status Box* items to a display alerts operators to critical conditions as they occur in real time.
- Constant Box** *Constant Box* items display values from the ConstantValue table in the RegPerfect® database in a text style. They can be used to display information such as calibration bottle reference values and fuel factors. You can also use a *Constant Box* to edit constant values and/or their periods of effectivity.
- Poll Box** The *Poll Box* item is a text style box that displays data from the Sample table for a single tag in the RegPerfect® database for a single timestamp. You can use *Poll Boxes* to create rows or columns of data in a calendar format, such as a calendar which shows the total for each day in a separate box.
- Value Box** The *Value Box* item is a text style box that displays data (values at a single timestamp or running averages or sums) for a single tag in the RegPerfect® database. Alternatively, it can be used to display real-time data from a PLC or DataLogger tag. You can use *Value Boxes* to create rows or columns of data or you can place a *Value Box* next to or on top of another graphics item such as an analyzer to show data in a meaningful way.

Graph Value Box	The <i>Graph Value Box</i> item is a text style box that displays data for a single tag in the RegPerfect® database. When clicked, it brings up a form displaying the sample data over a time period in both a graphic and a tabular style. You can use <i>Graph Value Box</i> items for historical data trends.
On/Off Switches	The <i>On/Off Switch</i> item is a graphic representation of a switch that can be turned on and off. When the switch is clicked to on, it writes the configured <i>WriteOnValue</i> to a PLC tag and when it is clicked to off, it writes the <i>WriteOffValue</i> out. It can also be used to send a pulse signal to the PLC by writing the <i>WriteOnValue</i> followed by the <i>WriteOffValue</i> . You can use an <i>On/Off Switch</i> item to simulate the on/off states of a Boolean tag in your PLC. In addition, the <i>On/Off Switch</i> item can be used to start a DataLogger calibration sequence.
Manual Station	The <i>Manual Station</i> item is a graphic representation of a control panel that has a value box and three buttons. The value in the value box can be changed and written into a PLC tag. You can use a <i>Manual Station</i> item to simulate a real-time process from your PLC, such as a daily calibration.
Gauges	The various <i>Gauge</i> items are gauges that look very similar to the physical gauges seen in a control room. They display sample data at a single timestamp or a running average or sum for a tag in the RegPerfect® database. They display data directly read from a PLC as well. The data value is depicted as a bar level or needle position on the gauge. You can use the <i>Gauge</i> items to create panels that operators are familiar with and can read quickly and easily.
LED Digit Boxes	The <i>LED Digit Box</i> items are LED style text boxes that look similar to the physical LED displays seen in a control room. They display data for a single tag in the RegPerfect® database or display real-time data for a PLC tag. You can place a <i>LED Digit Box</i> next to or on top of another graphics item such as an analyzer to show data in a meaningful way.
LEDs	The various <i>LED</i> items are graphics that look like alarm lights in a control room. The item turns on or flashes based on critical conditions that you can define for the tag data. You can use the <i>LED</i> item to create displays that visually alert operators that critical data events, such as invalid data, high alarm levels, or malfunctioning equipment are taking place as they occur in real time.
Database Trend	The <i>Database Trend</i> plots 1-minute (or higher) database values for up to 6 tags against time or another tag. This item is useful for both real-time display and historical analysis.
Real Time Trend	The <i>Real Time Trend</i> plots sub 1-minute, real-time values against time for a single PLC tag. The graph is updated at the PLC polling intervals. It allows you to view the real-time data changing trend inside the PLC.
Thermometer	The <i>Thermometer</i> item is a thermometer that looks very similar to the physical thermometers seen in a control room. It can be used to display temperature data for a tag in the RegPerfect® database. It can be used to display temperature directly read from a PLC as well. You can use the <i>Thermometer</i> item to create panels that operators are familiar with and can read quickly and easily.

Animations	The <i>Burner, Fan</i> and <i>Smoke</i> items are graphic representations of flame, fan, and a cloud of smoke that will turn on and off based on the value of a tag in the RegPerfect® database or a PLC tag. You can use an animation to indicate whether fuel is being combusted or a process fan is operating.
Analyzer	The <i>Analyzer</i> item is a LED style box that displays data from the Sample table for a single tag in the RegPerfect® database. You can use <i>Analyzer</i> items to create rows or columns of data or you can place an <i>Analyzer</i> next to or on top of another graphics item to show data in a meaningful way.
Cal Gas Bottle	The <i>Cal Gas Bottle</i> item is a graphic representation of a gas bottle with a bar in the middle that will display the value of a tag in the sample table as a height as a function of a configurable maximum. You can use <i>Cal Gas Bottle</i> items to alert operators to the amount of gas remaining and to display the layout of the calibration plumbing.
ML9800	The <i>ML9800</i> item is a graphic representation of a ML9800 analyzer. You can use a ML9800 item to display value of a RegPerfect® database tag or a PLC tag.
SensorE	The <i>SensorE</i> item is a graphic representation of a Sensor-e gas analyzer. You can use a SensorE item to display value of a RegPerfect® database tag or a PLC tag.
Picture Box	The <i>Picture Box</i> item displays a .bmp file that you configure. It can be used to display company logos or other non-moving graphical items that depict your operations.
BackGround Box	The <i>BackGround Box</i> item displays a picture (.jpg, .gif, .bmp) file that you configure. It can be used to display company logos or other non-moving graphical items that depict your operations.
Shapes	Various <i>Shapes</i> are available that you can put on your display. The items are not linked to any database values and are used solely for creating a more presentable display.
Schematics	The old set of schematics was entirely replaced with a new set of ten 2-D schematics in version 4. Most of the new schematics can be linked to discrete PLC tags. They can be used to control valve states or as alarm/state indicators by writing/reading directly to/from a PLC. You can use them to control your CEMs.

1.2 New Features

1.2.1 Trend

In version 5.2010.0.902, the *Minute Trend* item was replaced with a new *Database Trend* item which includes new features and enhancements in addition to all major functionality and options of the legacy C++ trend application. For more information, see [Trend User Interface](#).

1.2.2 DataLogger Support

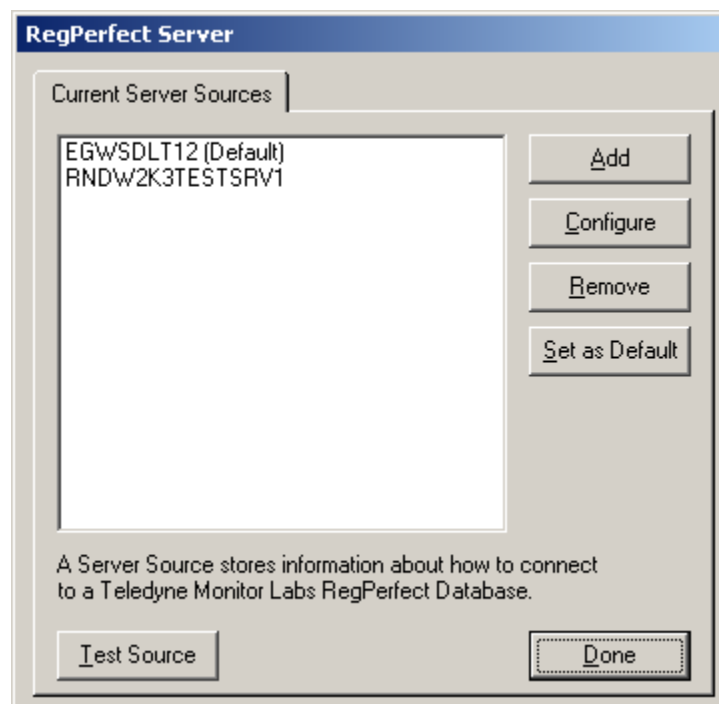
In version 5.2010.0.1005, support was added for a DataLogger controller. Spotlight can read instantaneous channel and digital values and can start calibration sequences on the logger. For more information, see [DataLogger](#).

2 Data Source Configuration

The SpotLight application can retrieve data from three types of data sources: databases on RegPerfect® servers, Allen-Bradley or General Electric PLCs and DataLoggers. To make a data source available for the SpotLight application, it needs to be configured in advance.

2.1 RegPerfect Server(s)

A server source contains information about how to connect to a RegPerfect® database on a server. Click *Servers* on the main menu bar in SpotLight design mode to open the *RegPerfect Server* dialog. This dialog will open automatically the first time you launch SpotLight when no RegPerfect® server sources have been configured.



The new *Set as Default* button allows you to set a default server which will ease configuring a SpotLight display. The default server will be automatically selected as the data source when new items are added to a Spotlight display in design mode.

Click the *Add* button to open the SQL Server Setup dialog:

SQL Server Setup

This wizard will help create a connection to a SQL Server with a Teledyne Monitor Labs RegPerfect Database.

What SQL Server do you want to connect to?

Server Name: EGWSDLT12

How should SQL Server verify the authenticity of the login ID?

With Windows authentication using the network login ID

With SQL Server authentication using a login ID and password

Login ID: sa

Password:

Add Data Source Cancel

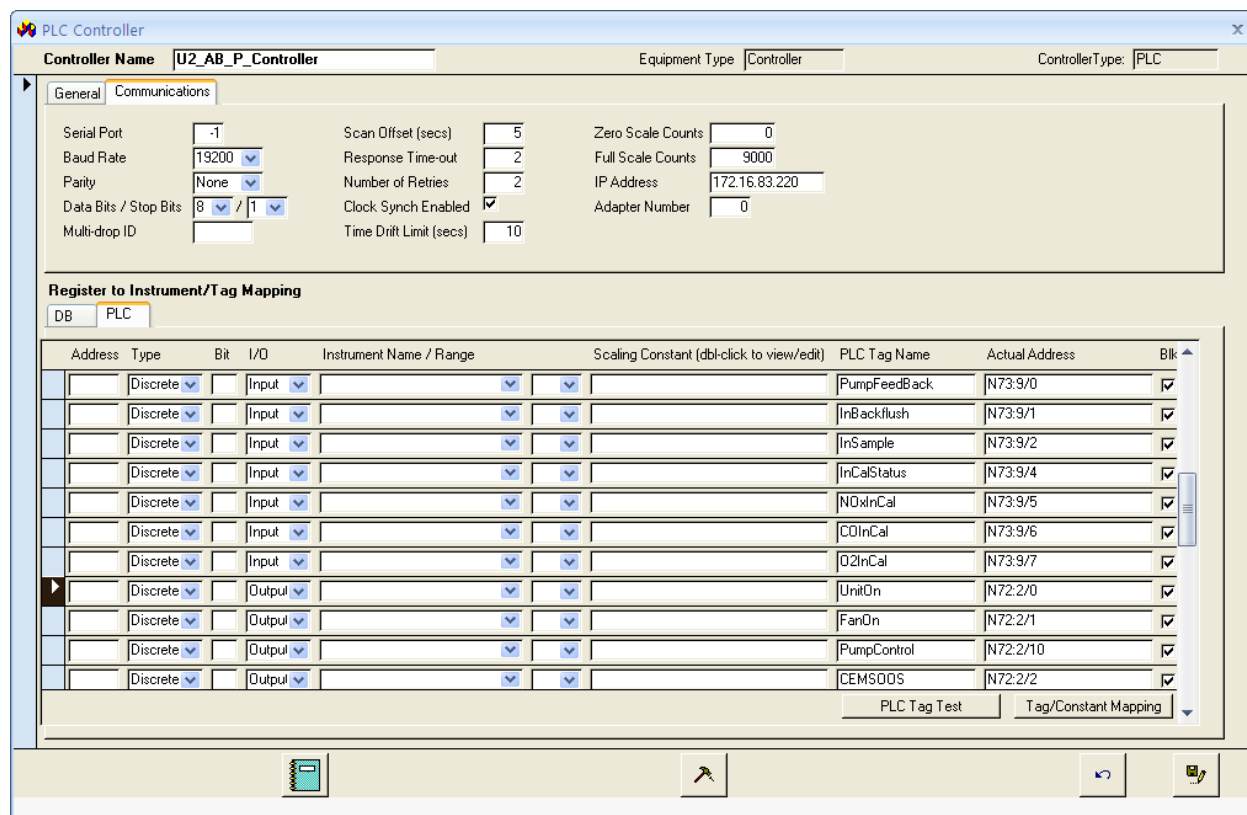
After you add a server data source, it will be listed in the previous dialog. You can then select it and test it before exiting the dialog.

Tip: You should always connect to a RegPerfect database using the "Windows authentication using the network login ID" option as shown in the screen shot above.

2.2 Allen-Bradley PLC

Spotlight can directly read and write AB PLC registers. Unlike the connection to a database server described in the section 2.1, the AB connection enables you to display near real-time data that can be updated as often as every few milliseconds. Note that this feature works only if the AB has an ethernet connection to RegPerfect.

As of version 4.1, the old ABPLCAdministrator application is no longer used. The configuration of PLC Tags for use on displays has been moved to the Configuration application, as shown below.



Database Tags and PLC Tags

Each row under the sub title "Register to Instrument/Tag Mapping" represents a PLC register or channel from which RegPerfect reads data – most of them are used to map the register to an instrument and tag so that data can be properly stored in the RegPerfect database. We call these "database tags". Those that have an entry in the *PLC Tag Name* column – we'll call them "PLC tags" – are used to make data available to Spotlight displays. A tag may be both a database tag and a PLC tag, just a database tag, or just a PLC tag.

To configure a PLC tag, you may use an existing register that a RegPerfect® database tag is mapped to by entering a PLC tag name or you may add a new register with a PLC tag name. If you choose to add a new register row for a PLC tag, it is recommended you use the same scaling constant as the database tag of the same parameter when applicable. The ActualAddress is the actual register address in the PLC that SpotLight will read/write from/to for this tag. If you leave the ActualAddress column blank, you must provide an address in the Address column and SpotLight will deduce the actual address from the address provided as follows:

SLC and PLC-5: F57 : PLC_Register.Address [/PLC_Register.DiscreteBitNumber]
ControlLogix: ChStage3 [PLC_Register.Address] [/PLC_Register.DiscreteBitNumber]

The Blk (IsBlockRead) is only used by SpotLight to specify whether a PLC tag is read individually or within a block for SpotLight displays. In order to read multiple PLC tags together in one register block, PLC tags of the same register type need to be set up next to each other or within a readable range of physical memory in the PLC. Block reads enhance real time performance substantially and should be used whenever possible.

After you enter the tag information, click the *PLC Tag Test* button to verify your configuration:

AB PLC Tag Test

Controller Name	U2_AB_P_Controller	Scaling Enabled	<input type="checkbox"/>
PLC Tag Name	UnitOn	Min In	0
IP Address	172.16.83.220	Max In	0
Adapter	0	Min Out	0
Data Type	Bit	Max Out	0
Address/Bit	N72:2 0		

PLC Type: PLC/SLC

PLC Poll Status: **Disconnected** Turn Around Time (ms):

PLC Value: Scaled Value:

Write Value: 0 Write Result:

Write Poll Close

2.3 General Electric PLC

Spotlight can directly read and write GE PLC registers. Unlike the connection to RegPerfectDb described in the section 2.1, the GE connection enables you to display near real-time data that can be updated as often as every few milliseconds. Note that this feature works only if the GE has an ethernet connection to RegPerfect.

As of version 4.1, the old GEPLCAdministrator application is no longer used. The configuration of PLC Tags for use on displays has been moved to the Configuration application, as shown below.

The screenshot shows the 'PLC Controller' configuration window. At the top, the 'Controller Name' is 'U2_Fanuc9030_P_Controller', 'Equipment Type' is 'Controller', and 'ControllerType' is 'PLC'. Below this are two tabs: 'General' and 'Communications'. The 'Communications' tab is active, showing various settings:

- Serial Port: -1
- Baud Rate: 9600
- Parity: None
- Data Bits / Stop Bits: 8 / 1
- Multi-drop ID: (blank)
- Scan Offset (secs): 5
- Response Time-out: 2
- Number of Retries: 2
- Clock Synch Enabled:
- Time Drift Limit (secs): 3
- Zero Scale Counts: 6400
- Full Scale Counts: 32000
- IP Address: 172.16.83.221
- Adapter Number: (blank)

Below the communication settings is the 'Register to Instrument/Tag Mapping' section, with 'DB' and 'PLC' tabs. The 'PLC' tab is active, showing a table with the following columns: Address, Type, Bit, I/O, Instrument Name / Range, Scaling Constant (dbl-click to view/edit), PLC Tag Name, Actual Address, and Blk. The table contains 13 rows of data:

Address	Type	Bit	I/O	Instrument Name / Range	Scaling Constant (dbl-click to view/edit)	PLC Tag Name	Actual Address	Blk
	Channel		Input			NOx	1004	<input checked="" type="checkbox"/>
	Channel		Input			CO	1014	<input checked="" type="checkbox"/>
	Channel		Input			O2	1024	<input checked="" type="checkbox"/>
	Channel		Input			Chiller Temperature	1034	<input checked="" type="checkbox"/>
	Channel		Input			Bottle1	1044	<input checked="" type="checkbox"/>
	Channel		Input			Bottle2	1054	<input checked="" type="checkbox"/>
	Channel		Input			Bottle3	1064	<input checked="" type="checkbox"/>
	Channel		Input			Channel1234	1234	<input checked="" type="checkbox"/>
	Channel		Input			Channel1254	1254	<input checked="" type="checkbox"/>
	Channel		Input			Channel1264	1264	<input checked="" type="checkbox"/>
	Channel		Input			Channel1274	1274	<input checked="" type="checkbox"/>

At the bottom right of the table, there are two buttons: 'PLC Tag Test' and 'Tag/Constant Mapping'.

Database Tags and PLC Tags

Each row under the sub title "Register to Instrument/Tag Mapping" represents a PLC register or channel from which RegPerfect reads data – most of them are used to map the register to an instrument and tag so that data can be properly stored in the RegPerfect database. We call these "database tags". Those that have an entry in the *PLC Tag Name* column – we'll call them "PLC tags" – are used to make data available to Spotlight displays. A tag may be both a database tag and a PLC tag, just a database tag, or just a PLC tag.

To configure a PLC tag, you may use an existing register that a RegPerfect® database tag is mapped to by entering a PLC tag name or add a new register with a PLC tag name. If you choose to add a new register row for a PLC tag, it is recommended you use the same scaling constant as the database tag of the same parameter when applicable. The ActualAddress is the actual register address in the PLC that SpotLight will read/write from/to for this tag. If you leave the ActualAddress column blank, you must provide an address in the Address column and SpotLight will deduce the actual address from the address provided as follows:

1010 + PLC_Register.Address * 10

The Blk (IsBlockRead) is only used by SpotLight to specify whether a PLC tag is read individually or within a block for SpotLight displays. In order to read multiple PLC tags together in one register block, PLC tags of the same register type need to be set up next to each other or within a readable range of physical memory in the PLC. Block reads enhance real time performance substantially and should be used whenever possible.

After you enter the tag information, click the *PLC Tag Test* button to verify your configuration:

The screenshot shows a dialog box titled "GE PLC Tag Test". It contains the following fields and controls:

- PLC Name:
- PLC Tag Name:
- IP Address:
- Register Type:
- Data Type:
- Address:
- Scaling Enabled:
- Min In:
- Max In:
- Min Out:
- Max Out:
- PLC Poll Status: Disconnected
- Turn Around Time (ms):
- PLC Value:
- Scaled Value:
- Write Value:
- Write Result:
- Buttons: Write, Poll, Close

2.4 DataLogger

Spotlight, in conjunction with UDC, can read DataLogger registers. Unlike the connection to a database server described in section 2.1, the DataLogger connection enables you to display near real-time data that can be updated as often as every few seconds. Note that this feature works no matter whether the DataLogger has an ethernet or serial connection to RegPerfect, though update speed may be slower with a serial connection.

The DataLogger Tags for use on displays are configured in the Configuration application, as shown below.

Data Logger Controller

Controller Name: **U1_DL16_P_Controller** Equipment Type: **Controller** ControllerType: **DataLogger**

General Communications

Serial Port: Scan Offset (secs):
Baud Rate: Time Drift Limit (secs):
Parity: IP Address:
Data Bits / Stop Bits: /
Logger ID:

Register to Instrument/Tag Mapping

DB Logger

Address	Type	I/O	Instrument Name / Range		Data Logger Tag Name
2	Channel	Input	U1_CO2_P_Instrument	High	DL1Ch2
9	Channel	Input	U1_NOX_P_Instrument	High	DL1Ch9
13	Channel	Input	U1_SO2_P_Instrument	Low	DL1Ch13
40	Discrete	Input			DL1DI40
41	Discrete	Input			DL1DI41
*	Channel	Input			

Status Flag Mapping Tag Mapping

Database Tags and DataLogger Tags

Each row under the sub title "Register to Instrument/Tag Mapping" represents a DataLogger channel or digital from which RegPerfect reads data – most of them are used to map the register to an instrument and tag so that data can be properly stored in the RegPerfect database. We call these "database tags". Those that have an entry in the *Data Logger Tag Name* column – we'll call them "DataLogger tags" – are used to make data available to Spotlight displays. A tag may be a database tag, a DataLogger tag, or both.

To configure a DataLogger tag, you may use an existing channel that a RegPerfect® database tag is mapped to by entering a DataLogger tag name or you may add a new channel with a DataLogger tag name.

SpotLight can also start DataLogger calibration sequences. The logger sequence names are mapped to RegPerfect calibrations in the Configuration application. In the example below, the daily calibration for NOx is mapped to the "CalGas1" logger sequence.

Calibration Definition ID 31

Instrument Name/Range: **U1_NOX_P_Instrument** High

Calibration Type: **Daily** Calibration Delays Sequence Name: **CalGas1**

Subject to Part 75, Appendix B Quality Assurance Requirements

Use Offline Cals

Actual Value Precision:

Reference Value Precision:

Validated Tags:

Standard Specification

Deviation Calculation:

Performance Spec: (%)

Deviation Limit:

Alternate Specification Enabled

Deviation Calculation:

Performance Spec: (Engineering Unit)

Deviation Limit:

Subject to Part 60, Appendix F Quality Assurance Requirements

Use Offline Cals

Deviation Calculation:

Actual Value Precision:

Reference Value Precision:

Validated Tags:

Invalidate forward when drift >= X Perf. Spec. for days

Invalidate backward when drift >= X Perf. Spec. for any calibration

Range Test Definitions

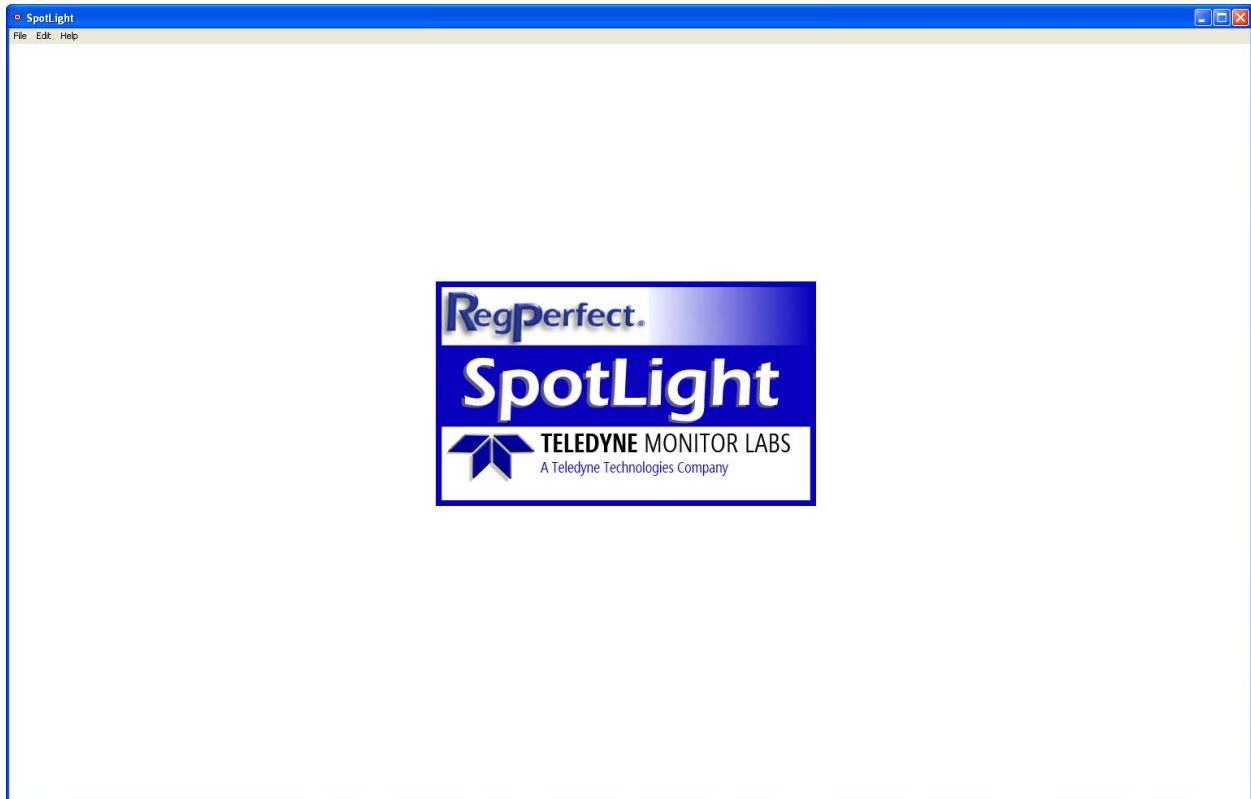
Test Level	Part 75		Part 60		Reference Value Constant Name (double click to inspect/modify)	Effective From	Effective Through	Phase
	Level	Level	Level	Performance Spec /Units				
High	High	High	High	2.5 Percent Error		01/01/95 0:00		
Zero	Zero	Zero	Zero	2.5 Percent Error		01/01/95 0:00		
*								

3 Using SpotLight in Display Mode

The SpotLight application has two modes of operation, *Display Mode* and *Design Mode*. When you start the application, it opens in *Display Mode*. At that time, you can either select and load a saved display, or switch to *Design Mode* in order to modify existing displays or to create new ones.

3.1 The Splash Screen

When the SpotLight application is launched, the splash screen is displayed.



The available options are on the file menu bar near the top of the screen. Each *Display Mode* option is described in the sections below.

You can also start the application by double clicking a .rpd file, which is a saved display.

3.2 Running in Real Time

When the application is running in *Display Mode*, all the objects on the display are updated according to the data sources that have been configured in *Design Mode*. The non-real-time data is time sensitive and is retrieved according to the server time minus an offset that you configure. This offset allows the server to collect data from outside sources, make calculations, and store the data in the RegPerfect® database. This means that your display shows your data with a slight delay, which you can configure.

3.3 Help

The Help menu has three selections:

3.3.1 SpotLight Manual

Click this button to bring up the SpotLight manual in .PDF format. You will need Adobe Acrobat Reader to open/read this file.

3.3.2 Teledyne Monitor Labs on the Web

Click this button to bring up Teledyne Monitor Labs website.

3.3.3 About SpotLight...

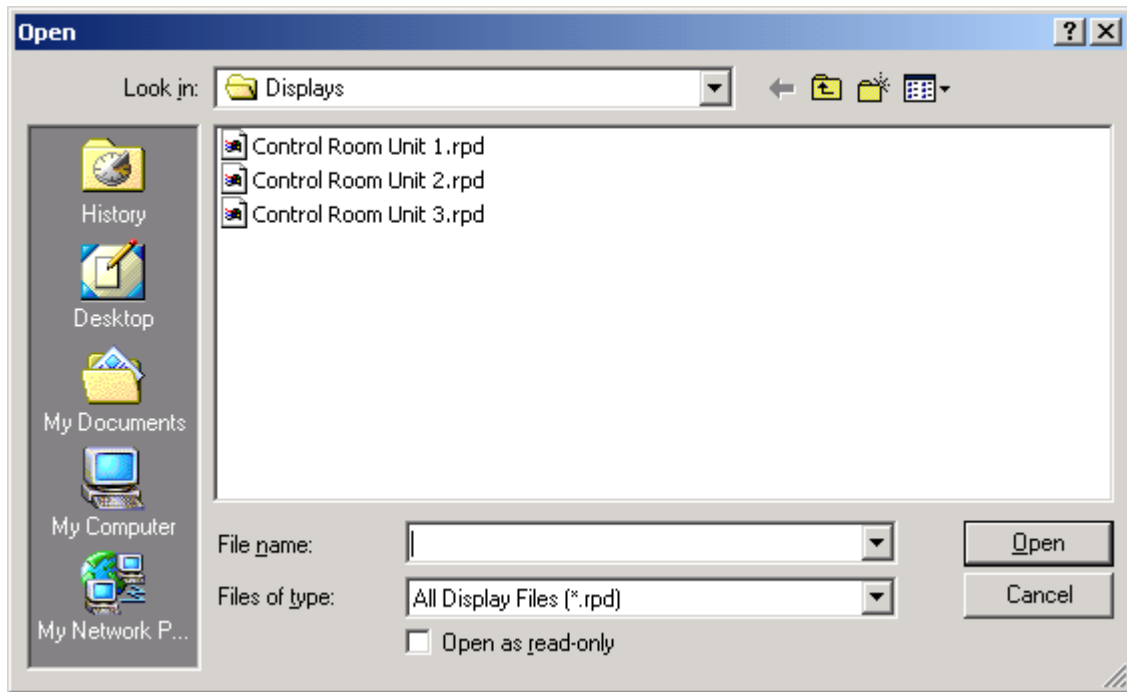
Click this button to show copyright and version information.

3.4 File

The File menu has four selections:

3.4.1 Open Display

Click this button to bring up the file menu dialog.



Select the display file you wish to load.

3.4.2 Open Display in New Window

Same as Open Display in the section 3.4.1 except that the selected display will be opened in a new SpotLight window.

3.4.3 Close Display

Click this button to close the currently loaded display file and return to the splash screen.

3.4.4 Design Mode

Click this button to switch the application into *Design Mode* where you can build or modify display files.

Note that this menu item is disabled if the logon user is in the RP_OPERATORS group or RP_TECHNICIANS group. Only users in the RP_ADMINS or RP_MANAGERS group can open a display in *Design Mode*.

3.4.5 **Exit**

Click this button to exit the application.

3.5 Edit

The Edit menu has three selections:

3.5.1 Audible Alarms

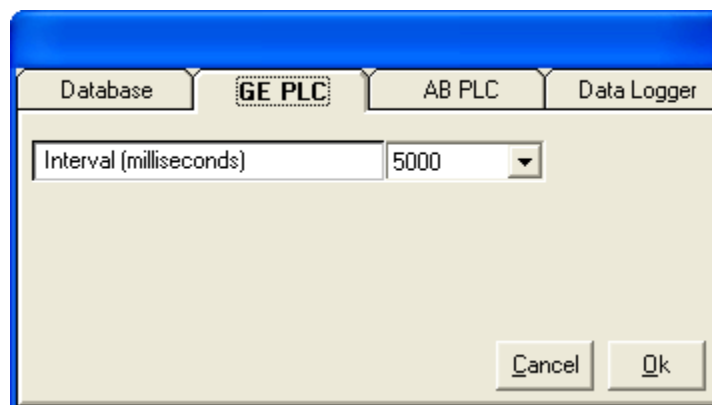
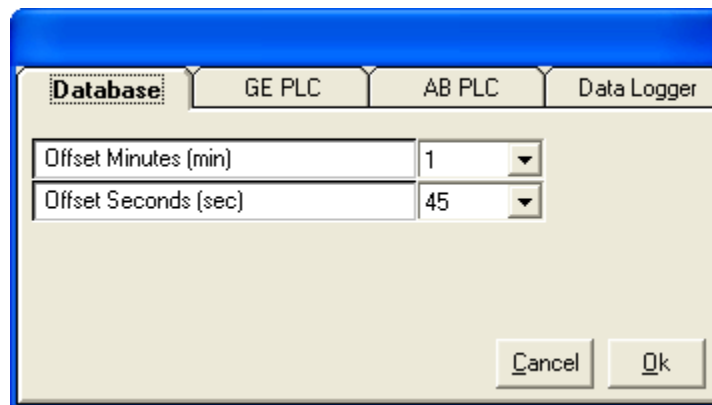
Click this button to bring up the alarm properties dialog.

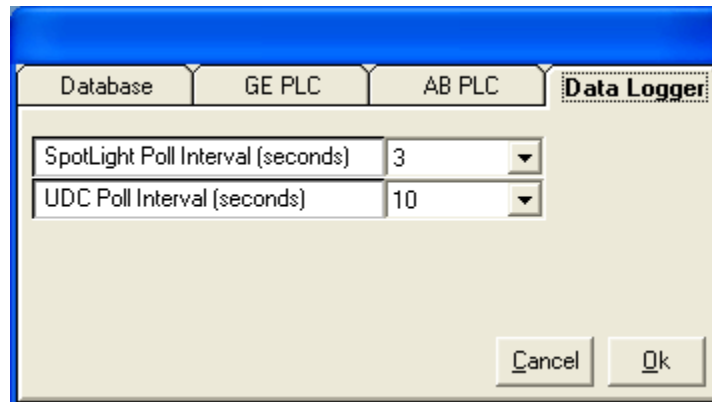
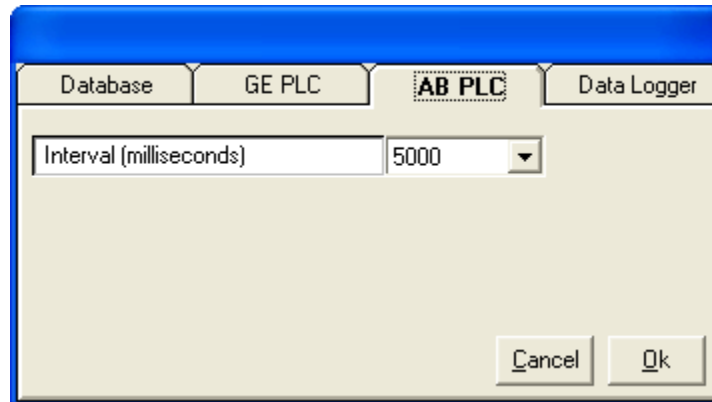


Click the folder icon to select a wav file and the play button to play it. You may also enable and disable the poll error alarm sound capability applicable to all the *Status Boxes* except the *Alarm Box*. The *Alarm Box*'s sound settings are configured in the alarm profile.

3.5.2 Polling Intervals

Click this button to open the polling intervals dialog.





The recommended database polling offset is 1 minute and 45 seconds. This will cause SpotLight to query for the most current data at 45 seconds past the top of each minute. If this setting too often results in 0/Missing data on the display, increase the offset in 5-second increments until the problem goes away. At sites with very old, slow servers or 5 or more units, it may be necessary to increase the offset to more than 2 minutes.

The *UDC Poll Interval* determines how often the RegPerfect® UDC application polls each data logger device for new data. The *SpotLight Poll Interval* determines how often SpotLight reads data logger data from UDC and refreshes the display. The UDC rate should generally be set to 10 seconds, and the SpotLight interval to 3 seconds to ensure that Spotlight updates displayed values within a max of 3 seconds after the data becomes available.

3.5.3 **Screen Saver**

The Screen Saver menu item has three selections:

3.5.3.1 Enabled

Click True or False to enable and disable the application's screen saver capability.

3.5.3.2 Frequency

Click on any of the settings to set the occurring frequency of the screen saver.

3.5.3.3 Test

Click this button to test the application's screen saver functionality.

Each row in the large list box at the top of the display shows information about a single alarm.

	Start Time	End Time	Category	ACK Time	ACK By	Message
■	11/21/05 00:32	11/09/05 10:41	Out-of-Control			Unit 1 O2 Failed Daily Calibration Error Test
■	11/21/05 00:31	11/09/05 00:56	Out-of-Control			Unit 1 O2 Failed Daily Calibration Error Test
■	11/21/05 00:30	11/08/05 14:51	Out-of-Control			Unit 1 O2 Failed Daily Calibration Error Test
■	11/21/05 00:29	11/08/05 05:08	Out-of-Control			Unit 1 O2 Failed Daily Calibration Error Test

Columns

- Start Time: the time the alarm began
- End Time: the time the alarm ended. If this column is blank, the alarm condition has not ended and the alarm is considered "active"
- Category: the alarm category such as Invalid Data, Excess Emission, Other, etc. This can be a useful column to sort on.
- ACK Time: the time the alarm was acknowledged by an operator
- ACK By: the logon name of the operator that acknowledged the alarm
- Message: a description of the alarm

Tip: Click a column header (Start Time, End Time, Category, etc.) to sort the alarms on that column. The first time you click a column header, the list will re-sort on that column in ascending order. If you click it again, the list will re-sort on that column in descending order.

The colored icon at the left of each alarm row has a special significance. The *Alarm Button* on the main Spotlight display may change color and/or flash when there are alarms that require immediate attention. Although the colors are configurable, let's assume the defaults were used:

Alarm Button Color	Description
Red and Flashing	ALARM CONDITION: (1) There are unacknowledged "active" alarms (no time period limit) or (2) There are unacknowledged alarms (active or not) within the look-back period configured in the active alarm profile
Yellow	ALERT CONDITION: There are acknowledged but active alarms
Green	NORMAL CONDITION There are no alarms that meet the above criteria

The icon color for each alarm matches one of the above colors of the *Alarm Button*. So, for example, if your *Alarm Button* is flashing red, when you click the button and open the *Alarms* form, you can quickly identify which alarms are causing the flashing red button by looking for the alarms with the red icon. Similarly, if the button is yellow, the alarms with the yellow icon are responsible. For more information about configuring an alarm button, see [Configuring the Alarm Button](#).

To acknowledge an alarm, select one or more alarms by clicking (use Shift-click or Ctrl-click to select more than one), then click the [ACK] toolbar button.

To delete, select one or more alarms and click the [Delete] toolbar button.

Reason/Action List

The list at the bottom of the Alarms form shows the reason and action for the *selected* alarm. From this list you may view, add, change or delete the reason and action assigned to an alarm.

■	11/21/05 00:45	11/14/05 17:08	Out-of-Control		Unit 1 O2 Failed Daily Calibration Error Test
■	11/21/05 00:44	11/14/05 07:13	Out-of-Control		Unit 1 O2 Failed Daily Calibration Error Test
■	11/21/05 00:43	11/13/05 21:35	Out-of-Control		Unit 1 O2 Failed Daily Calibration Error Test
	Type	Category	Text		
▶	Reason	CEM Failure	▼	Failed daily calibration	
	Action	CEM Failure	▼	Adjusted and recalibrated	

Columns

Type: Reason or Action
 Category: CEM Failure, Excess Emission or other categories
 Text: the reason or action text

The reason and action shown in the list are for the selected alarm (the one shown with blue background in the screen shot above). To select an alarm, click it or use the up and down arrow keys.

Note: Sometimes the reason/action list will appear grayed out (disabled). This happens when you select an alarm that is not associated with a tag and therefore cannot be assigned a reason/action, or when you select multiple alarms using Shift-click or Ctrl-click.

When you select an alarm that has not yet been assigned a reason or action, the Category and Text columns will be blank:

■	11/21/05 00:44	11/14/05 07:13	Out-of-Control	0	Unit 1 O2 Failed Daily Calibration Error Test
■	11/21/05 00:43	11/13/05 21:35	Out-of-Control		Unit 1 O2 Failed Daily Calibration Error Test
	Type	Category	Text		
▶	Reason		▼		
	Action		▼		

To add a new reason or action, click the dropdown list in the category column, and select the desired text. To add a reason or action that is not on your standard list, click the dropdown in the Category column, and select the first entry in the list (*Add New Reason* or *Add New Action*).

To change a reason or action, click the dropdown list in the Category column and select a different reason or action.

To delete a reason or action, first select it by clicking the record selector (the box left of the Type column).

	Type	Category	Text		
▶	Reason	CEM Failure	▼	Monitor equipment malfunctions	
	Action	CEM Failure	▼	Adjusted and recalibrated	

Next, either press the keyboard *Delete* key, or right-click and select *Delete* from the context menu.

3.6.2 Alarm Tool Bar

The tool bar at the top of the *Alarms* form contains these buttons:

- ACK** Click this button to acknowledge the selected alarm(s). Upon confirmation, the selected alarms are acknowledged and the alarm list is refreshed with the ACK Time and ACK By columns filled in.
- BLOCK EDIT R/A** This button is used to assign a reason or action to *multiple* alarms (for a single alarm, use the reason action list at the bottom of the alarms form). Select multiple alarms using Shift-click or Ctrl-click, but be sure that all the alarms you select meet the following criteria:
- All the alarms must be associated with a tag. While this is true of most alarms, there are a few 'System' alarms that are not associated with a specific tag.
 - All the alarms must have the same default reason/action category ¹
 - All the alarms must have the same reason/action list before you begin the block edit. For example, if one alarm has been assigned a reason that one of the others has not, group editing of new reason is not possible.

¹ During configuration, alarms are assigned a *default reason/action category* which is used to indicate which category of reasons and actions will be assigned to the alarm. For example, an out-of-control alarm is usually assigned a default category of *CEM Failure*. If you attempt to block edit a reason for a group of alarms that include both out-of-control and, for example, excess emission alarms, you will be informed that you must select a different group of alarms with the same default category.

After selecting the desired alarms, click the *Block Edit R/A* button to open the *Reasons/Actions* form. Click the drop-down button in the *Category* column to add or change the reason or action. You may also add a reason/action not on your standard lists by selecting *Add New Reason* or *Add New Action* – these are the first selections in the drop down lists. To delete a reason/action, select it by clicking the record selector (left of the *Type* column), then press the keyboard *Delete* key or right-click and select *Delete*.

Reason/Action

Acknowledged at 02/03/06 13:31 by TML\XXZHONG

Assign Reason/Action

Type	Category	Text
▶ Reason		
Action		

Hint: Select Reason Code first and then select (optional) Action Comment.
To delete a reason/action, select it by clicking the record selector at the leftmost of each row and click Delete from the Context menu or press the Delete key.

Ok Cancel

REPORT

Clicking this button opens the *Alarm Report* form allowing you to select a smaller time range for reporting:

Click the *Preview Report* button to preview the alarm report for the selected time interval. The file menu options allow you to select various printing preferences.

Tip: Before clicking [Report], you may want to resize/shrink one or two columns on the Alarms form, for example, the ACK Time and/or the ACK By column, to ensure that all the information fits horizontally on a page in landscape mode.

Alarm Report

The Report interval may optionally be made smaller than the alarm interval you were viewing by changing the Start and End times (it may not be made larger):

Start ...

End ...

Report Preview

File View

Page Setup... 76% Page 1 of 2

Print... Ctrl+P

Exit Alt+F4

EGWSDLT12 - Alarms

Start Time	End Time	Category	ACK Time	ACK By	Message
01/31/06 22:00	01/31/06 22:00	InvalidRecalc	02/03/06 08:35	EGWSDL	Recalc start time prior to DataLockDate
01/31/06 21:00	01/31/06 22:00	Out-of-Control	02/03/06 08:46	EGWSDL	UI_CO_Ppm_1H Out of Control or Missing Data
01/31/06 21:00	01/31/06 21:00	InvalidRecalc	02/02/06 09:54	TML\XOC	Recalc start time prior to DataLockDate
01/31/06 21:00	01/31/06 21:00	InvalidRecalc	02/02/06 09:57	TML\XOC	Recalc start time prior to DataLockDate
01/31/06 21:00	01/31/06 22:00	Out-of-Control	02/01/06 14:54	TML\XOC	UI_CO_Ppm_1H Out of Control or Missing Data
01/31/06 20:00	01/31/06 20:00	InvalidRecalc	02/03/06 11:17	TML\XOC	Recalc start time prior to DataLockDate
01/31/06 18:00	01/31/06 19:00	Out-of-Control	02/03/06 13:38	TML\XOC	LR_StackFlow_scfh_1H Out of Control or Missing
01/31/06 18:00	01/31/06 19:00	Out-of-Control	02/01/06 14:55	TML\XOC	UI_CO_Ppm_1H Out of Control or Missing Data
01/31/06 17:00	01/31/06 17:00	InvalidRecalc	02/01/06 14:55	TML\XOC	Recalc start time prior to oldest raw data
01/31/06 16:45	01/31/06 16:45	InvalidRecalc	02/03/06 11:17	TML\XOC	Recalc start time prior to DataLockDate
01/31/06 16:00	01/31/06 17:00	Out-of-Control	02/01/06 14:55	TML\XOC	UI_CO_Ppm_1H Out of Control or Missing Data
01/31/06 15:00	01/31/06 16:00	Out-of-Control	02/03/06 08:08	EGWSDL	LR_StackFlow_scfh_1H Out of Control or Missing
01/31/06 15:00	01/31/06 15:00	Excess Emission	02/01/06 14:55	TML\XOC	Unit 1 SO2 Excess Emissions

DELETE

Click this button to delete the selected alarm(s). Upon confirmation, the selected alarms are deleted permanently and the alarm list is refreshed.

REFRESH

Click this button to refresh the alarm list by re-querying the RegPerfect® database. The Alarms form does not automatically refresh the alarm list while it is open, so use this button to see new alarms.

ALARM PROFILE

Click this button to open the *Alarm Profiles* form from which you may view/edit an existing profile, create a new profile and set the active profile. Setting a different active profile or changing the active profile settings allows you to view a specific subset of the alarms. For more information, see [Configuring Alarm Profiles](#).

3.7 Constant User Interface

3.7.1 Constant Value Editor

In version 4.1, two new design time properties were added to Spotlight's *Constant Box*:

- Writeable (yes/no)
- History (yes/no)

When both these properties are set to yes, users may click the *Constant Box* in display mode to open the *Constant Value Editor* form (shown below). For more information about configuring a constant box, see [Configuring the Constant Box](#).

The *Constant Value Editor* form lists the constant information in a grid. The *Effective Through* column is always disabled and will be filled in automatically. The form can be used to edit the constant values as well as their effectivity dates. The existing constant values are editable only where the constant category has the *CanEditCurrentValue* column set to True in the *ConstantCategory* table.

For calibration reference constants associated with Part 75 daily calibrations (high injection only) and linearity tests, the following fields are required and will be printed on emissions and QA/Certification EDRs:

Gas Type
Vendor ID
Cylinder ID
Expiration Date

Effective From	Effective Through	Value of Constant	Gas Type	Vendor ID	Cylinder ID	Certification Date	Expiration Date
10/01/2008 00:00		654.2					
08/16/2008 00:00	09/30/2008 23:59	648.6			123456	08/10/2008 00:00	
07/01/2008 00:00	08/15/2008 23:59	658					

To edit any value in the grid, first select it by clicking the grid cell. Next, either type or use the button shown (not available for constant value of data type Float and the bottle serial number).

	Effective From	Effective Through	Value of Constant	Bottle Cert
	06/19/2002 07:56		06/19/2002 06:10	
▶	06/19/2002 07:54	06/19/2002 07:55	06/19/2002 06:30	▼

To add a new record, click the [Add New] button and a new blank record appears beneath the others in the grid. Fill in the data and click a different record to commit the change. The list is automatically refreshed and re-sorted on Effective From.

To delete a record, first select it by clicking the record selector (the box left of the *Effective From* column). Next, either press the keyboard *Delete* key, or right-click and select *Delete* from the context menu.

	Effective From	Effective Through	Value of Constant	Bottle Cert
▶	06/19/2002 07:56		06/19/2002 06:10	
	06/19/2002 07:54	06/19/2002 07:55	06/19/2002 06:30	

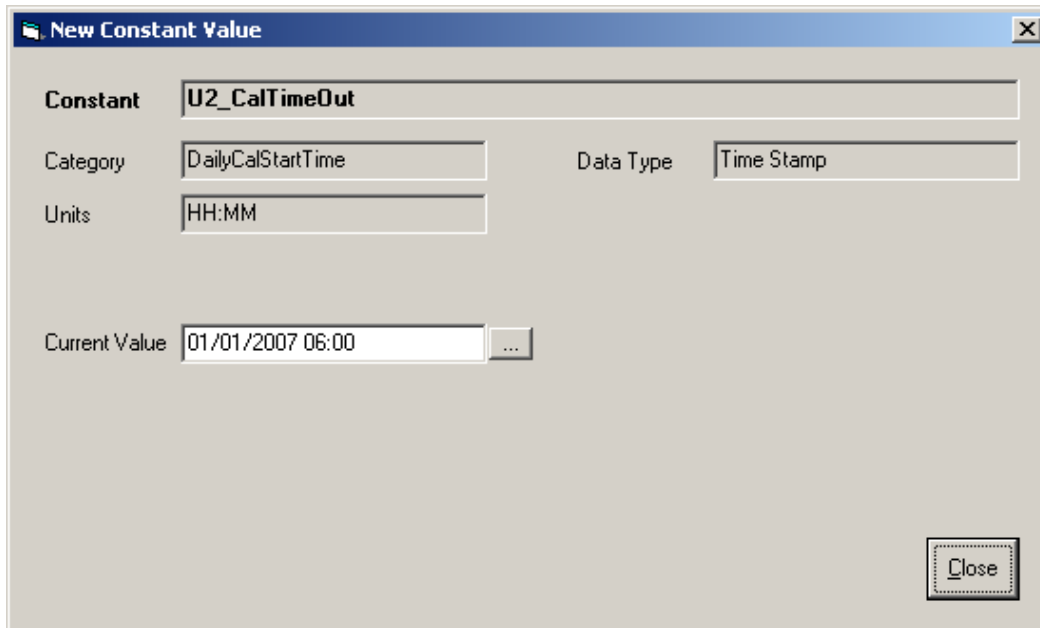
Click the [Close] button to close the *Constant Value Editor* form and save all the changes to the RegPerfect® database.

3.7.2 New Constant Value

In version 4.1, two new design time properties were added to Spotlight's *Constant Box*:

- Writeable (yes/no)
- History (yes/no)

When Writeable is set to yes and History is set to no, users may click the *Constant Box* in display mode to open the *New Constant Value* form (shown below). For more information about configuring a constant box, see [Configuring the Constant Box](#).



The screenshot shows a dialog box titled "New Constant Value". It contains the following fields and values:

Constant	U2_CalTimeOut		
Category	DailyCalStartTime	Data Type	Time Stamp
Units	HH:MM		
Current Value	01/01/2007 06:00		

A "Close" button is located in the bottom right corner of the dialog.

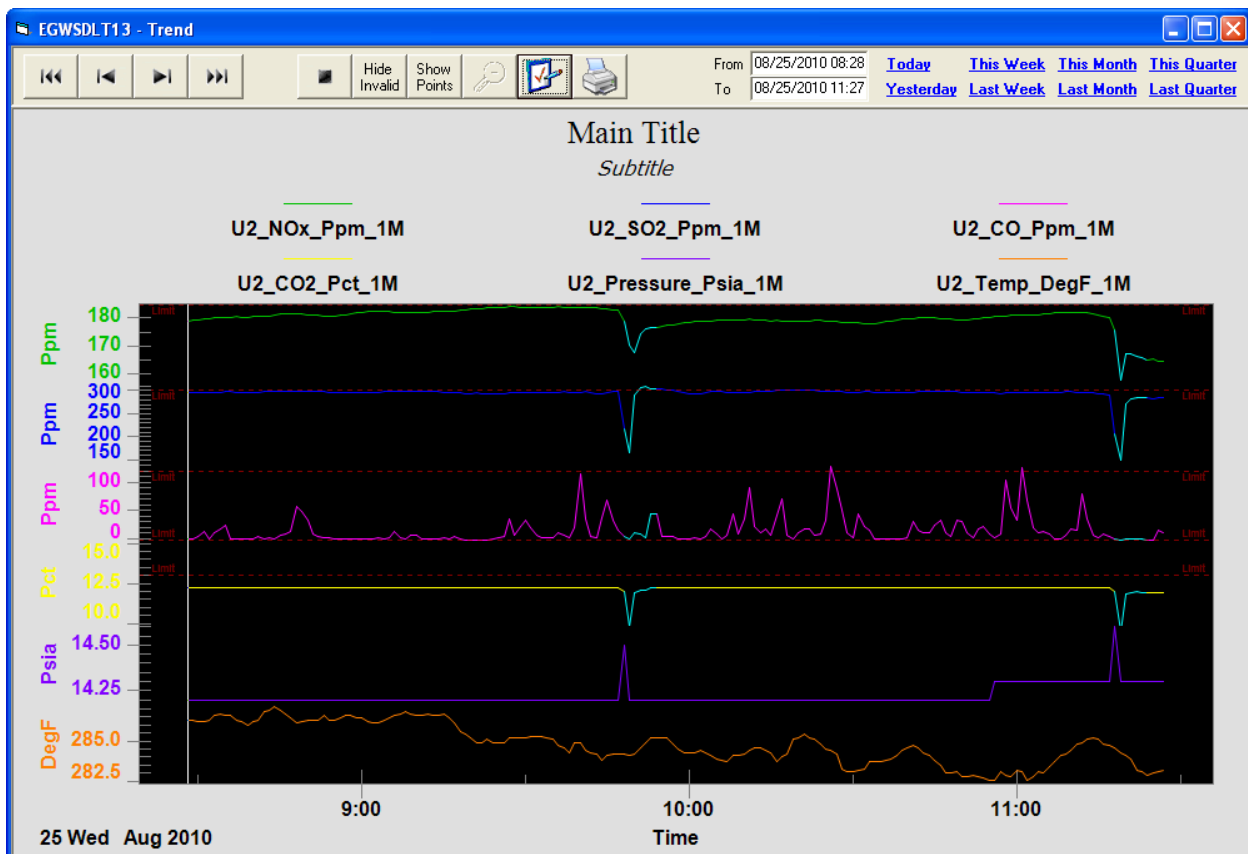
The *New Constant Value* form can only be used to change the current value of the constant. Depending on the data type of the constant, the value control on the form is slightly different which allows you to either enter a new value or select a value from a list or use a calendar. Clicking the [Close] button closes the *New Constant Value* form and saves the change to the RegPerfect® database.

3.8 Trend User Interface

3.8.1 Trend Display

Double-clicking the embedded *Database Trend* item on a SpotLight display or clicking the *Open Full Size* window icon at the upper right corner of the *Database Trend* item opens the graph in a separate, full size window (shown below). The *Trend* window displays the trend graph based on the configuration specified for the *Database Trend* item. Only one open *Trend* window is allowed at a time.

Note: Each *Database Trend* item on a *SpotLight* display supports plotting up to 6 tags versus time or tag in the *RegPerfect®* database. Line plots are used for trends of tags (Y) versus time (X) and scatter plots are used for tags (Y) versus tag (X). Multiple y-axes may be stacked vertically or overlapped or single y-axis may be chosen. You may configure the graph in *SpotLight* display mode by clicking the [Configure Trend] button on the toolbar of the *Trend* window.

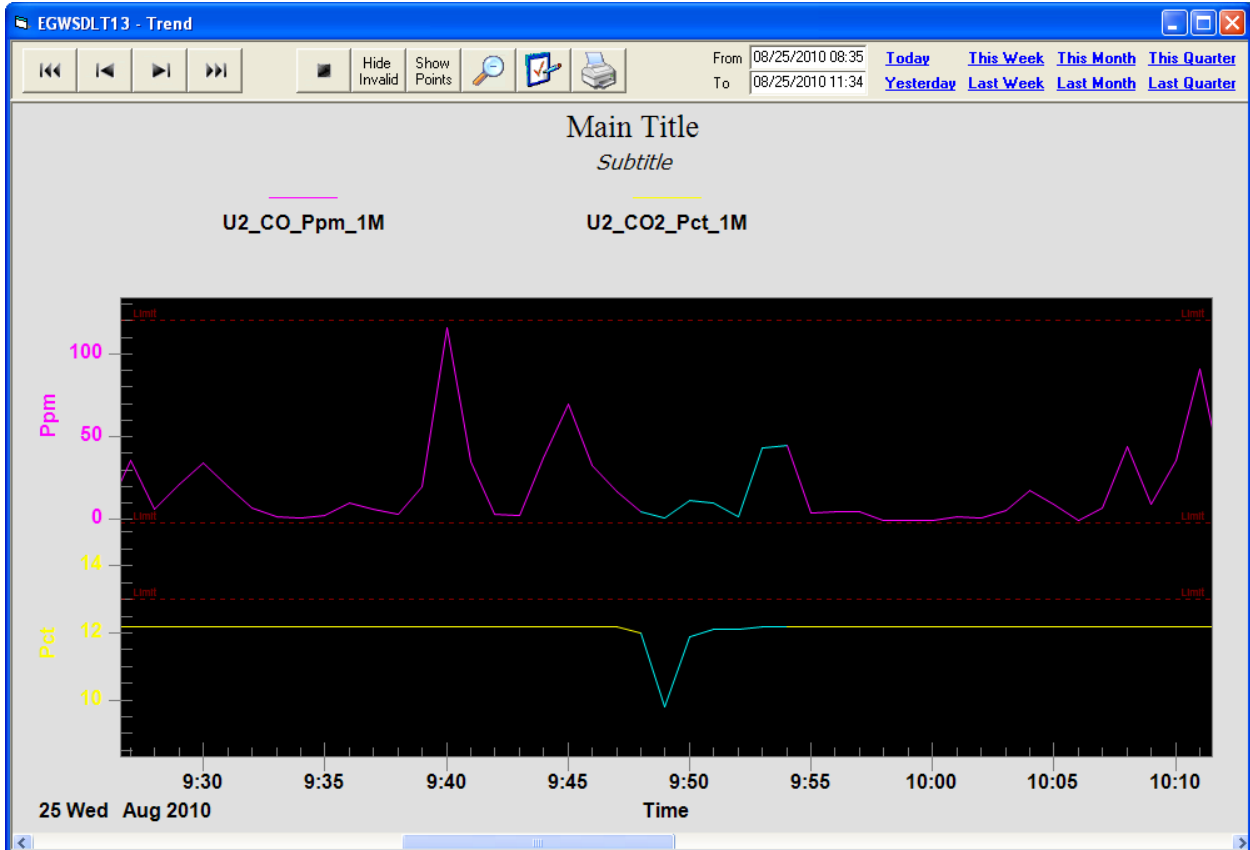


When the *Trend* window is initially opened, it is in the real-time mode, i.e. the trend graph is refreshed automatically at every database poll interval. In the example above, the graph displays real-time data for a time range of 3 hours up to poll time.

Zoom

Left-click anywhere (except data points) on the trend graph and drag to zoom in and take a closer look at a portion of the graph. Use the horizontal scroll bar to scroll through the entire x-axis region. Click the [Undo Zoom] button on the toolbar or right-click and select *Undo Zoom* from the context menu to return the graph back to normal. The [Undo Zoom] button and *Undo Zoom* menu item are disabled unless the graph is zoomed in.

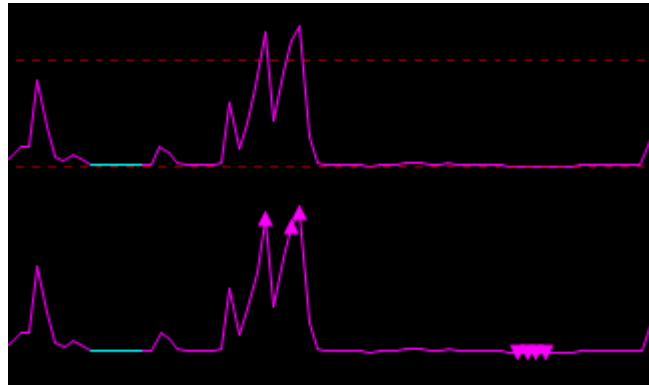
Tip: The normal mouse cursor is an arrow. The cursor changes from an arrow to a little hand when it moves on to a data point.



Exceeding Limit

There are two ways to indicate that a tag value is in excess of a limit: a horizontal limit line or a >limit point symbol (only the symbol is available for overlapped y-axes graphs). Both high and low limits may be specified.

The limit symbol, a small solid upward or downward triangle in the same color as plot color, is shown at each data point that exceeds or drops below the configured high or low limit. To hide limit line or limit symbol, right-click and unselect *Show Annotations* from the context menu.

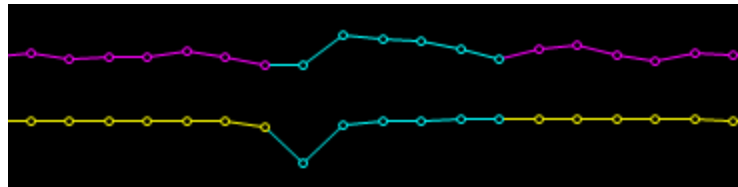


Value Display

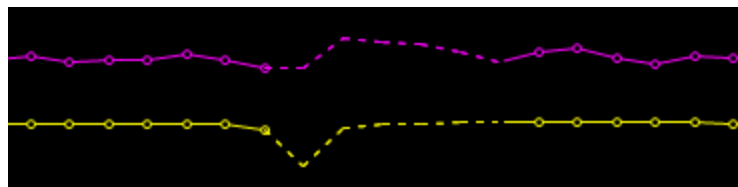
Single-click any data point to open the *Value Display* form which shows the time, value and status for each tag drawn on the graph. The display font color is usually the same as the tag's plot color, but may alternatively be the configured "invalid data color" for invalid samples.

Tag Name	Value	Status
U2_NOx_Ppm_1M	180.3	Z1
U2_SO2_Ppm_1M	283.6	None
U2_CO_Ppm_1M	16.9	None
U2_CO2_Pct_1M	12.2	None
U2_Pressure_Psia_1M	14.1	None
U2_Temp_DegF_1M	291.2	None

Tip: When you hover the mouse over a data point, the arrow cursor changes to a hand. To more easily find data points, click the [Show Points] button on the toolbar or select *Mark Data Points* from the context menu.



Note: Invalid data points are only shown when the line style of invalid data is the same as the normal line style.



Label Change

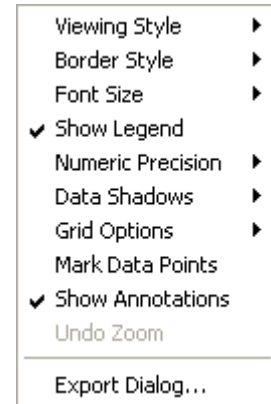
Graph labels initially default to tag names. To change the legend labels and the x-axis label for trends of tags (Y) versus tag (X), click the label to open the *Label Change* form.

Tip: The mouse cursor changes from an arrow to a little hand when it points to a label that is editable.

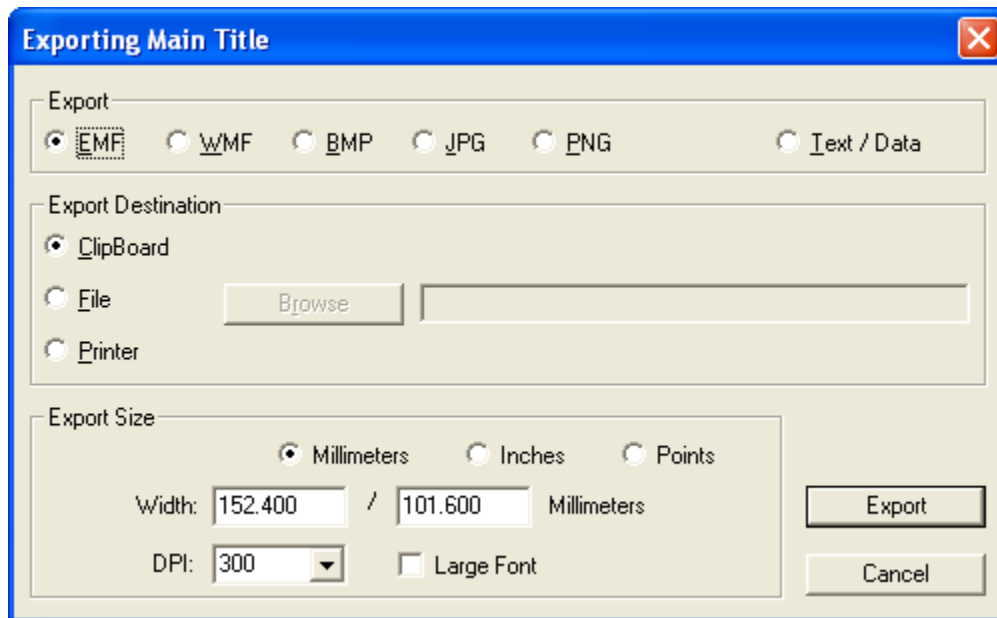


Context Menu

Use context menu to change how the graph is drawn and show/hide the extra graph characteristics, such as data points, grid lines and annotations. Right-click the graph to view the context menu.



Selecting *Export Dialog...* from the context menu opens the *Export Dialog*, shown below. It allows you to export the trend graph to the clipboard, a file or printer in different formats, such as .bmp or .jpg.



3.8.2 Trend Tool Bar

The tool bar at the top of the *Trend* window contains buttons, date/time edit controls and quick date selection links.



Shift the data time range of the graph backward by 2 * the current time range (also switch to historical mode if in real-time mode).



Shift the data time range of the graph backward by 1 * the current time range (also switch to historical mode if in real-time mode).



Shift the data time range of the graph forward by 1 * the current time range (also switch to historical mode if in real-time mode).



Shift the data time range of the graph forward by 2 * the current time range (also switch to historical mode if in real-time mode).



Toggle between real-time and historical mode (the button image also toggles, so that clicking Stop changes to historical mode and clicking Play changes to real-time mode).



Toggle between displaying and hiding invalid data.



Toggle between showing and hiding data points on plot lines.



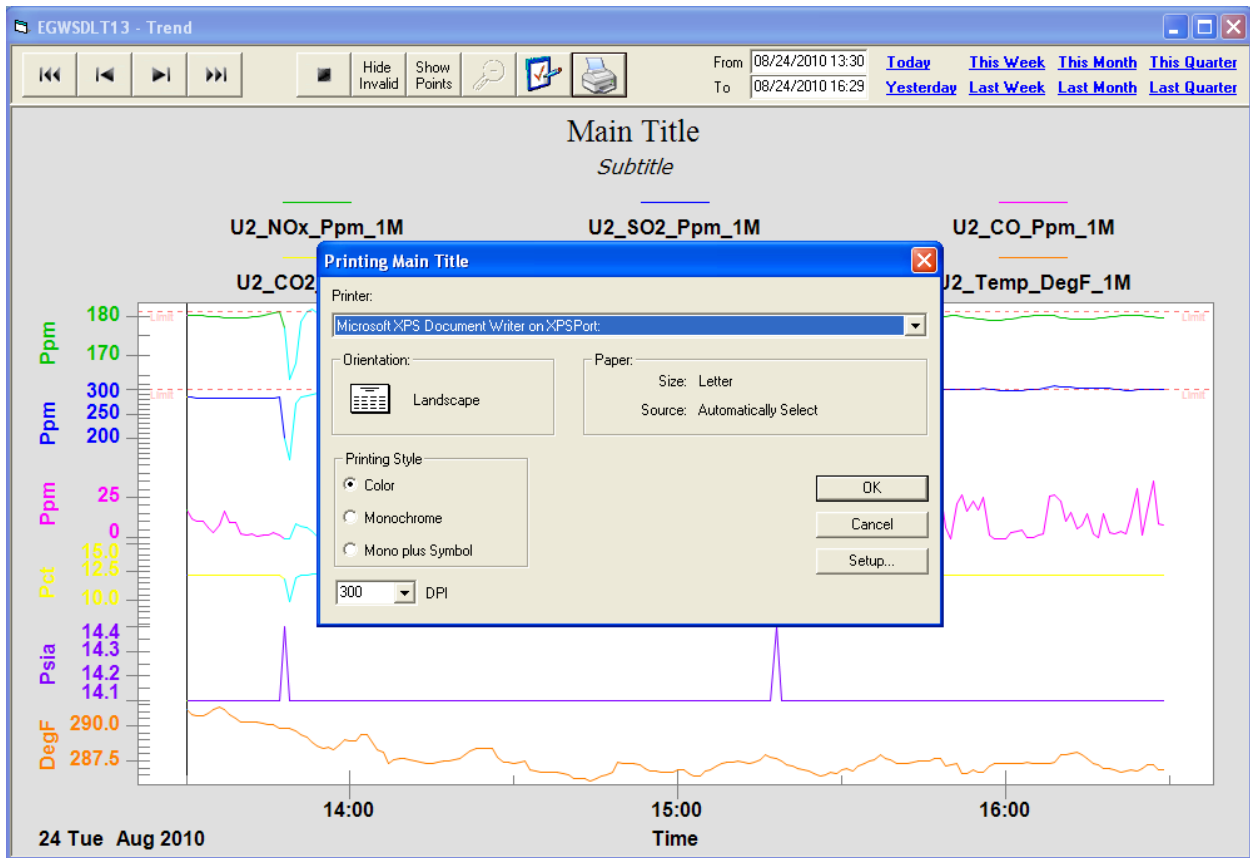
Undo zoom and restore the trend to the original time range. This button is disabled unless the trend graph is zoomed in.



Open the *Trend Configuration* form from which you may view/edit configuration settings. For more information, see [Configuring Trend](#).



Print the graph. This changes the trend graph background color to the configured graph background color for printing and opens the print dialog with default settings (as shown on the next page). After exiting the print dialog, the graph background color changes back to the configured normal background color.



From	08/24/2010 10:32	Today	This Week	This Month	This Quarter
To	08/24/2010 13:31	Yesterday	Last Week	Last Month	Last Quarter

Editing the *From* and/or *To* time or clicking any of the quick date selection links switches the graph to historical mode if in real-time mode and refreshes the graph to display data for the selected time range. The *From* and *To* boxes always show the start and end time of data that are plotted in the graph. To change the time range, enter the *From* or *To* time in the edit box and click anywhere outside the edit box to commit the change and refresh the graph.

4 Using SpotLight in Design Mode

The SpotLight application has two modes of operation, *Display Mode* and *Design Mode*. When you start the application, it opens in *Display Mode*. At that time, you can select and load a saved display, or you can switch to *Design Mode* in order to modify existing displays or to create new ones. When you are in *Design Mode*, you can easily switch back to *Display Mode* through the file menu.

The available options are on the file menu bar near the top of the screen. Each *Design Mode* option is described in the sections below.

4.1 Help

The Help menu has three selections:

4.1.1 SpotLight Manual

Click this button to bring up the SpotLight manual in .PDF format. You will need Adobe Acrobat Reader to open/read this file.

4.1.2 Teledyne Monitor Labs on the Web

Click this button to bring up Teledyne Monitor Labs website.

4.1.3 About SpotLight...

Click this button to show copyright and version information.

4.2 File

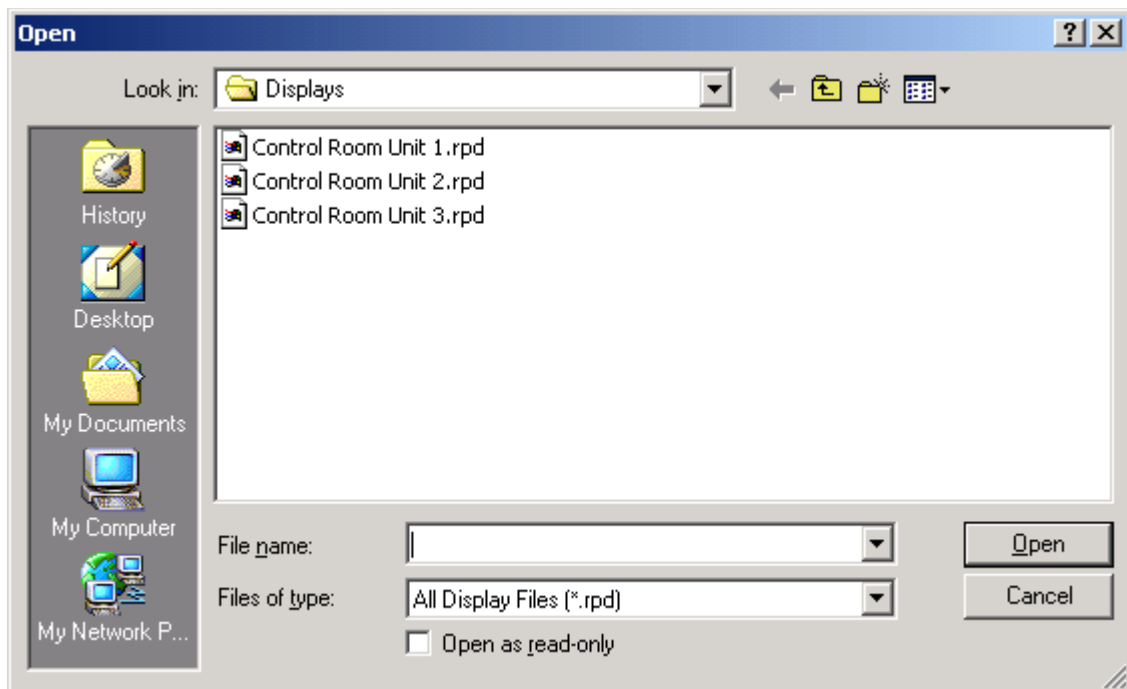
The File menu has six selections:

4.2.1 New Display

Click this button to begin working on a new blank display.

4.2.2 Edit Display

Click this button to bring up the following file menu dialog:



Select the display file you wish to load and modify.

4.2.3 Save Display

Click this button to bring up the file menu dialog and save the current display.

4.2.4 Save Display As

Click this button to bring up the file menu dialog and save the current display with a new name.

4.2.5 **Display Mode**

Click this button to switch the application into *Display Mode*.

4.2.6 **Exit**

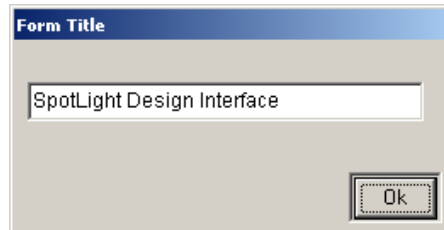
Click this button to exit the application.

4.3 Edit

4.3.1 Form Properties

4.3.1.1 Form Title

Click this button to bring up the following *Form Title* dialog:



Use this dialog to enter or edit the title of your display.

4.3.1.2 Form Color

Click this button to bring up the following *Color* dialog:



Use this dialog to modify the backdrop color of your display.

4.3.2 Design Properties

4.3.2.1 Move/Resize On

Click this button to toggle the state of the *Move/Resize On* option. When this option is on (checked), you will be able to drag your display items to different locations on the display and you will be able to resize them. If the option is not checked, you will not be able to move and resize your display items.

4.3.2.2 Grid Visible

Click this button to toggle the state of the *Grid Visible* option. When this option is on (checked), you will see the grid points on your display. If the option is not checked, the grid points will not appear.

4.3.2.3 Grid Snap On

Click this button to toggle the state of the *Grid Snap On* option. When this option is on (checked) and you drag a display item to a new location, it will align/snap to the grid points. If the option is not checked, a dragged item will reside at exactly the dragged location.

4.3.2.4 Grid Color

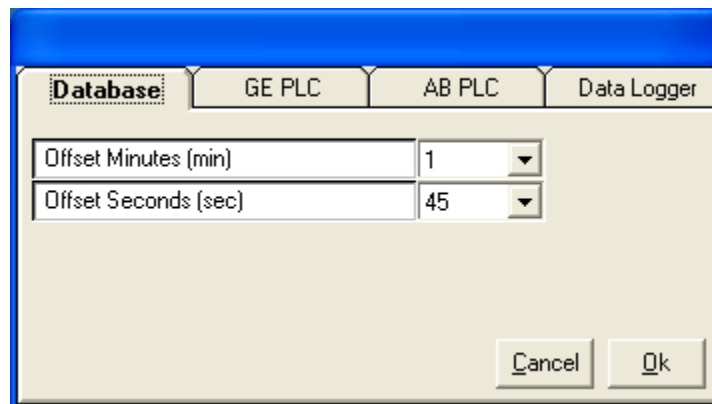
Click this button to bring up the *Color* dialog. You can then modify the color of the points that make up the grid. Grid points allow you to easily align display items.

4.3.2.5 Grid Spacing

Click this button to modify the spacing between the points on the grid. You can choose a grid spacing between 4 and 12.

4.3.3 Polling Intervals

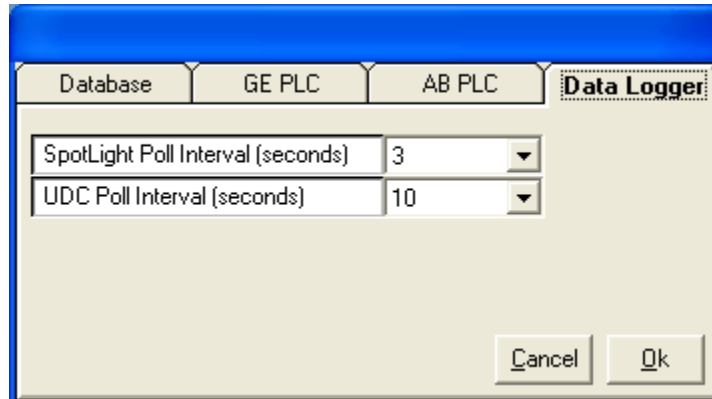
Click this button to bring up the following polling intervals dialog:



The image shows a dialog box titled "Polling Intervals" with a blue header bar. It contains three tabs: "Database" (selected), "GE PLC", and "AB PLC". Below the tabs are two input fields: "Offset Minutes (min)" with a dropdown menu showing "1", and "Offset Seconds (sec)" with a dropdown menu showing "45". At the bottom right, there are "Cancel" and "Ok" buttons.

Database	GE PLC	AB PLC	Data Logger
Offset Minutes (min)		1	
Offset Seconds (sec)		45	

Cancel Ok



The recommended database polling offset is 1 minute and 45 seconds. This will cause SpotLight to query for the most current data at 45 seconds past the top of each minute. If this setting too often results in 0/Missing data on the display, increase the offset in 5-second increments until the problem goes away. At sites with very old, slow servers or 5 or more units, it may be necessary to increase the offset to more than 2 minutes.

The *UDC Poll Interval* determines how often the RegPerfect® UDC application polls each data logger device for new data. The *SpotLight Poll Interval* determines how often SpotLight reads data logger data from UDC and refreshes the display. The UDC rate should generally be set to 10 seconds, and the SpotLight interval to 3 seconds to ensure that SpotLight updates displayed values within a max of 3 seconds after the data becomes available.

4.3.4 Audible Alarms

Click this button to bring up the following alarm properties dialog:



Use this dialog to select the application's alarm wave file and play it. You can also enable and disable the poll error alarm sound capability applicable to all the *Status Boxes* except the *Alarm Box*. The *Alarm Box*'s sound settings are configured in the alarm profile.

4.3.5 Screen Saver

4.3.5.1 Enabled

Click True or False to enable and disable the application's screen saver capability.

4.3.5.2 Frequency

Click on any of the settings to set the occurring frequency of the screen saver.

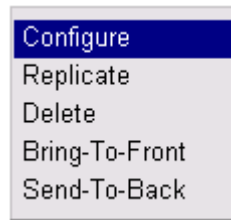
4.3.5.3 Test

Click this button to test the application's screen saver functionality.

4.4 Items

Items are a variety of display objects that you can organize on your screen in a way that is meaningful to you and your operators. Many *Items* can be linked to information in the RegPerfect® database and/or PLCs. They will be automatically updated in real-time. Other *Items* are simply formatting aids to help you create a better display.

Some features are common to all the items you can use to make displays. When you have added an item to your display you can right click on it to bring up the following menu:



- Clicking on *Configure* brings up the property sheet for the item.
- Clicking on *Replicate* creates a copy of the item with the same attributes.
- Clicking on *Delete* removes the item from your display.
- Clicking on *Bring-To-Front* moves the item to the top of a set of stacked items
- Clicking on *Send-To-Back* moves the item to the bottom of a set of stacked items

4.4.1 Text Box

Click this button to add a *Text Box* item to your display. The item will be placed in the upper left corner of your display and you can drag it to the desired location. This object is not linked to any database values and will retain the values that you enter.

Text Box items are lines of text that you can put on your display. They can be used as titles, labels for other items or for any descriptive text you want to add to your display.

Double clicking on the item or right-clicking and selecting *Configure* brings up the following property sheet:

The image shows a 'Configuration' dialog box for a 'Text Box' item. The dialog has a title bar with the word 'Configuration' and a close button (X) in the bottom right corner. The main area is a table with the following sections:

Configuration	
(Name)	TextBox1
Appearance	
BackColor	<input checked="" type="checkbox"/>
BorderColor	<input checked="" type="checkbox"/>
BorderStyle	Raised
FillStyle	Opaque
GradientFillStyle	None
GradientStartColor	<input checked="" type="checkbox"/>
GradientEndColor	<input checked="" type="checkbox"/>
Text & Font	
Text	TextBox1
TextOrientation	Horizontal
Font	Arial
FontAlignment	CenterCenter
FontColor	<input checked="" type="checkbox"/>
Behavior	
Locked	False

Use this property sheet to enter the text value and various text and style attributes.

4.4.2 Open File Box

Click this button to create an *Open File Box* item on your display. The item will be placed in the upper left corner of your display and you can drag it to the desired location. This object is not linked to any database values and will retain the values that you enter.

Open File Box items are buttons used to launch other applications or open any files with known association programs. Note that when *Open File Box* is configured to open a SpotLight display file (file with .rpd extension), it closes the existing display and opens the new display in the currently running SpotLight instead of in a new SpotLight process.

When you select an *Open File Box* item, the following property sheet is presented:

The image shows a 'Configuration' dialog box with the following sections and fields:

Configuration	
(Name)	OpenBox1
Graphic Properties	
Picture	<input checked="" type="checkbox"/>
MaskColor	<input checked="" type="checkbox"/>
BackColor	<input checked="" type="checkbox"/>
Caption & Font	
Text	Open File
Font	Arial <input checked="" type="checkbox"/>
File Properties	
FileName	<input checked="" type="checkbox"/>
OpenPrompt	True <input type="checkbox"/>
FileType	Executable <input type="checkbox"/>
Parameters	
Behavior	
Locked	False <input type="checkbox"/>

At the bottom right of the dialog are two buttons: a checkmark button and a close button (X).

Use this property sheet to specify the file name and type to launch or open. Also enter the text and style attributes.

4.4.3 Status Boxes

4.4.3.1 Alarm Box

Click this button to create an *Alarm Button* on your display. The button will be placed in the upper left corner and you may drag it to the desired location.

Clicking the *Alarm Button* in *Display Mode* opens the *Alarms* form listing all the alarms meeting the criteria specified by the active alarm profile. The *Alarms* form can be used to:

- View a subset of alarms that meet any specific criteria
- Delete one or more alarms
- Acknowledge one or more alarms
- View or edit the reason and action assigned to an alarm
- Block edit reason and/or action for multiple alarms
- Generate alarm reports
- Create, view or edit alarm profiles and set the active alarm profile

For more information, see [Alarm User Interface](#).

There are two forms involved in configuring alarms: the first is primarily for configuring the alarm button itself, and the second – the *Alarm Profiles* form – is primarily for configuring the *Alarms* form which is opened when you click the *Alarm Button* in *Display Mode*.

Configuring the Alarm Button

When you drag an *Alarm Button* item onto the display, its configuration form opens.

ServerName: select the desired RegPerfect server

AlarmColor: the button will turn this color and flash when there are

- Unacknowledged, active alarms
- Unacknowledged alarms (active or not) within a look-back period you configure in the alarm profile

AlertColor: the button will turn this color when there are active alarms (even if they have been acknowledged)

NormalColor: the button will turn this color when neither the alarm or alert criteria are met

Caption: you may choose the caption for the alarm button

Tip: If you have more than one RegPerfect server, you may show alarms from both servers on a single Spotlight display. Add two Alarm Buttons to the display, configure each with a different ServerName, then change the Caption of each button to denote which server's alarms it shows.

Configuration/Database		Alarm On When
(Name)	StatusBox1	
(Type)	Alarm	
Database		
ServerName	EGWSDLT12	
Appearance		
BackColor		✓
AlarmColor	Red	✓
AlertColor	Yellow	✓
NormalColor	Green	✓
Text & Font		
Caption	ALARM	
TextOrientation	Horizontal	
Font	Arial	✓
FontAlignment	aCenter	
FontColor	Black	✓
Behavior		
Locked	False	

Click the *Alarm On When* tab to complete your *Alarm Button* configuration.

Here, you select an alarm profile to be the “active” profile for this alarm button. Initially, the *Default* profile may be the only alarm profile that exists.

To create a new profile or view/edit an existing profile, click the leftmost button at the bottom of this form to open the *Alarm Profiles* form.

(Name)	StatusBox1
(Type)	Alarm

Alarm Profile

Name	Default
------	---------

The behavior of Alarm button flash and audible notification is defined and configured in the alarm profile. Click the Alarm Profile button below to view/edit, add and delete alarm profiles.

Configuring Alarm Profiles

An alarm profile is a named set of configuration properties which govern the sort order, filters, audible annunciation and other properties that affect how alarms are displayed.

Tip: You may create as many alarm profiles as you wish, but only one may be the "active" profile for each alarm button on the display. You may change the "active" profile in design mode (see above) or in display mode from the Alarm Profile form.

You may choose to use only one alarm profile, or different alarm profiles for different operators, or one profile to use most of the time and a special one to use when you are ready to assign reasons and actions. It's entirely up to you. The default profile cannot be deleted or modified, so if you don't like the default profile, you will need to create at least one new alarm profile.

The *Alarm Profiles* form is shown on the next page.

Filters: set the filters as desired to control which alarms are displayed. Click the [?] buttons for more explanation.

Sort: select the column you want to sort on using the drop down list, then select ascending or descending.

Button Flash and Audible Notification:

Button flash look-back period: the alarm button will turn red and flash if there are unacknowledged alarms within the look-back period. Click the [?] button for more explanation.

If you selected a Monitoring Site filter, it will be applied to both the button flash and audible notification. For example, if the Monitoring Site filter is set to "Unit 1", the Alarm button will only flash if there are unacknowledged or active alarms on Unit 1.

Play Audible Notification: control when or if the WAV file is played. Click the [?] button for more explanation.

Note in the screen shot above that the Delete, Save As, Apply and Ok buttons are disabled. This is because the *Default* profile is the profile being viewed. You may not modify or delete the *Default* profile. If it does not fit your needs, create a new profile by typing in a profile name in the box at top left of the form.

4.4.3.2 Instrument Box

Click this button to create an *Instrument Box* button on your display. The button will be placed in the upper left corner of your display and you can drag it to the desired location. When you run your display, the button can be clicked to display instrument status from the RegPerfect® database.

The *Instrument Box* item lists all the instruments for the server selected. You can use the *Instrument Box* item to view and set the status for any instrument. The instrument status toggles between In Service and Out Of Service. If any Out-Of-Service overrides exist, the *Instrument Box* item flashes and the alarm sound plays at the database polling intervals if sound is enabled.

Starting from v6.2012.0.309, the functionality of setting instrument status override for PLC type controllers has been disabled. To set an instrument in or out of service for a PLC type controller, you will need to use your local HMI.

When you select an *Instrument Box* item, the following property sheet is presented:

The screenshot shows a property sheet window titled "Configuration/DataSource" with a sub-tab "Alarm On When". The window contains several sections of configuration options:

(Name)	StatusBox2
(Type)	Instrument
DataSource	
ServerName	EGWSDLT75
Appearance	
BackColor	✓
AlarmColor	✓
AlertColor	✓
NormalColor	✓
Text & Font	
Caption	INSTRUMENT
TextOrientation	Horizontal
Font	Arial ✓
FontAlignment	aCenter
FontColor	✓
Behavior	
Locked	False
Auto CEMs Log	Both
EnableTechs	False
EnableOperators	False

At the bottom right of the window, there are two icons: a magnifying glass and a close button (X).

The *Configuration/Database* tab allows you to select the RegPerfect® server and change the look and feel of the item. The *Alarm On When* tab is disabled.

The *Auto CEMs Log* property, added in version 4, allows automatically opening the CemsLog application when setting an instrument in and/or out of service. You may choose one of four options as detailed below.

Disabled: disable automatically opening CemsLog

InService: only open CemsLog when setting an instrument In Service

OutOfService: only open CemsLog when setting an instrument Out Of Service

Both: open CemsLog when setting an instrument both In Service and Out Of Service

The *EnableTechs* and *EnableOperators* properties are used to secure the ability to set the instrument status override.

EnableTechs: If set to False, logon users belonging to the RP_TECHS group will not be able to change the instrument status.

EnableOperators: If set to False, logon users belonging to the RP_OPERATORS group will not be able to change the instrument status.

4.4.3.3 Message Queue Box

Click this button to create a *Message Queue Box* button on your display. The button will be placed in the upper left corner of your display and you can drag it to the desired location. When you run your display, the button can be clicked to show message queue entries from the RegPerfect® database.

The *Message Queue Box* item displays the messages from drivers and other applications that instruct RegPerfect® Calculation Engine to perform calculations. The messages are stored in the Z_RawSample_Processor_Queue table in the RegPerfect® database. You can use the *Message Queue Box* item to view these messages as they come into the RegPerfect® system and to verify that the Calculation Engine is processing them in a timely fashion. When the real-time calculations in the queue exceeds the configured alarm count, the *Message Queue Box* item flashes and the alarm sound plays at the database polling intervals if sound is enabled.

When you select a *Message Queue Box* item, the following property sheet is presented:

The screenshot shows a property sheet window with two tabs: "Configuration/Database" (selected) and "Alarm On When". The "Configuration/Database" tab contains the following fields:

(Name)	StatusBox3
(Type)	Message Queue
Database	
ServerName	EGWSDLT12
Appearance	
BackColor	<input checked="" type="checkbox"/>
AlarmColor	<input checked="" type="checkbox"/> [Red]
AlertColor	<input checked="" type="checkbox"/> [Yellow]
NormalColor	<input checked="" type="checkbox"/> [Green]
Text & Font	
Caption	MESSAGE QUEUE
TextOrientation	Horizontal
Font	Arial
FontAlignment	aCenter
FontColor	<input checked="" type="checkbox"/> [Black]
Behavior	
Locked	False

At the bottom right of the window are two icons: a magnifying glass and a close button (X).


The *Configuration/Database* tab allows you to select the RegPerfect® server and change the look and feel of the item. Selecting the *Alarm On When* tab brings up the following property sheet:

Configuration/Database		Alarm On When
(Name)	StatusBox3	
(Type)	Message Queue	
Alarm Count		
IntegerCount	200	

Message Queue is based on Real-Time calculations.

An alarm occurs when the total Real-Time calculations exceeds the IntegerCount.

Recommended is 200 per Monitoring Site in the database.



The *Alarm On When* tab allows you to configure the alarm count that determines the alarm condition as described in the property sheet.

4.4.3.4 Service Status Box

Click this button to create a *Service Status Box* button on your display. The button will be placed in the upper left corner of your display and you can drag it to the desired location. When you run your display, you can click the button to display the status of the RegPerfect® service applications which include the Calculation Engine and the drivers that collect raw data from PLCs and other controllers.

If a service is inactive for a number of minutes greater than the configured alarm count, the *Service Status Box* item flashes and the alarm sound plays at the database polling intervals if sound is enabled.

When you select a *Service Status Box* item, the following property sheet is presented:

The image shows a configuration dialog box for a Service Status Box. It has two tabs: "Configuration/Database" (selected) and "Alarm On When". The dialog is organized into several sections:

- General:** (Name) StatusBox4, (Type) Service Status.
- Database:** ServerName EGWSDLT12 (dropdown).
- Appearance:** BackColor (checkbox checked), AlarmColor (red color swatch, checkbox checked), AlertColor (yellow color swatch, checkbox checked), NormalColor (green color swatch, checkbox checked).
- Text & Font:** Caption SERVICE STATUS, TextOrientation Horizontal (dropdown), Font Arial (checkbox checked), FontAlignment aCenter (dropdown), FontColor (black color swatch, checkbox checked).
- Behavior:** Locked False (dropdown).

At the bottom right, there are two icons: a magnifying glass and a close button (X).


The *Configuration/Database* tab allows you to select the RegPerfect® server and change the look and feel of the item. Selecting the *Alarm On When* tab brings up the following property sheet:

Configuration/Database		Alarm On When	
(Name)	StatusBox4		
(Type)	Service Status		
Alarm Count			
IntegerCount	4		

Service Status IntegerCount is the number of minutes of inactivity by a RegPerfect service.

An alarm occurs if a service is inactive for a number of minutes greater than the IntegerCount.

Recommended setting is 3 to 8 minutes.



The *Alarm On When* tab allows you to configure the alarm count that determines the alarm condition as described in the property sheet.

4.4.3.5 Database Connection Box

Click this button to create a *Database Connection Box* button on your display. The button will be placed in the upper left corner of your display and you can drag it to the desired location. When you run your display, you can click the button to show the database connection information.

The *Database Connection Box* item is a button that you can click to display the server name you are connected to and the authentication method. If the RegPerfect® server is not configured or the database connection is not established, the *Database Connection Box* item flashes and the alarm sound plays at the database polling intervals if sound is enabled.

When you select a *Database Connection Box* item, the following property sheet is presented:

Configuration/Database		Alarm On When
(Name)	StatusBox5	
(Type)	Database Connection	
Database		
ServerName	EGWSDLT12	
Appearance		
BackColor		✓
AlarmColor	Red	✓
AlertColor	Yellow	✓
NormalColor	Green	✓
Text & Font		
Caption	DB CONNECTION	
TextOrientation	Horizontal	
Font	Arial	✓
FontAlignment	aCenter	
FontColor	Black	✓
Behavior		
Locked	False	

The *Configuration/Database* tab allows you to select the RegPerfect® server and change the look and feel of the item. The *Alarm On When* tab is disabled.

4.4.4 Server Time Box

Click this button to create a *Server Time Box* item on your display. The item will be placed in the upper left corner of your display and you can drag it to the desired location. This object is not linked to any database values and updates based on the time of the data that is currently being polled.

A *Server Time Box* item displays time of the server selected minus the offset you have configured in a text style format. This is useful because the server time will likely drift from the time of a client PC running a Spotlight display. If a client PC clock is several minutes ahead of the server, the display will appear to be lagging behind unless the server time is displayed rather than the client time.

Selecting a *Server Time Box* item brings up the following property sheet:

The screenshot shows a property sheet titled "Database/Configuration" for an object named "TimeBox1". The sheet is organized into several sections:

- (Name)**: TimeBox1
- Database**:
 - ServerName: egwsdlt02 (dropdown menu)
- Appearance**:
 - BackColor: (empty) [checkmark]
 - BorderColor: (black) [checkmark]
 - BorderStyle: (empty) [dropdown]
 - FillStyle: (empty) [dropdown]
- Text & Font**:
 - Time: 6/15/2004 6:06:21 PM
 - TimeFormat: (empty) [dropdown]
 - TextOrientation: (empty) [dropdown]
 - Font: Arial [checkmark]
 - FontAlignment: (empty) [dropdown]
 - FontColor: (black) [checkmark]
- Behavior**:
 - Locked: (empty) [dropdown]

A close button (X icon) is located in the bottom right corner of the property sheet.

4.4.5 Value Boxes

4.4.5.1 Constant Box

Click this button to create a *Constant Box* item on your display. The item will be placed in the upper left corner of your display and you can drag it to the desired location. This object is linked to a constant in your database via the constant you select on the property sheet and the constant value in the database table will be displayed in the constant box in real time.

Constant Box items display current constant values from the ConstantValue table in the RegPerfect® database. They can be used to display information such as calibration bottle reference values and fuel factors. Clicking the *Constant Box* in *Display Mode* opens one of the two constant editing forms, *Constant Value Editor* and *New Constant Value*, depending on whether the constant history is configured editable. The *Constant Value Editor* form can be used to edit the constant values as well as the history information while the *New Constant Value* form can be used to change the current value of the constant only. For more information, see [Constant User Interface](#).

When you select a *Constant Box* item, the following property sheet is presented:

Configuration		Database
(Name)	Constant1	
Appearance		
BackColor		<input checked="" type="checkbox"/>
BorderColor		<input checked="" type="checkbox"/>
BorderStyle	Raised	▼
FillStyle	Opaque	▼
Text & Font		
TextOrientation	Horizontal	▼
Font	Arial	<input checked="" type="checkbox"/>
FontAlignment	aCenter	▼
FontColor		<input checked="" type="checkbox"/>
Behavior		
Locked	False	▼
Writable	Yes	▼
History	Yes	▼

The *Configuration* tab allows you to change the look and feel of the item. The *Writable* property is used to specify whether the constant is editable. The *History* property, only enabled when *Writable* is set to Yes, is used to specify whether the constant history is editable.

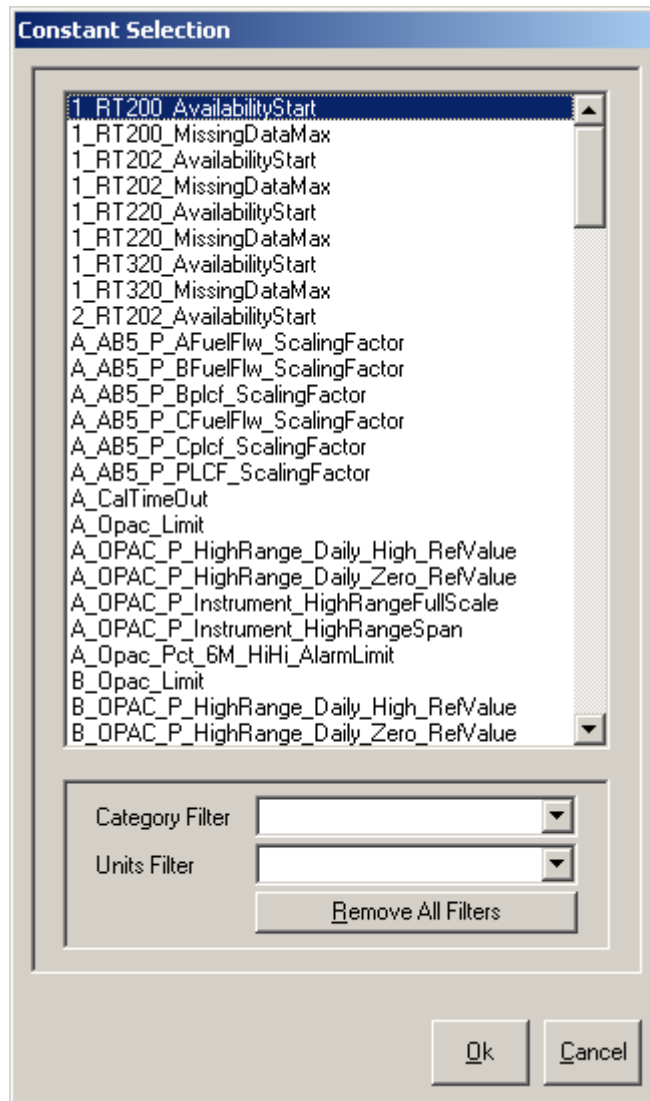
Selecting the *Database* tab brings up the following property sheet:

The screenshot shows a configuration dialog box with two tabs: 'Configuration' and 'Database'. The 'Database' tab is active. The dialog contains the following fields:

(Name)	Constant1
Database	
ServerName	EGWSDLT12
DbFunction	12 - GetConstant
FunctionOffset	0
ConstantName	U2_SO2Bias_Ppm
DataType	Float

A small button with an 'X' icon is located in the bottom right corner of the dialog box.

When you click the button to the right of the *ConstantName* box, the following selection dialog appears:



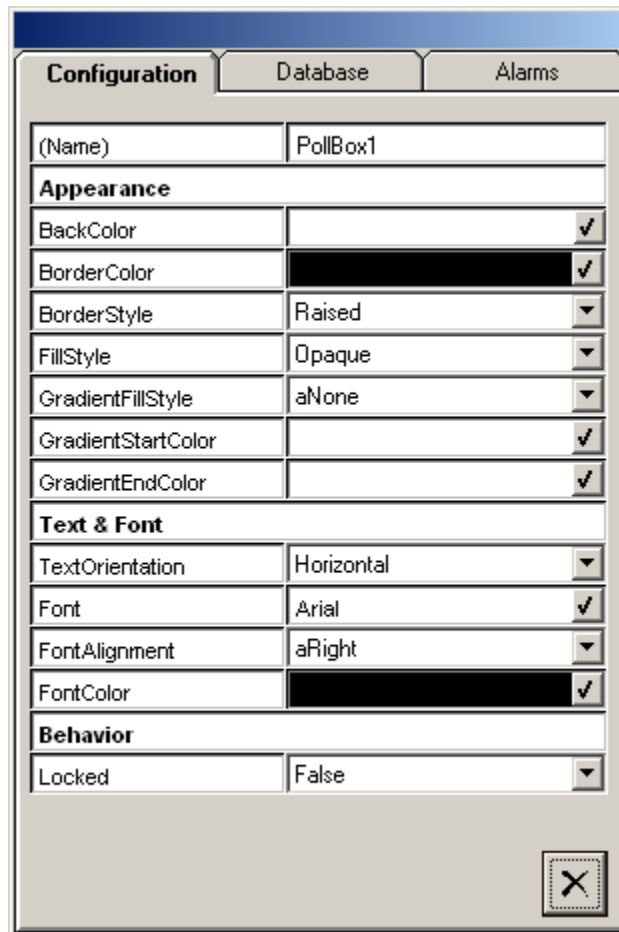
You can directly select the constant from the constant list or you can filter the list first and then make your selection. The constant name you choose will be used to retrieve constant data to update the item in real time.

4.4.5.2 Poll Box

Click this button to create a *Poll Box* item on your display. The item will be placed in the upper left corner of your display and you can drag it to the desired location. This object is linked to sample data in your database via the tag you select on the property sheet. This means the values in the sample table will be automatically written to the item.

The *Poll Box* item is a text style box that displays data from the Sample table for a single tag in the RegPerfect® database for a single timestamp. You can use *Poll Boxes* to create rows or columns of data in a calendar format, such as a calendar which shows the total for each day in a separate box.

When you select a *Poll Box* item, the following property sheet is presented:

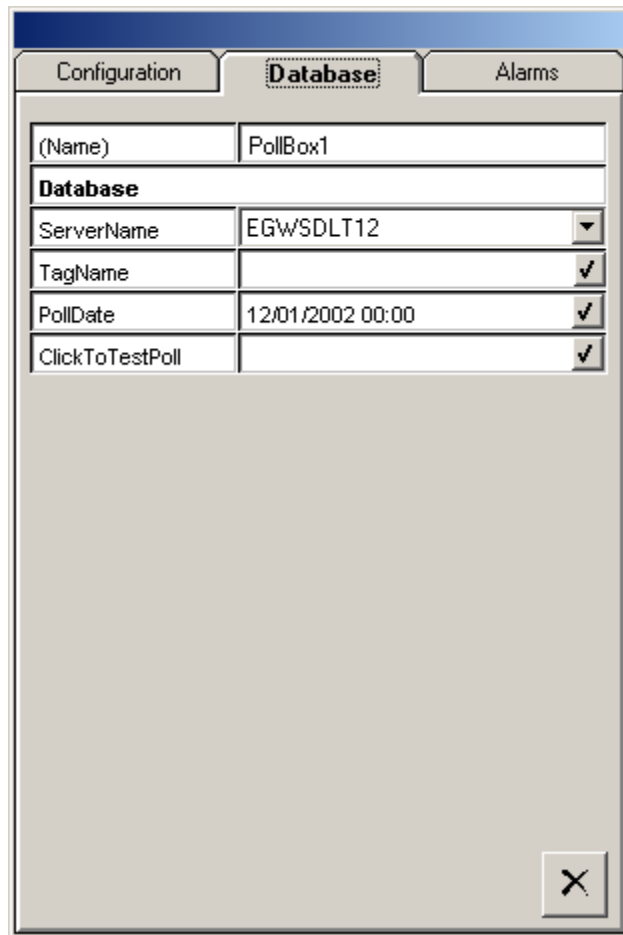


The image shows a software property sheet for a 'Poll Box' item. It has three tabs: 'Configuration', 'Database', and 'Alarms'. The 'Configuration' tab is active. The sheet is divided into sections: 'Appearance', 'Text & Font', and 'Behavior'. Each section contains various settings with checkboxes or dropdown menus. A close button (X) is located at the bottom right.

Configuration		Database	Alarms
(Name)	PollBox1		
Appearance			
BackColor		<input checked="" type="checkbox"/>	
BorderColor		<input checked="" type="checkbox"/>	
BorderStyle	Raised	<input type="checkbox"/>	
FillStyle	Opaque	<input type="checkbox"/>	
GradientFillStyle	aNone	<input type="checkbox"/>	
GradientStartColor		<input checked="" type="checkbox"/>	
GradientEndColor		<input checked="" type="checkbox"/>	
Text & Font			
TextOrientation	Horizontal	<input type="checkbox"/>	
Font	Arial	<input checked="" type="checkbox"/>	
FontAlignment	aRight	<input type="checkbox"/>	
FontColor		<input checked="" type="checkbox"/>	
Behavior			
Locked	False	<input type="checkbox"/>	

The *Configuration* tab allows you to change the look and feel of the item.

Selecting the *Database* tab brings up the following property sheet:



The screenshot shows a software window with three tabs: Configuration, Database, and Alarms. The Database tab is selected. Below the tabs is a table with the following data:

(Name)	PollBox1
Database	
ServerName	EGWSDLT12
TagName	
PollDate	12/01/2002 00:00
ClickToTestPoll	

Checkmarks are visible to the right of the TagName, PollDate, and ClickToTestPoll rows. A close button (X) is located in the bottom right corner of the window.

The *Database* tab allows you to select the data source, tag name, and poll time.

When you click the button to the right of the *TagName* box, the tag selection dialog appears. You can directly select the tag from the tag list or you can filter the tag list first and then make your selection. The tag you choose will be used to retrieve sample data to update the item in real time.

Selecting the *Alarms* tab brings up the following property sheet:

The screenshot shows a software window with three tabs: "Configuration", "Database", and "Alarms". The "Alarms" tab is selected and active. Below the tabs is a table titled "Alarm Configuration". The table has four rows, each with a property name and a value. The "FatalColor" row has a red color swatch and a checkmark. The "NonFatalColor" row has a yellow-green color swatch and a checkmark. The "LowLimitValue" row has the value "-999999999". The "HighLimitValue" row has the value "999999999". A close button (X) is located in the bottom right corner of the window.

Alarm Configuration	
FatalColor	Red ✓
NonFatalColor	Yellow-Green ✓
LowLimitValue	-999999999
HighLimitValue	999999999

4.4.5.3 Value Box

Click this button to create a *Value Box* item on your display. The item will be placed in the upper left corner of your display and you can drag it to the desired location. This object is linked to either sample data in your RegPerfect® database or register/channel data in your GE/AB PLC or DataLogger via the tag you select on the property sheet. The values in the sample table or the real-time values from the PLC or DataLogger will be automatically written to the value box in real time.

The *Value Box* item is a text style box that displays data for a single tag in the RegPerfect® database. The data can be a sample at the polling time or at an offset time or a running average or sum for certain time periods. The item can be used to display data directly read from a PLC or DataLogger as well. You can use *Value Boxes* to create rows or columns of data or you can place a value box next to or on top of another graphics item such as an analyzer to show data in a meaningful way.

For a time period shorter than a day, the running average and sum are formed from one minute samples in the RegPerfect® database. Otherwise, the running average and sum are formed from one hour samples. They reset at the top of every time period. They can be used to give you an idea of the current period's averages and sums as they are being formed, rather than waiting until the end of the interval. Note that the RegPerfect® Calculation Engine may be forming averages and sums in a manner that yields slightly different values.

A minimum of one valid sample is required to display an average or a sum. Only data during unit on periods is included and invalid data is disregarded.

The value box font may turn three different colors depending on how the sample status flags are set:

Fatal Color:	Missing, FatalFault, OOC_Daily, OOC_Manual, NotQualityAssured, InterferenceTestFailed, InterferenceTestNotQA, ExceedsScale
Non-Fatal Color:	NonFatalFault, InCalibration, InZeroTest, InLowTest, InMidTest, InHighTest, InPurge*, OutOfService, TooFewSamples*, ZeroCalError2x, HighCalError2x
Normal Color:	None of the above status flags is set

*: InPurge and TooFewSamples status flags only cause non-fatal color when unit is online.

Note that the above color scheme also applies to the following display items:

- Graph Value Box*
- Poll Box*
- Analyzer*
- ML9800*
- SensorE*
- Horizontal Bar*
- Vertical Bar*
- Horizontal Gauge*
- Vertical Gauge*

When you select a *Value Box* item, the following property sheet is presented:

Configuration		DataSource	Alarms
(Name)	ValueBox1		
Appearance			
BackColor			✓
BorderColor			✓
BorderStyle	Raised		▼
FillStyle	Opaque		▼
GradientFillStyle	aNone		▼
GradientStartColor			✓
GradientEndColor			✓
Text & Font			
TextOrientation	Horizontal		▼
Font	Arial		✓
FontAlignment	aRight		▼
FontColor			✓
Behavior			
Locked	False		▼

The *Configuration* tab allows you to change the look and feel of the item.

Selecting the *DataSource* tab brings up the following property sheet:

The screenshot shows a dialog box with three tabs: Configuration, DataSource (selected), and Alarms. The DataSource tab contains the following fields:

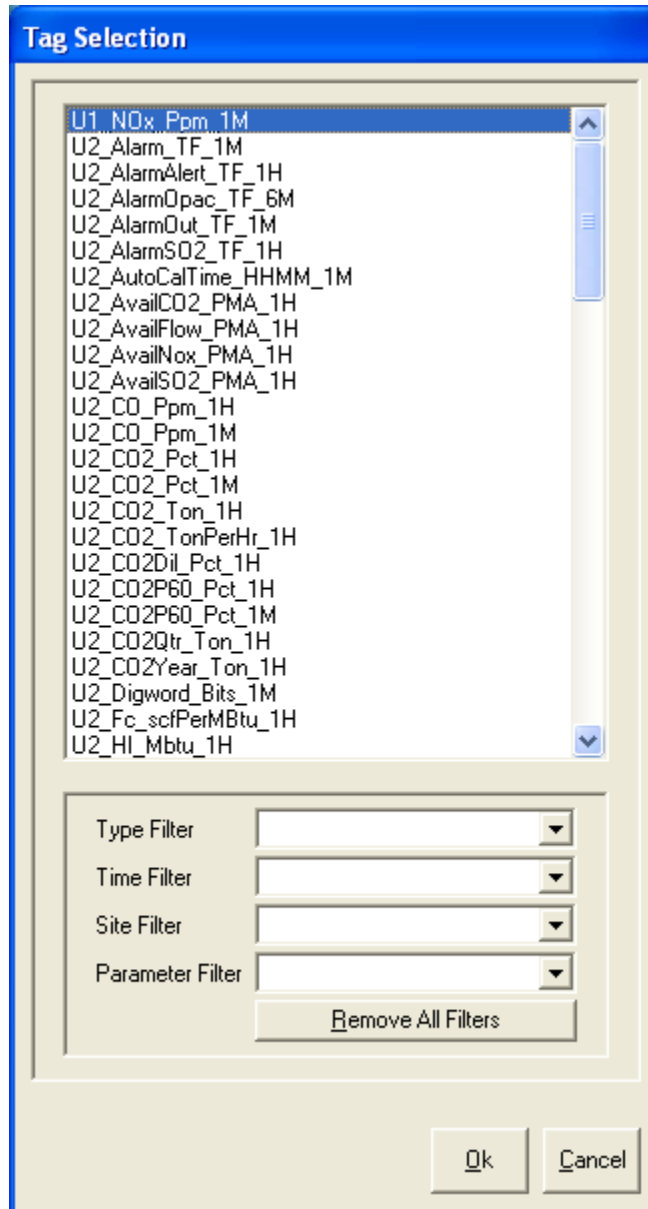
(Name)	ValueBox1
DataSource Properties	
ServerName	EGWSDLT13
DataSourceType	Database
DbFunction	0 - GetValue
FunctionOffset	0
TagName	
ControllerName	
RealtimeTagName	
DecimalPlaces	0

A close button (X) is located in the bottom right corner of the dialog box.

The *DataSource* tab allows you to select a RegPerfect® server and select a data source type of Database, DataLogger or PLC.

When you select DataLogger or PLC as your data source type, the *DbFunction*, *FunctionOffset* and *TagName* options are disabled and the *ControllerName*, *RealtimeTagName* and *DecimalPlaces* options are enabled. The configured DataLoggers or PLCs for the selected server are listed in the *ControllerName* pull-down for you to make your selection. After you select one, its configured tags are listed in the *RealtimeTagName* pull-down. The tag you choose will be used to retrieve data to update the item in real time. You can select a decimal precision for a DataLogger or PLC tag to be used for displaying the value.

When you select Database as your data source type, the *ControllerName*, *RealtimeTagName* and *DecimalPlaces* options are disabled and the *DbFunction*, *FunctionOffset* and *TagName* options are enabled. You can select a database function and optionally a time offset. When you click the button to the right of the *TagName* box, the following tag selection dialog appears:



Depending on the database function you select, the *Time Filter* option may or may not be disabled. You can directly select the tag from the tag list or you can filter the tag list first and then make your selection. The tag you choose will be used to retrieve sample data to update the item in real time. The decimal precision configured in the database will be used for displaying the value.

Selecting the *Alarms* tab brings up the following property sheet:

The screenshot shows a dialog box titled "Alarms" with three tabs: "Configuration", "DataSource", and "Alarms". The "Alarms" tab is selected. Below the tabs is a section titled "Alarm Configuration" containing a table with the following properties:

Alarm Configuration	
FatalColor	 ✓
NonFatalColor	 ✓
HoldOnInvalid	False ▼
LowLimitValue	-999999999
HighLimitValue	999999999

A close button (X) is located in the bottom right corner of the dialog box.

4.4.5.4 Graph Value Box

Click this button to create a *Graph Value Box* item on your display. The item will be placed in the upper left corner of your display and you can drag it to the desired location. This object is linked to sample data in your RegPerfect® database via the tag you select on the property sheet. The values in the sample table will be automatically written to the value box in real time. In addition, when you run your display, you can click the item to display the sample data in a graphic style.

Similar to the *Value Box* item, the *Graph Value Box* item is a text style box that displays data for a single tag in the RegPerfect® database. The data displayed can be a sample value at the polling time or at an offset time or a running average or sum for a time period selected. In *Display Mode*, the *Graph Value Box* item can change color when the mouse hovers over it. Clicking the item brings up a form displaying the sample data for a certain time period including the current poll time in both a graphic and a tabular style. You can shift the time period to display the sample data in the past and change the scales and style of the graph. The graph always display data retrieved from the RegPerfect® database. Unlike the trend items described in the section 4.4.9, the graph does not update automatically in real time. The *Graph Value Box* item is a good choice to display historical data in the RegPerfect® database.

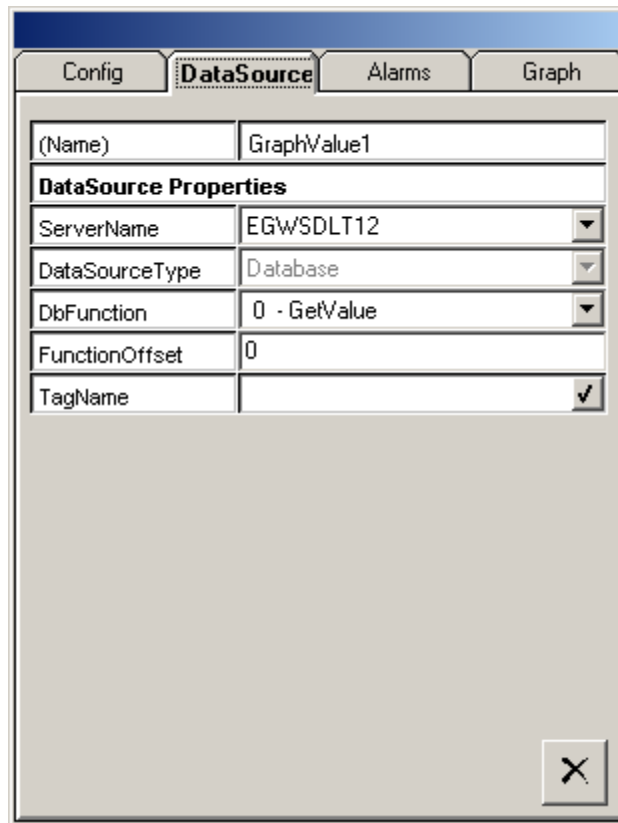
When you select a *Graph Value Box* item, the following property sheet is presented:

The screenshot shows a property sheet window with four tabs: Config, DataSource, Alarms, and Graph. The Config tab is active and contains the following settings:

Config	
(Name)	GraphValue1
Appearance	
BackColor	<input checked="" type="checkbox"/>
BorderColor	<input checked="" type="checkbox"/>
BorderStyle	Raised
MouseOverColor	<input checked="" type="checkbox"/>
Text & Font	
TextOrientation	Horizontal
Font	Arial
FontAlignment	aRight
FontColor	<input checked="" type="checkbox"/>
Behavior	
Locked	False

The *Config* tab allows you to change the look and feel of the item.

Selecting the *DataSource* tab brings up the following property sheet:



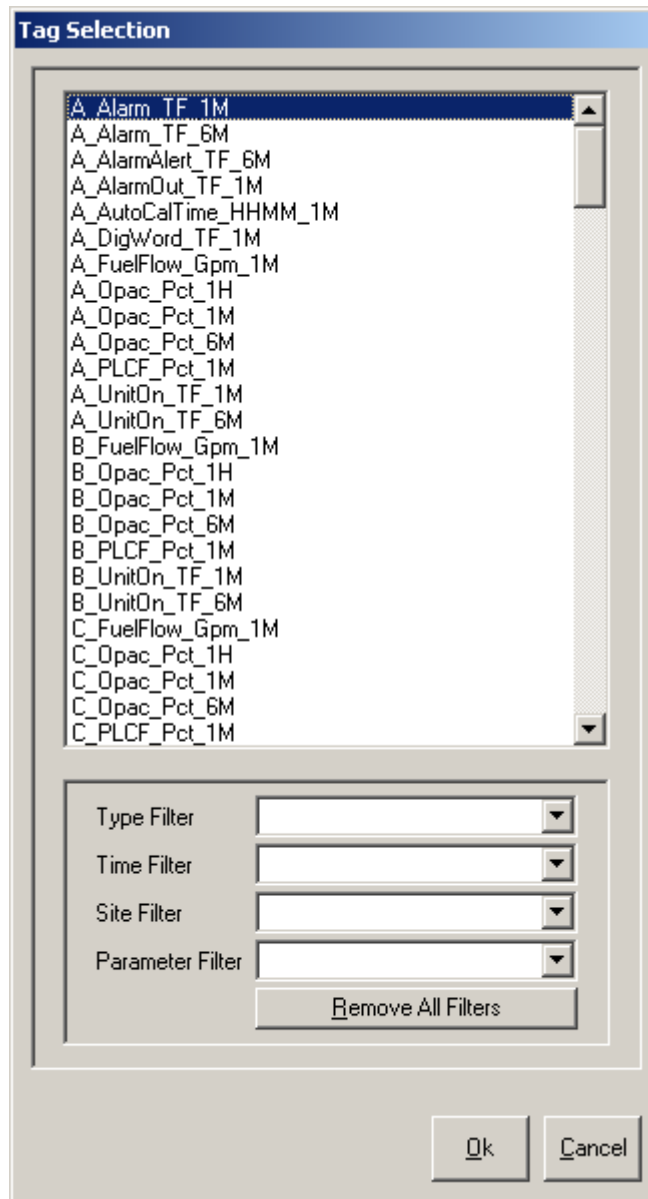
The screenshot shows a dialog box with four tabs: "Config", "DataSource", "Alarms", and "Graph". The "DataSource" tab is selected. The dialog contains the following fields:

(Name)	GraphValue1
DataSource Properties	
ServerName	EGWSDLT12
DataSourceType	Database
DbFunction	0 - GetValue
FunctionOffset	0
TagName	<input checked="" type="checkbox"/>

A close button (X) is located in the bottom right corner of the dialog.

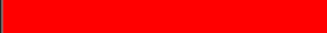

The *DataSource* tab allows you to select the server, database function, time offset, and tag name.

When you click the button to the right of the *TagName* box, the following tag selection dialog appears:



You can directly select the tag from the tag list or you can filter the tag list first and then make your selection. The tag you choose will be used to retrieve sample data to update the item in real time.

Selecting the *Alarms* tab brings up the following property sheet:

Alarm Configuration	
FatalColor	 ✓
NonFatalColor	 ✓
HoldOnInvalid	False ▼
LowLimitValue	-999999999
HighLimitValue	999999999

Selecting the *Graph* tab brings up the following property sheet:

The screenshot shows a software interface with four tabs: 'Config', 'DataSource', 'Alarms', and 'Graph'. The 'Graph' tab is active. Below the tabs is a property sheet with the following fields:

(Name)	GraphValue1
ChartAppearance	
ChartTitle	
ChartType	a2DStep
ChartScale	
ChartAutoScale	True
ChartMinValue	0
ChartMaxValue	100

A close button (X) is located in the bottom right corner of the property sheet.

The *Graph* tab allows you to change the look of the graph brought up by clicking the item in *Display Mode*.

4.4.6 Switches

4.4.6.1 On/Off Switches

Three *On/Off Switches* are available: *Push Button 1*, *Push Button 2* and *LED Switch*. They provide the same functionality but differ in appearance and use. Click any of the *On/Off Switch* buttons to create an *On/Off Switch* item on your display. The item will be placed in the upper left corner of your display with default size and you can drag it to the desired location and re-size if needed. This object is linked to one or two GE or AB PLC tags via the tag names you select on the property sheet. It controls writing the on/off values into the register/channel of the PLC and displays feedback signals from the PLC in real time.

The *On/Off Switch* item is a graphic representation of a switch that can be turned on and off. When the switch is clicked to on, it writes the configured *WriteOnValue* to the PLC tag and when it is clicked to off, it writes the *WriteOffValue* out. It can also be used to send a 2-second pulse signal to the PLC by writing the *WriteOnValue* followed by the *WriteOffValue*. You can use an *On/Off Switch* item to start a calibration or other sequence for PLC or DataLogger.

When you select an *On/Off Switch* item, the item's property sheet is presented. The *Configuration* tabs of the three *On/Off Switches'* property sheet are slightly different. The following is the one for *Push Button 2*.

The image shows a software window titled 'Configuration' with a 'DataSource' tab. The window contains a table of properties for a switch item named 'Switch2'. The properties are organized into sections: Appearance, Title Text & Font, and Behavior. Each property has a text input field and a checkmark or dropdown arrow indicating its status.

Configuration	
(Name)	Switch2
Appearance	
BackColor	<input checked="" type="checkbox"/>
SwitchOnText	ON
SwitchOffText	OFF
SwitchOnTextColor	<input checked="" type="checkbox"/>
SwitchOffTextColor	<input checked="" type="checkbox"/>
Title Text & Font	
Title	
Font	Tahoma <input checked="" type="checkbox"/>
FontColor	<input checked="" type="checkbox"/>
Behavior	
Locked	False <input type="checkbox"/>

The *Configuration* tab allows you to change the look and behavior of the item.

The data source configuration is the same for the three *On/Off Switches*. Selecting the *DataSource* tab brings up the following property sheet:

The screenshot shows a software window titled "DataSource" with a "Configuration" tab. The window contains a table of properties for a device named "Switch2". The properties include:

DataSource Properties	
(Name)	Switch2
ServerName	EGWSDLT13
DataSourceType	DataLogger
ControllerName	
CalSequenceName	
ControlBit	
FeedbackBit	
WriteOnValue	1
WriteOffValue	0
WriteBehavior	Momentary
Confirmation	False
Auto CEMs Log	Neither
EnableTechs	False
EnableOperators	False

The following describes some of the properties on the *DataSource* tab:

DataSourceType: select DataLogger or PLC. One of the choices may not be available depending on the system you have.

ControllerName: the configured DataLoggers or PLCs for the selected server are listed for you to make your selection.

CalSequenceName: a calibration sequence name of the selected data logger that the switch tries to start when clicked. For use with DataLogger data source only and is disabled when PLC is selected as the data source type.

ControlBit: a discrete PLC tag that the switch writes to when clicked. For use with PLC data source only and is disabled when DataLogger is selected as the data source type.

FeedbackBit: a discrete PLC tag that the switch reads feedback from to update the switch state. For use with PLC data source only and is disabled when DataLogger is selected as the data source type.

WriteBehavior: if set to Momentary, set on value for two seconds followed by setting off value and require a feedback signal to be configured. If set to Continuous, set on/off value forever and optionally require a feedback signal. When DataLogger is selected as the data source type, this option is set to Momentary and is disabled.

Confirmation: if set to True, a confirmation dialog pops up to confirm the write or start calibration action when the switch is clicked in display mode (to prevent accidentally starting a daily calibration test, for example).

AutoCEMsLog: if set to On, only open CemsLog when clicking to turn switch on. If set to Off, only open CemsLog when clicking to turn switch off. If set to Both, open CemsLog when clicking to turn switch on and off. If set to Neither, disable automatically opening CemsLog.

EnableTechs: used to secure the ability to write to a PLC or start a calibration sequence. If set to False, logon users belonging to the RP_TECHS group will not be able to activate the switch.

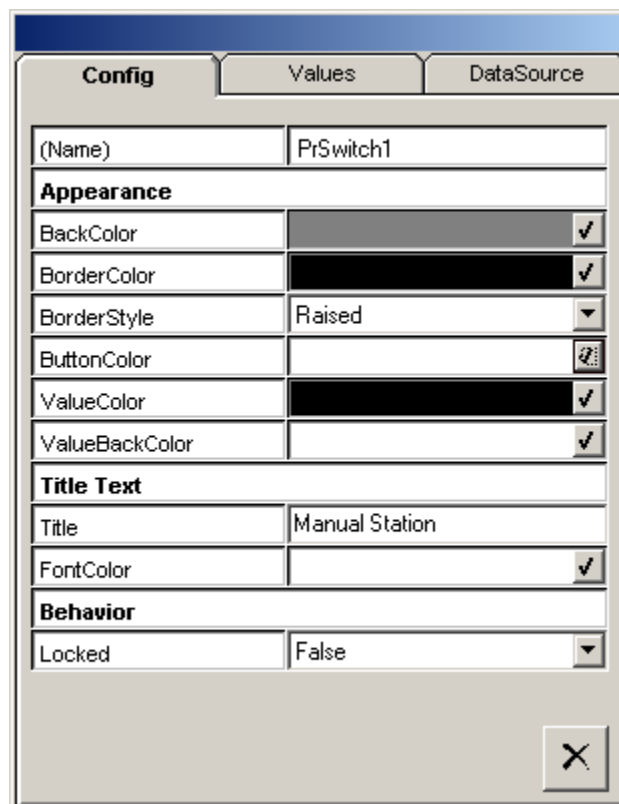
EnableOperators: used to secure the ability to write to a PLC or start a calibration sequence. If set to False, logon users belonging to the RP_OPERATORS group will not be able to activate the switch.

4.4.6.2 Manual Station







Click this button to create a *Manual Station* item on your display. The item will be placed in the upper left corner of your display with default size and you can drag it to the desired location and re-size if needed. This object is linked to a tag of your GE/AB PLC via the tag name you select on the property sheet. It controls writing certain values into the register/channel of the PLC in real time.

The *Manual Station* item is a graphic representation of a control panel that has a value box and three buttons. The value in the value box can be increased or decreased by the value of the configured increment when the *Increase* or *Decrease* button is clicked respectively. When the *Send* button is clicked, the current displayed value is written into the PLC tag. You can use a *Manual Station* item to simulate a real-time process from your PLC, such as a daily calibration.

When you select a *Manual Station* item, the following property sheet is presented:



The image shows a property sheet window for a 'Manual Station' item. The window has three tabs: 'Config', 'Values', and 'DataSource'. The 'Config' tab is selected and contains the following settings:

Config	
(Name)	PrSwitch1
Appearance	
BackColor	 ✓
BorderColor	 ✓
BorderStyle	Raised ▾
ButtonColor	
ValueColor	 ✓
ValueBackColor	 ✓
Title Text	
Title	Manual Station
FontColor	 ✓
Behavior	
Locked	False ▾

A close button (X) is located in the bottom right corner of the property sheet.

The *Config* tab allows you to change the look and feel of the item.

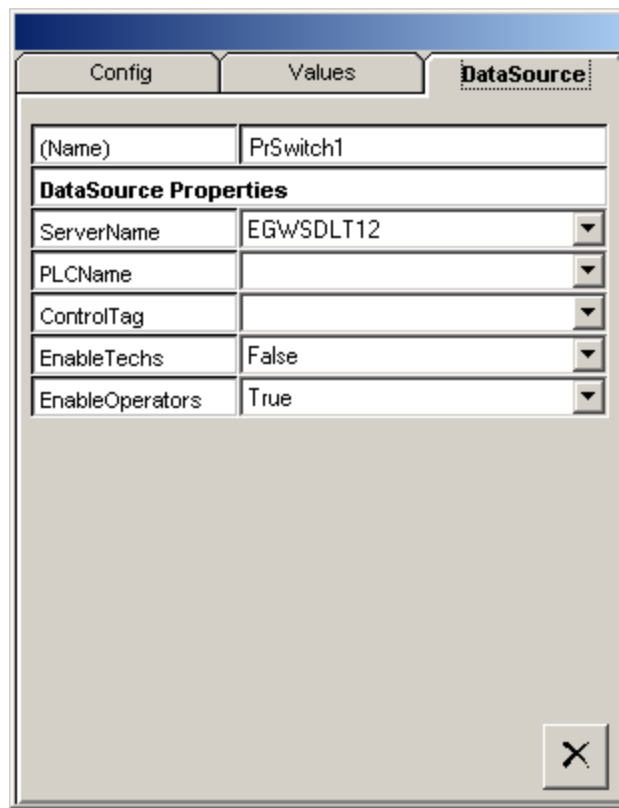
Selecting the *Values* tab brings up the following property sheet:

The screenshot shows a software property sheet with three tabs: 'Config', 'Values', and 'DataSource'. The 'Values' tab is selected and active. The property sheet contains the following fields:

(Name)	PrSwitch1
Value Properties	
MinimumValue	-9999
MaximumValue	9999
StartValue	0
IncrementValue	1
DecimalPlaces	0

A close button (X) is located in the bottom right corner of the property sheet.

Selecting the *DataSource* tab brings up the following property sheet:



The screenshot shows a dialog box with three tabs: "Config", "Values", and "DataSource". The "DataSource" tab is selected. The dialog contains the following fields:

(Name)	PrSwitch1
DataSource Properties	
ServerName	EGWSDLT12
PLCName	
ControlTag	
EnableTechs	False
EnableOperators	True

A close button (X) is located in the bottom right corner of the dialog box.

The following describes some of the properties on this tab:

ControlTag: a PLC tag that the manual station writes to

EnableTechs: used to secure the ability to write to a PLC. If set to False, logon users belonging to the RP_TECHS group will not be able to activate the control.

EnableOperators: used to secure the ability to write to a PLC. If set to False, logon users belonging to the RP_OPERATORS group will not be able to activate the control.


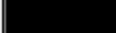


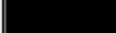
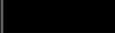




4.4.7 Gauges

4.4.7.1 Horizontal Gauge

Click this button to create a *Horizontal Gauge* item on your display. The item will be placed in the upper left corner of your display with default size. Drag the item to the desired location and re-size if needed. This object is linked to sample data in your database via the tags you select on the property sheet. This means the values in the sample table will be automatically used to update the item in real time.

The *Horizontal Gauge* item is a gauge that looks very similar to the physical gauges seen in a control room. It displays data from the Sample table for up to four tags in the RegPerfect® database. Each data value is depicted as a separate needle on the gauge. You can use the *Horizontal Gauge* to create panels that operators are familiar with and can read quickly and easily.

When you select a *Horizontal Gauge* item, the following property sheet is presented:

Configuration		DataSource	
(Name)	FlatGauge1		
Appearance			
BackColor		<input checked="" type="checkbox"/>	
BorderColor		<input checked="" type="checkbox"/>	
BorderStyle	Raised		
Title Text & Font			
Title	HorizontalGauge		
Font	Tahoma	<input checked="" type="checkbox"/>	
FontAlignment	aCenter		
FontColor		<input checked="" type="checkbox"/>	
Scale Properties			
MinScaleValue	0		
MaxScaleValue	10		
HashMarkColor		<input checked="" type="checkbox"/>	
ScaleFont	Tahoma	<input checked="" type="checkbox"/>	
ScaleFontColor		<input checked="" type="checkbox"/>	
Behavior			
Locked	False		
		Draw Area 1 Properties	
DrawArea1Enabled	False		
Area1Color		<input checked="" type="checkbox"/>	
Area1StartValue	0		
Area1EndValue	0		
		Draw Area 2 Properties	
DrawArea2Enabled	False		
Area2Color		<input checked="" type="checkbox"/>	
Area2StartValue	0		
Area2EndValue	0		
		Draw Area 3 Properties	
DrawArea3Enabled	False		
Area3Color		<input checked="" type="checkbox"/>	
Area3StartValue	0		
Area3EndValue	0		
		General Data Properties	
FatalColor		<input checked="" type="checkbox"/>	
NonFatalColor		<input checked="" type="checkbox"/>	
HoldOnInvalid	False		

The *Configuration* tab allows you to change the look and feel of the item. Selecting the *DataSource* tab brings up the following property sheet:

Configuration		DataSource	
(Name)	FlatGauge1	ServerName	EGWSDLT12
Needle1 Data		Needle4 Data	
Enabled	True	Enabled	False
Color	 	Color	
TagName		TagName	
Caption		Caption	
TestValue	0	TestValue	0
Needle2 Data		Sizing Variables (Read Only)	
Enabled	False	Sizeable	True
Color	 	HasLimits	True
TagName		MinWidth (pixels)	200
Caption		MinHeight (pixels)	60
TestValue	0	MaxWidth(pixels)	1500
Needle3 Data		MaxHeightPixels	1500
Enabled	False		
Color	 		
TagName			
Caption			
TestValue	0		

The *DataSource* tab allows you to select the server and tag names.

When you click the button to the right of the *TagName* box, the tag selection dialog appears. You can directly select the tag from the list or you can filter the tag list first and then make your selection. The tags you choose will be used to retrieve sample data to update the item in real time.

4.4.7.2 Vertical Gauge

Click this button to create a *Vertical Gauge* item on your display. The item will be placed in the upper left corner of your display with default size and you can drag it to the desired location and re-size if needed. This object is linked to either sample data in your RegPerfect® database or register/channel data in your GE/AB PLC via the tag you select on the property sheet. This means the values in the sample table and the real-time values from the PLC will be automatically used to update the item in real time.

The *Vertical Gauge* item is a gauge that looks very similar to the physical gauges seen in a control room. It displays sample data at a single timestamp or a running average or sum for a tag in the RegPerfect® database. It displays data directly read from a PLC as well. The data value is depicted as a bar level on the gauge. You can use the *Vertical Gauge* to create panels that operators are familiar with and can read quickly and easily.

When you select a *Vertical Gauge* item, the following property sheet is presented:

The image shows a screenshot of a software property sheet for a 'Vertical Gauge' item. The window has a blue title bar and four tabs: 'Config', 'Scale', 'DataSource', and 'Alarms'. The 'Config' tab is selected. Below the tabs, there is a table with the following properties:

(Name)	VerticalGauge1
Appearance	
BackColor	<input checked="" type="checkbox"/>
BorderColor	<input checked="" type="checkbox"/>
BorderStyle	Raised
Title Text & Font	
Title	VGauge
Font	Tahoma <input checked="" type="checkbox"/>
FontAlignment	aCenter
FontColor	<input checked="" type="checkbox"/>
Behavior	
Locked	False

At the bottom right of the property sheet, there is a small square button with a dashed border and an 'X' icon inside.

The *Config* tab allows you to change the look and feel of the item.

Selecting the *Scale* tab brings up the following property sheet:

The screenshot shows a property sheet window with four tabs: Config, Scale, DataSource, and Alarms. The Scale tab is selected. The window contains the following fields:

(Name)	VerticalGauge1
Scale Properties	
MinScaleValue	0
MaxScaleValue	10
BarColor	 ✓
HashMarkColor	 ✓
ScaleFont	Tahoma ✓
ScaleFontColor	 ✓

A close button (X) is located in the bottom right corner of the window.

The *Scale* tab allows you to change the look and scale of the gauge.

Selecting the *DataSource* tab brings up the following property sheet:

The screenshot shows a dialog box with four tabs: 'Config', 'Scale', 'DataSource', and 'Alarms'. The 'DataSource' tab is selected. The dialog contains the following fields:

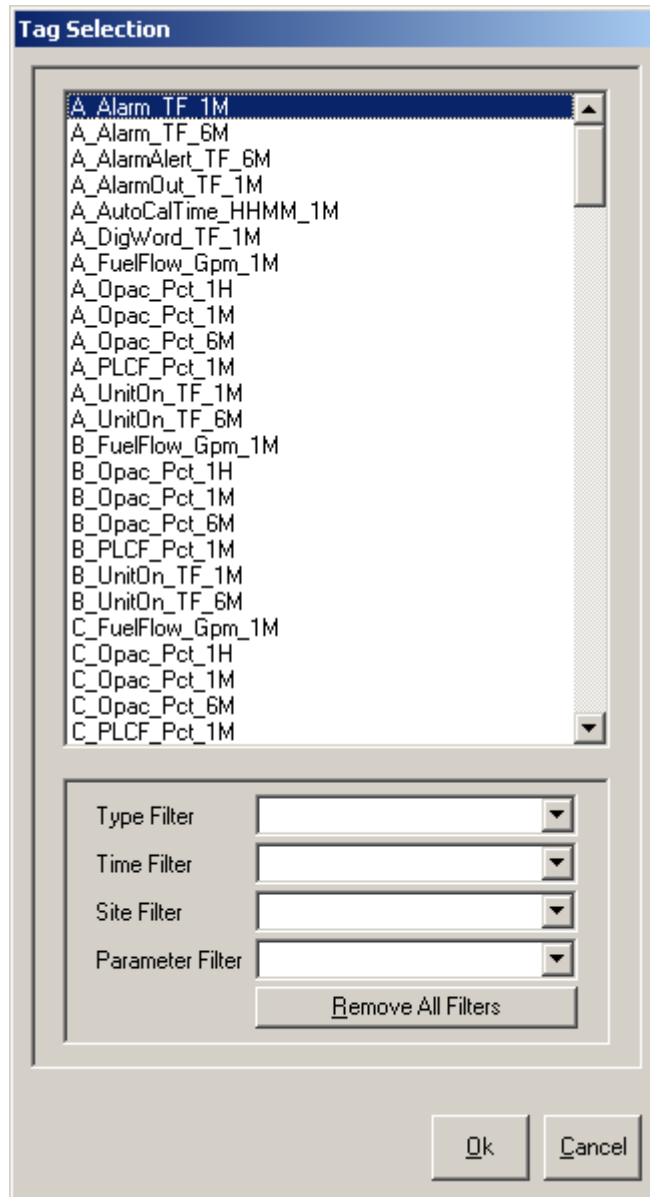
(Name)	VerticalGauge1
DataSource Properties	
ServerName	EGWSDLT12
DataSourceType	Database
DbFunction	0 - GetValue
FunctionOffset	0
TagName	<input checked="" type="checkbox"/>
ControllerName	
PLCTagName	

A close button (X) is located in the bottom right corner of the dialog.

The *DataSource* tab allows you to select a RegPerfect® server and select a data source type of Database versus PLC.



When you select PLC as your data source type, the *DbFunction*, *FunctionOffset* and *TagName* options are disabled. The configured PLCs for the selected server are listed in the *ControllerName* pull-down for you to make your selection. After you select a PLC, the configured PLC tags for the selected PLC are listed in the *PLCTagName* pull-down for you to make your selection. The tag you choose will be used to retrieve data to update the item in real time.

When you select Database as your data source type, the *ControllerName* and *PLCTagName* options are disabled and the *DbFunction*, *FunctionOffset* and *TagName* options are enabled. You can select a database function and optionally a time offset. When you click the button to the right of the *TagName* box, the following tag selection dialog appears:



Depending on the database function you select, the *Time Filter* option may or may not be disabled. You can directly select the tag from the tag list or you can filter the tag list first and then make your selection. The tag you choose will be used to retrieve sample data to update the item in real time.

Selecting the *Alarms* tab brings up the following property sheet:

Alarm Configuration	
FatalColor	 ✓
NonFatalColor	 ✓
HoldOnInvalid	False ▼
LowLimitValue	-999999999
HighLimitValue	999999999

4.4.7.3 Round Gauge and Rectangular Gauge

Click either button to create a gauge item on your display. The item will be placed in the upper left corner of your display with default size and you can drag it to the desired location and re-size if needed. This object is linked to either sample data in your RegPerfect® database or register/channel data in your GE/AB PLC via the tag you select on the property sheet. This means the values or calculated values from the sample table and the real-time values from the PLC will be automatically displayed by the gauge in real time.

The two gauge items are meter-like gauges. They display sample data at a single timestamp or a running average or summation of one minute samples for a tag in the RegPerfect® database. They display data directly read from a PLC as well. The data value is depicted as a needle position on the gauge. You can use these gauges to create panels that operators are familiar with and can read quickly and easily.

When you select either of the gauge items, its property sheet is presented. There are three tabs on the property sheet for the two gauge items: *Configuration*, *Scale* and *DataSource*. The *Configuration* tab and the *Scale* tab are slightly different for each gauge item and they allow you to change the look and scale of the gauge. The *DataSource* tab is the same for the two gauge items and it is the same as that for the *Vertical Gauge* item. The *DataSource* tab allows you to select the RegPerfect® server, data source type, tag name, etc. Refer to section 5.4.7.2 for more details.

4.4.7.4 Bar Gauges

You have two choices: *Horizontal Bar* and *Vertical Bar*.

Click either of the *Bar Gauge* buttons to create a *Bar Gauge* item on your display. The item will be placed in the upper left corner of your display and you can drag it to the desired location and re-size if needed. This object is linked to either sample data in your RegPerfect® database or register/channel data in your GE/AB PLC via the tag you select on the property sheet. This means the values or calculated values from the sample table and the real-time values from the PLC will be automatically displayed by the gauge in real time.

The *Bar Gauge* items are simple bar-like gauges. They display sample data at a single timestamp or a running average or summation of one minute samples for a tag in the RegPerfect® database. They display data directly read from a PLC as well. The data value is depicted as a bar level on the gauge. You can use the *bar Gauge* to create panels that operators can read quickly and easily.

When you select either of the *Bar Gauge* items, its property sheet is presented. There are four tabs on the property sheet for the *Bar Gauge* items: *Config*, *Scale*, *DataSource* and *Alarms*. The *Config* tab and the *Scale* tab are slightly different for each gauge item and they allow you to change the look and scale of the gauge. The *DataSource* tab and the *Alarms* tab are the same for the two gauge items and they are the same as those for the *Vertical Gauge* item. The *DataSource* tab allows you to select the RegPerfect® server, data source type, tag name, etc. Refer to section 5.4.7.2 for more details.

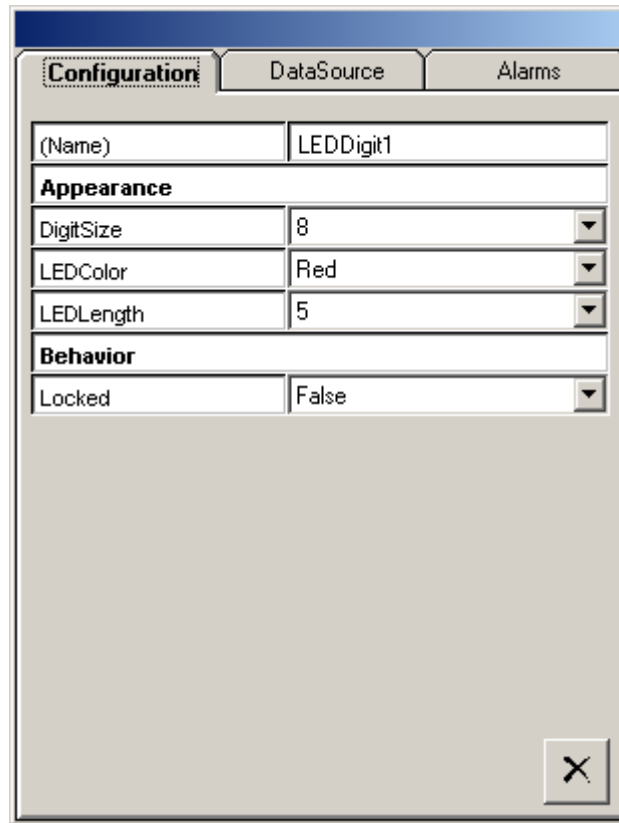
4.4.8 LEDs

4.4.8.1 LED Digit Box

Click this button to create a *LED Digit Box* item on your display. The item will be placed in the upper left corner of your display and you can drag it to the desired location. This object is linked to either sample data in your RegPerfect® database or register/channel data in your GE/AB PLC via the tag you select on the property sheet. The values in the sample table or the real-time values from the PLC will be automatically written to the LED box in real time.

The *LED Digit Box* item is a LED style text box that looks very similar to the physical LED displays seen in a control room. It displays data for a single tag in the RegPerfect® database. The data can be a sample at the polling time or at an offset time or a running average or sum for certain time periods. The item can be used to display data directly read from a PLC as well. You can place a *LED Digit Box* next to or on top of another graphics item such as an analyzer to show data in a meaningful way.

When you select a *LED Digit Box* item, the following property sheet is presented:



Configuration		DataSource	Alarms
(Name)	LEDDigit1		
Appearance			
DigitSize	8		
LEDColor	Red		
LEDLenght	5		
Behavior			
Locked	False		

The *Configuration* tab allows you to change the look and feel of the item. Note that ten digit sizes are available for you to choose.

Selecting the *DataSource* tab brings up the following property sheet:

The screenshot shows a dialog box with three tabs: Configuration, DataSource (selected), and Alarms. The DataSource tab contains the following fields:

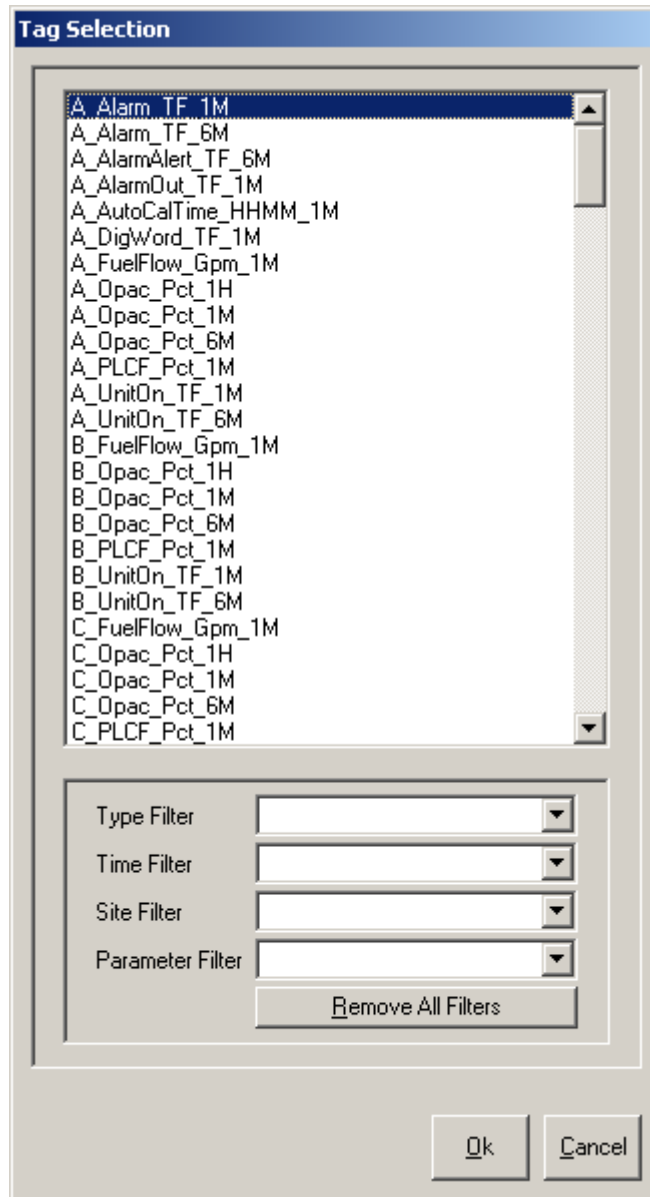
(Name)	LEDDigit1
DataSource Properties	
ServerName	EGWSDLT13
DataSourceType	Database
DbFunction	0 - GetValue
FunctionOffset	0
TagName	<input checked="" type="checkbox"/>
ControllerName	
PLCTagName	
DecimalPlaces	1

A close button (X) is located in the bottom right corner of the dialog box.

The *DataSource* tab allows you to select a RegPerfect® server and select a data source type of Database versus PLC.

When you select PLC as your data source type, the *DbFunction*, *FunctionOffset* and *TagName* options are disabled and the *ControllerName*, *PLCTagName* and *DecimalPlaces* options are enabled. The configured PLCs for the selected server are listed in the *ControllerName* pull-down for you to make your selection. After you select a PLC, the configured PLC tags for the selected PLC are listed in the *PLCTagName* pull-down for you to make your selection. The tag you choose will be used to retrieve data to update the item in real time. You can select a decimal precision for a PLC tag to be used for displaying the value.

When you select Database as your data source type, the *ControllerName*, *PLCTagName* and *DecimalPlaces* options are disabled and the *DbFunction*, *FunctionOffset* and *TagName* options are enabled. You can select a database function and optionally a time offset. When you click the button to the right of the *TagName* box, the following tag selection dialog appears:



Depending on the database function you select, the *Time Filter* option may or may not be disabled. You can directly select the tag from the tag list or you can filter the tag list first and then make your selection. The tag you choose will be used to retrieve sample data to update the item in real time. The decimal precision configured in the database will be used for displaying the value.

Selecting the *Alarms* tab brings up the following property sheet:

The screenshot shows a dialog box with three tabs: Configuration, DataSource, and Alarms. The Alarms tab is selected. Below the tabs is a section titled "Alarm Configuration" containing a table with three rows. The first row has "HoldOnInvalid" and "False". The second row has "LowLimitValue" and "-999999999". The third row has "HighLimitValue" and "999999999". A close button (X) is located in the bottom right corner of the dialog box.

Alarm Configuration	
HoldOnInvalid	False
LowLimitValue	-999999999
HighLimitValue	999999999

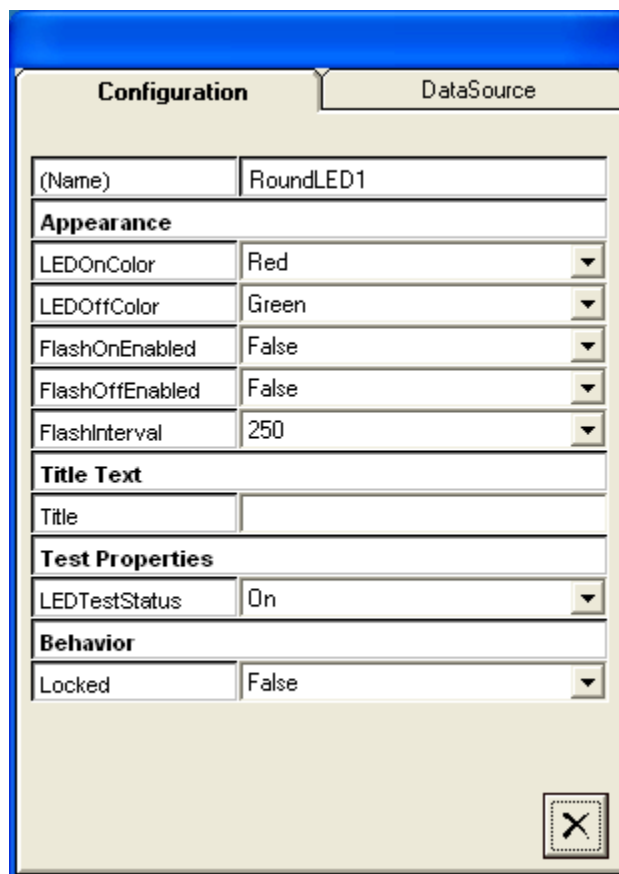
4.4.8.2 Round LED and Rectangular LED

The *Round LED* and *Rectangular LED* provide the same functionality and only differ in appearance. Click either button to create a LED item on your display. The item will be placed in the upper left corner of your display with default size and you can drag it to the desired location and re-size if needed. This object is linked to either sample data in your RegPerfect® database or register/channel data in your GE/AB PLC or DataLogger via the tag you select on the property sheet. This means the values from the sample table or the real-time values from the PLC or DataLogger will automatically update the LED item in real time.

The LED item is a graphic that looks like an alarm light in a control room. It turns on and off with or without flashes based on critical conditions that you can define. You can use the LED items to create displays that visually alert operators that critical data events, such as invalid data, high alarm levels, or malfunctioning equipment, are taking place as they occur in real time.

Tip: Use an LED when you want a read-only indicator for a discrete tag. If you want to be able to change the discrete value, use a switch.

The property sheet is the same for the two LED items. When you select a LED item, the following property sheet is presented:



The screenshot shows a property sheet window with two tabs: "Configuration" (selected) and "DataSource". The "Configuration" tab contains the following sections and fields:

Configuration	
(Name)	RoundLED1
Appearance	
LEDOncolor	Red
LEDOffColor	Green
FlashOnEnabled	False
FlashOffEnabled	False
FlashInterval	250
Title Text	
Title	
Test Properties	
LEDTestStatus	On
Behavior	
Locked	False

A close button (X icon) is located in the bottom right corner of the window.

The *Configuration* tab allows you to change the look and feel of the item.

Selecting the *DataSource* tab brings up the following property sheet:

(Name)	RoundLED1
DataSource Properties	
ServerName	EGWSDLT13
DataSourceType	Database
DbFunction	0 - GetValue
FunctionOffset	0
FlagName	None
TagName	<input checked="" type="checkbox"/>
ControllerName	
RealtimeTagName	

The *DataSource* tab allows you to select a RegPerfect® server and select a data source type of Database, DataLogger or PLC. When you select Database as your data source type, the *ControllerName* and *RealtimeTagName* options are disabled and the *DbFunction*, *FunctionOffset* and *TagName* options are enabled. You can select a database function and optionally a time offset. You select a tag on the tag selection dialog brought up by clicking the button to the right of the *TagName* box.

When you select DataLogger or PLC as your data source type, the *DbFunction*, *FunctionOffset* and *TagName* options are disabled. The configured DataLoggers or PLCs for the selected server are listed in the *ControllerName* pull-down for you to make your selection. After you select one, its configured tags are listed in the *RealtimeTagName* pull-down. The tag you choose will be used to retrieve data to update the LED item in real time.

Depending on the data source type you select, you have a single choice of *GetValue* for *DbFunction* or two choices of *GetValue* and *GetFlagValue* for *DbFunction*. *GetFlagValue* is only available for retrieving sample data from your RegPerfect® database. For *DbFunction* of *GetValue*, non-zero tag value turns the LED on and zero turns the LED off. For *DbFunction* of *GetFlagValue*, sample status flag of True turns the LED on and False turns the LED off.

4.4.9 Trends

4.4.9.1 Database Trend

Click this button to create a *Database Trend* item on your display. The item will be placed in the upper left corner of your display and you may drag it to the desired location and size. This object is linked to sample data in your RegPerfect® database via the tag(s) you select. The values in the sample table will be automatically displayed in real-time.

The *Database Trend* item is a two-dimension graph that shows the sample data change with time or tag for up to 6 tags in the RegPerfect® database. Line plots are used for trends of tags (Y) versus time (X) and scatter plots are used for tags (Y) versus tag (X). Options of vertically stacked and overlapped y-axes and single y-axis are available. The embedded trend graph on the SpotLight display is always in real-time mode. Every minute when database polling occurs, the graph updates itself by displaying the sample data of the selected tags for the configured time range up to poll time.

Double-clicking the *Database Trend* item or clicking the *Open Full Size* window icon at the upper right corner of the *Database Trend* item in *Display Mode* opens the graph in a separate, full size window. From this full sized window you may:

- switch to historical mode and view/analyze historical data
- zoom in on sections of the graphs
- view/edit graph configuration settings
- print

The embedded graph on the SpotLight display supports many of the same features found on the full size graph – these are detailed in [Trend User Interface](#).

There are two forms involved in configuring trend: the first is primarily for configuring the embedded trend item itself, and the second – the *Trend Configuration* form – is primarily for configuring the graph.

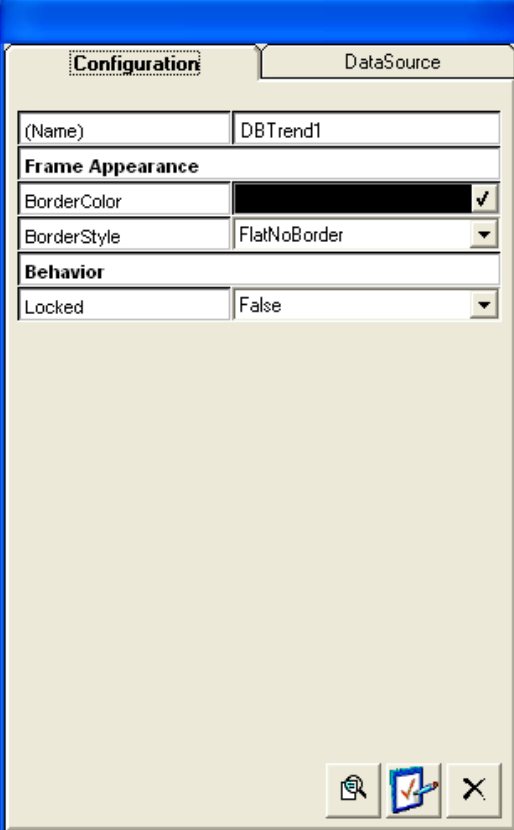
Configuration/DataSource

When you drag a *Database Trend* item onto the display, its configuration form opens.

BorderColor, BorderStyle: select the desired colors

Click the middle [Configure Trend] button at the bottom of this form to open the Trend Configuration form (see next page).

Click the leftmost [Preview Trend] button to preview your graph based on your settings.



The screenshot shows the 'Configuration' tab of the 'Database Trend' configuration form. The form has a blue header bar with the title 'Configuration' and a sub-tab 'DataSource'. Below the header, there are several sections:

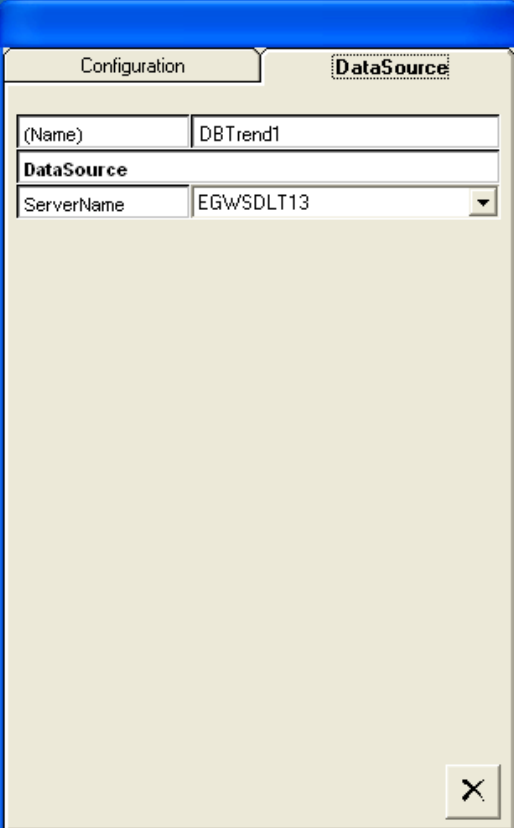
- (Name)**: A text field containing 'DBTrend1'.
- Frame Appearance**: A section containing:
 - BorderColor**: A color selection field with a black color swatch and a checkmark.
 - BorderStyle**: A dropdown menu set to 'FlatNoBorder'.
- Behavior**: A section containing:
 - Locked**: A dropdown menu set to 'False'.

At the bottom right of the form, there are three icons: a magnifying glass (Preview Trend), a blue square with a white checkmark (Configure Trend), and a close button (X).

Click the *DataSource* tab to complete the configuration for your *Database Trend* item.

ServerName: select the desired RegPerfect server

Tip: If you have more than one RegPerfect server, you may show data trends from both servers on a single Spotlight display. Add two Database Trend items to the display, configure each with a different ServerName, then change the Main Title and/or Subtitle of each graph to denote which server's data trends it shows.



The screenshot shows the 'DataSource' tab of the 'Database Trend' configuration form. The form has a blue header bar with the title 'DataSource' and a sub-tab 'Configuration'. Below the header, there are several sections:

- (Name)**: A text field containing 'DBTrend1'.
- DataSource**: A section containing:
 - ServerName**: A dropdown menu set to 'EGWSDLT13'.

At the bottom right of the form, there is a close button (X).

To configure the graph, click the middle button at the bottom of the *Configuration* tab to open the *Trend Configuration* form.

Trend Configuration Form

Tip: you may open this form in design mode or display mode from the separate Trend window opened by double-clicking the embedded Database Trend item on the SpotLight display or clicking the Open Full Size window icon at the upper right corner of the Database Trend item.

The Trend Configuration form is shown below.

Trend Configuration

General Properties

Main Title/Font	RegPerfect	Times New Roman	✓	Label/Legend Font	Arial	✓	Graph Tick-marks	[Color]	✓	Desk Foreground	[Color]	✓	Font Size	<input type="radio"/> Small	<input type="radio"/> Small
Subtitle/Font	Trend	Times New Roman	✓	Graph Bkgrd for Printing	[Color]	✓	Graph Background	[Color]	✓	Desk Background	[Color]	✓	<input type="radio"/> Large	<input checked="" type="radio"/> Medium	<input type="radio"/> Medium
													<input type="radio"/> Large	<input checked="" type="radio"/> Large	<input type="radio"/> Large

Tags and Plot Styles

Tag Name	Plot Color	Line Style	Point Symbol	Auto or Min/Max Scale	Low/High Limit Value	Hide Axis
	✓	Thin Solid Line	Solid Circle	✓	0 0	<input type="checkbox"/>
	✓	Thin Solid Line	Solid Circle	✓	0 0	<input type="checkbox"/>
	✓	Thin Solid Line	Solid Circle	✓	0 0	<input type="checkbox"/>
	✓	Thin Solid Line	Solid Circle	✓	0 0	<input type="checkbox"/>
	✓	Thin Solid Line	Solid Circle	✓	0 0	<input type="checkbox"/>
	✓	Thin Solid Line	Solid Circle	✓	0 0	<input type="checkbox"/>

Trending Style

Y- Axis

Vertically stacked y-axes

Limit Line

Plot Color Other Color ✓

Line Style

Symbol

Overlapped y-axes

Limit Symbol only

Invalid Data

Hide

Show

Plot Color Other Color ✓

Line Style

Time Span

Real-time

Range Hour(s)

From

To

X-Axis

Time

Tag (scatter plot)

Auto Scale Min/Max

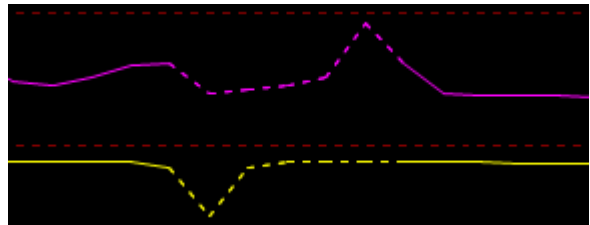
General Properties: set the general properties as desired to control the overall look of the trend graph.

Tags and Plot Styles: select the y-axis tags and plot styles. You may only select tags of the same sample interval. For line plots of tags versus time, the data point symbol is only shown if you select *Viewing Style -> Monochrome + Symbol* from the context menu. For each y axis, select the automatic scale based on sample value range or manual scale by providing minimum and maximum scale values. Optionally, you may configure low and high limits for each tag. Leaving the limit value blank disables limit exceeding indication.

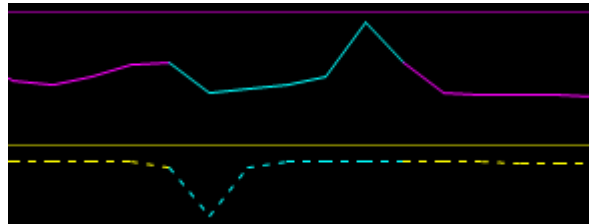
In version 5.2011.0.725, support was added for trend graph of single y-axis. This is especially useful for plotting multiple tags of the same parameter type. Checking/unchecking any *Hide Axis* check box of the 2nd to 6th tag hides/shows their axes together and enables/disables single y-axis plot. When single y-axis is chosen, either limit line or limit symbol can be used to indicate that a tag value is in excess of a limit.

Trending Style: select vertically stacked or overlapped y-axes and whether to show or hide invalid data. You may choose to use limit lines or limit symbols for stacked y-axes graph (only limit symbols are available for overlapped y-axes graphs). You may select to draw the limit line in a different color and/or style than the data plot line. The limit symbol is always drawn in the same color as the plot color of the tag(s).

If you choose to show invalid data using the tag plot color, you won't be able to distinguish the invalid data unless you also choose a different line style (dashed in the example at right).

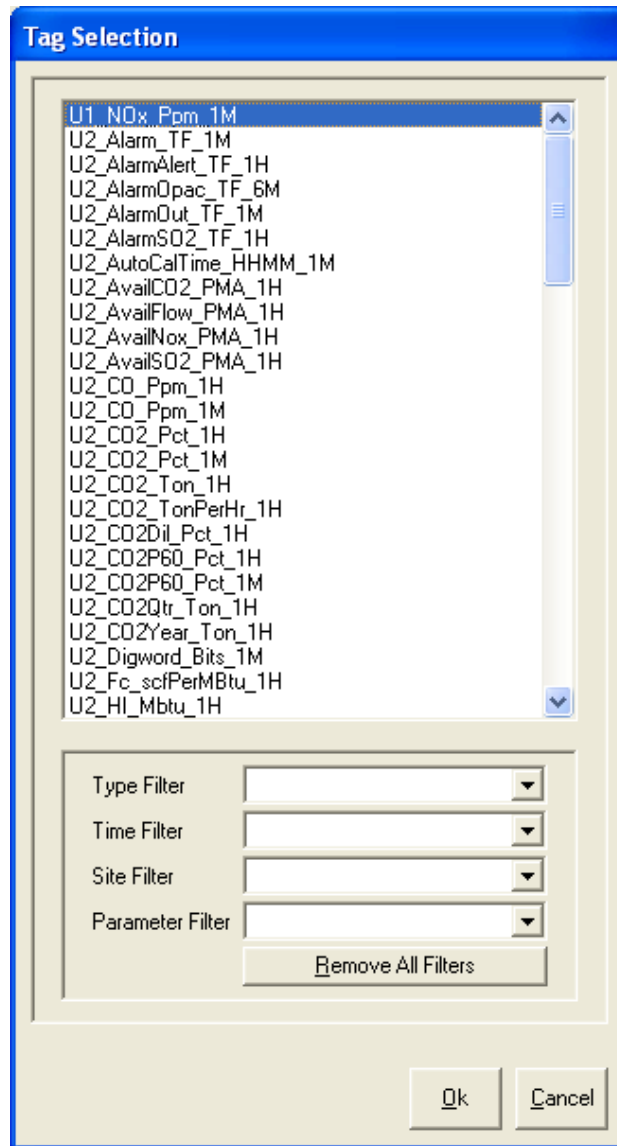


Alternatively, if you select a different color for invalid data, the invalid line style is not configurable and the same line style will be used to plot both valid and invalid data.



Time Span: select whether to plot versus time or tag (scatter plot). The *Real-time* check box and the *From/To* edit controls are not shown in design mode. The graph always displays the configured hours of data up to poll time in real-time mode. In display mode, you may uncheck the *Real-time* check box and select a time range to view historical data trend. For x-axis of tag, the same as y-axis, you may select to use automatic scale or manual scale.

When selecting tags by clicking the check mark to the right of the *Tag Name* fields, the Tag Selection dialog is opened:



You can directly select the tag from the list or you can filter the tag list first and then make your selection. To select a tag, double-click the tag name or select the tag by clicking the tag name and then click the [Ok] button. The tag(s) you choose will be used to retrieve sample data to draw the trend graph in real-time.

4.4.9.2 Real Time Trend

Click this button to create a *Real Time Trend* item on your display. The item will be placed in the upper left corner of your display and you can drag it to the desired location and size. This object is linked to register/channel data in your GE/AB PLC via the tag you select on the property sheet. The real-time values from the PLC will be automatically displayed in real time.

The *Real Time Trend* item is a two-dimension graph that shows the real-time data change for a single PLC tag. It differs from the *Minute Trend* item described in the section 5.4.9.1 in that the *Minute Trend* displays data read from the RegPerfect® database while the *Real Time Trend* displays data read directly from a PLC register. Both trend graphs update automatically in real time, but the *Real Time Trend* graph updates at the configured PLC polling intervals instead of every minute as the *Minute Trend* does. The *Real Time Trend* item allows you to view the real-time data changing trend inside the PLC.

When you select a *Real Time Trend* item, the following property sheet is presented:

The screenshot shows a property sheet for a Real Time Trend item, with the 'Frame' tab selected. The sheet is divided into three sections: Frame, Graph, and DataSource. The 'Frame' section contains the following properties:

Frame	
(Name)	RealTrend1
Frame Appearance	
BackColor	<input checked="" type="checkbox"/>
BorderColor	<input checked="" type="checkbox"/>
BorderStyle	FlatNoBorder
TopOffset	24
BottomOffset	40
LeftOffset	30
RightOffset	20
Frame Caption	
Caption	RealTrend1
CaptionFont	Arial <input checked="" type="checkbox"/>
CaptionAlignment	aCenter
CaptionColor	<input checked="" type="checkbox"/>
Behavior	
Locked	False

At the bottom right of the property sheet, there are three buttons: a document icon, a checkmark icon, and a close icon (X).

The *Frame* tab allows you to change the look and feel of the graph.

Selecting the *Graph* tab brings up the following property sheet:

The image shows a dialog box titled "Graph" with three tabs: "Frame", "Graph", and "DataSource". The "Graph" tab is selected. The dialog contains a table of properties for a graph named "RealTrend1".

Graph Properties	
(Name)	RealTrend1
GraphColor	<input checked="" type="checkbox"/>
Plot Line Properties	
PlotLineColor	<input checked="" type="checkbox"/>
PlotLineWidth	1
x Scale Properties	
x.AxisLineColor	<input checked="" type="checkbox"/>
x.AxisFont	Arial <input checked="" type="checkbox"/>
x.AxisFontColor	<input checked="" type="checkbox"/>
x.AxisLabel	True
y Scale Properties	
MinScaleValue	0
MaxScaleValue	100
DecimalPlaces	0
y.AxisLineColor	<input checked="" type="checkbox"/>
y.AxisFont	Arial <input checked="" type="checkbox"/>
y.AxisFontColor	<input checked="" type="checkbox"/>

At the bottom of the dialog are three buttons: a document icon, a checkmark, and a close (X) button.

The *Graph* tab allows you to change how the graph will be drawn. You may choose to show or hide the x-axis time labels, which indicate a 10-minute scale.

Selecting the *Database* tab brings up the following property sheet:

(Name)	RealTrend1
DataSource Properties	
ServerName	EGWSDLT12
PLCName	
PLCTagName	
LimitLineColor	
LowLimitValue	-9999999
HighLimitValue	9999999

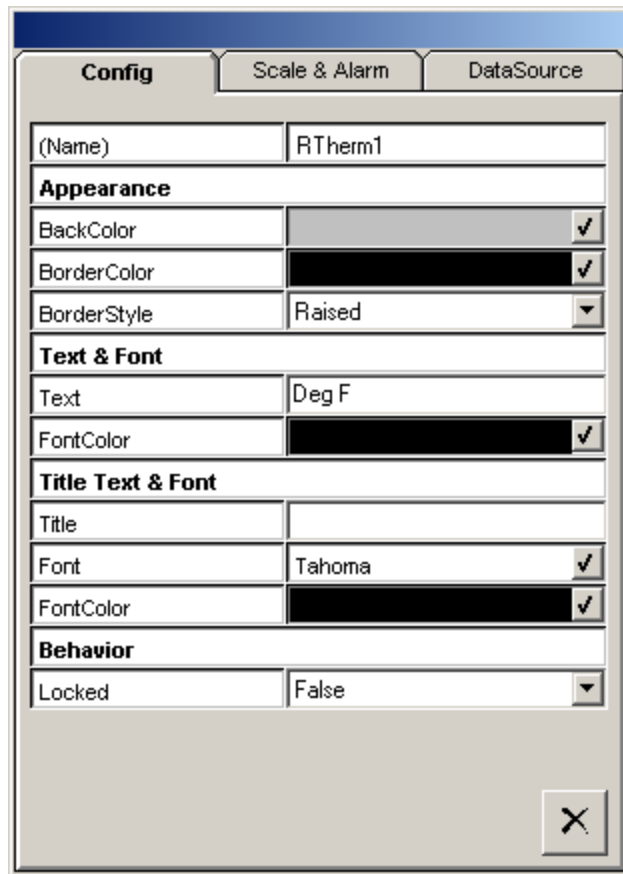
The *Database* tab allows you to select a RegPerfect® server, a configured PLC and a tag. The configured PLCs for the selected server are listed in the *ControllerName* pull-down for you to make your selection. After you select a PLC, the configured PLC tags for the selected PLC are listed in the *PLCTagName* pull-down for you to make your selection. The tag you choose will be used to retrieve data to update the item in real time.

4.4.10 Thermometer

Click this button to create a *Thermometer* item on your display. The item will be placed in the upper left corner of your display with default size and you can drag it to the desired location and re-size if needed. This object is linked to either sample data in your RegPerfect® database or register/channel data in your GE/AB PLC via the tag you select on the property sheet. The values in the sample table or the real-time values from the PLC will be automatically used to update the item in real time.

The *Thermometer* item is a thermometer that looks very similar to the physical thermometer. It can be used to display temperature at a single timestamp or a running average or sum for a tag in the RegPerfect® database. It can be used to display temperature directly read from a PLC as well. The red temperature bar flashes when the monitored temperature exceeds an alarm point that you set on the property sheet. You can use the *Thermometer* item to create displays that visually alert operators to critical temperature conditions as they occur in real time.

When you select a *Thermometer* item, the following property sheet is presented:



The image shows a property sheet window for a Thermometer item. The window has three tabs: 'Config', 'Scale & Alarm', and 'DataSource'. The 'Config' tab is selected. The property sheet is organized into several sections:

- (Name)**: RTherm1
- Appearance**
 - BackColor: [Color swatch] ✓
 - BorderColor: [Color swatch] ✓
 - BorderStyle: Raised (dropdown)
- Text & Font**
 - Text: Deg F
 - FontColor: [Color swatch] ✓
- Title Text & Font**
 - Title: [Empty field]
 - Font: Tahoma (dropdown) ✓
 - FontColor: [Color swatch] ✓
- Behavior**
 - Locked: False (dropdown)

A close button (X) is located in the bottom right corner of the window.

The *Config* tab allows you to change the look and feel of the item.

Selecting the *Scale & Alarm* tab brings up the following property sheet:

Config		Scale & Alarm		DataSource	
(Name)	RTherm1				
Scale Properties					
MinimumTemperature	0				
MaximumTemperature	100				
Alarm					
AlarmPoint	100				
Test Value					
TestValue	0				

You may set an alarm point on this tab. When the monitored temperature exceeds this point, the red temperature bar will flash.

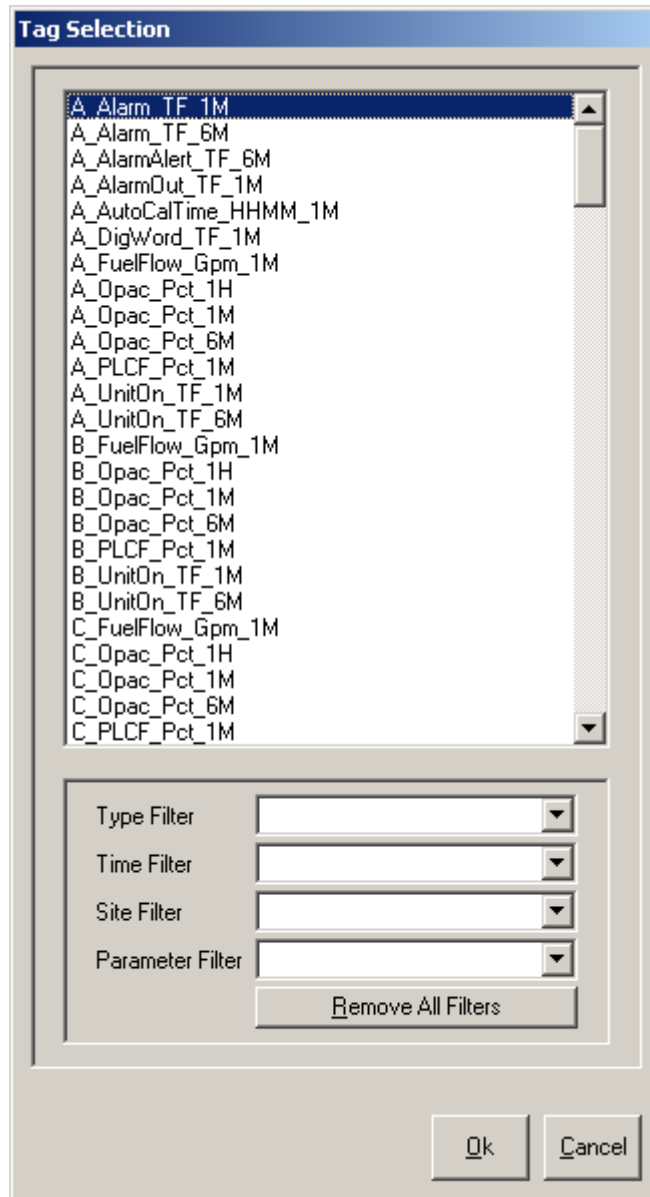
Selecting the *DataSource* tab brings up the following property sheet:

(Name)	RTherm1
DataSource Properties	
ServerName	EGWSDLT12
DataSourceType	Database
DbFunction	0 - GetValue
FunctionOffset	0
TagName	<input checked="" type="checkbox"/>
ControllerName	
PLCTagName	

The *DataSource* tab allows you to select a RegPerfect® server and select a data source type of Database versus PLC.

When you select PLC as your data source type, the *DbFunction*, *FunctionOffset* and *TagName* options are disabled. The configured PLCs for the selected server are listed in the *ControllerName* pull-down for you to make your selection. After you select a PLC, the configured PLC tags for the selected PLC are listed in the *PLCTagName* pull-down for you to make your selection. The tag you choose will be used to retrieve data to update the item in real time.

When you select Database as your data source type, the *ControllerName* and *PLCTagName* options are disabled and the *DbFunction*, *FunctionOffset* and *TagName* options are enabled. You can select a database function and optionally a time offset. When you click the button to the right of the *TagName* box, the following tag selection dialog appears:



Depending on the database function you select, the *Time Filter* option may or may not be disabled. You can directly select the tag from the list or you can filter the tag list first and then make your selection. The tag you choose will be used to retrieve sample data to update the item in real time.

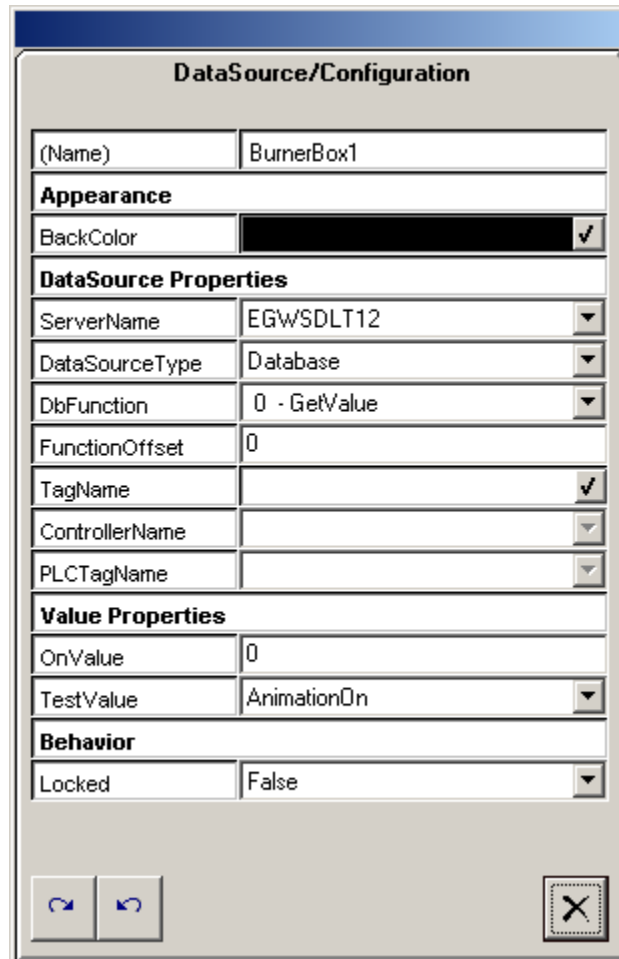
4.4.11 Animations

4.4.11.1 Burner

Click this button to create a *Burner* item on your display. The item will be placed in the upper left corner of your display with default size and you can drag it to the desired location and re-size if needed. This object is linked to either sample data in your RegPerfect® database or register/channel data in your GE/AB PLC via the tag you select on the property sheet. The values in the sample table or the real-time values from the PLC will be automatically used to update the item in real time.

The *Burner* item is a graphic representation of a flame that will turn on and off based on the value of a tag in the RegPerfect® database or a PLC tag. You can use a *Burner* item to indicate if a unit is operating or a specific fuel is being combusted.

When you select a *Burner* item, the following property sheet is presented:



The screenshot shows a property sheet titled "DataSource/Configuration" for a "Burner" item. The sheet is organized into several sections:

- (Name)**: BurnerBox1
- Appearance**: BackColor (black, checked)
- DataSource Properties**:
 - ServerName: EGWSDLT12
 - DataSourceType: Database
 - DbFunction: 0 - GetValue
 - FunctionOffset: 0
 - TagName: (checked)
 - ControllerName: (disabled)
 - PLCTagName: (disabled)
- Value Properties**:
 - OnValue: 0
 - TestValue: AnimationOn
- Behavior**: Locked: False

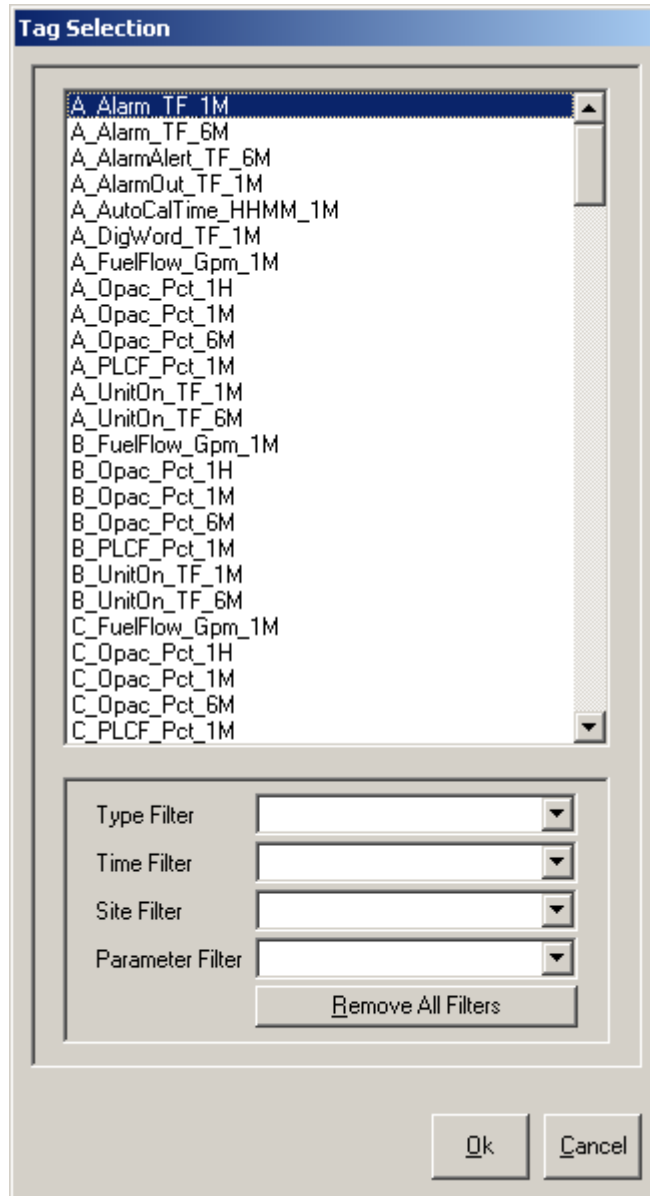
At the bottom left, there are two "Rotate" buttons (curved arrows) and at the bottom right, there is a close button (X).

Use the two *Rotate* buttons at the lower left corner of the property sheet to rotate the burner to the desired orientation.

You can select a data source type of Database or PLC. When you select PLC as your data source type, the *DbFunction*, *FunctionOffset* and *TagName* options are disabled. The configured PLCs for the selected server are listed in the *ControllerName* pull-down for you to make your selection. After you select a PLC,

the configured PLC tags for the selected PLC are listed in the *PLCTagName* pull-down for you to make your selection. The tag you choose will be used to retrieve data to update the item in real time.

When you select Database as your data source type, the *ControllerName* and *PLCTagName* options are disabled and the *DbFunction*, *FunctionOffset* and *TagName* options are enabled. You can select a database function and optionally a time offset. When you click the button to the right of the *TagName* box, the following tag selection dialog appears:



Depending on the database function you select, the *Time Filter* option may or may not be disabled. You can directly select the tag from the list or you can filter the tag list first and then make your selection. The tag you choose will be used to retrieve sample data to update the item in real time.

4.4.11.2 Fan

Click this button to create a *Fan* item on your display. The item will be placed in the upper left corner of your display with default size and you can drag it to the desired location and re-size if needed. This object is linked to either sample data in your RegPerfect® database or register/channel data in your GE/AB PLC via the tag you select on the property sheet. The values in the sample table or the real-time values from the PLC will be automatically used to update the item in real time.

The *Fan* item is a graphic representation of a fan that will turn on and off based on the value of a tag in the RegPerfect® database or a PLC tag. You can use a *Fan* item to indicate if a fan is running or a ventilation system is in use.

Tip: When resizing the Fan or Smoke item, horizontal grey lines may appear sometimes depending on the size. Resizing again by a slight amount makes the lines disappear.

The property sheet of the *Fan* item is the same as that for the *Burner* item except that there are no *Rotate* buttons. Refer to section 5.4.11.1 for configuration details.

4.4.11.3 Smoke

Click this button to create a *Smoke* item on your display. The item will be placed in the upper left corner of your display with default size and you can drag it to the desired location and re-size if needed. This object is linked to either sample data in your RegPerfect® database or register/channel data in your GE/AB PLC via the tag you select on the property sheet. The values in the sample table or the real-time values from the PLC will be automatically used to update the item in real time.

The *Smoke* item is a graphic representation of a cloud of smoke that will turn on and off based on the value of a tag in the RegPerfect® database or a PLC tag. You can use a *Smoke* item to indicate if a unit is operating or a specific fuel is being combusted.

The property sheet of the *Smoke* item is the same as that for the *Burner* item except that there are no *Rotate* buttons. Refer to section 5.4.11.1 for configuration details.

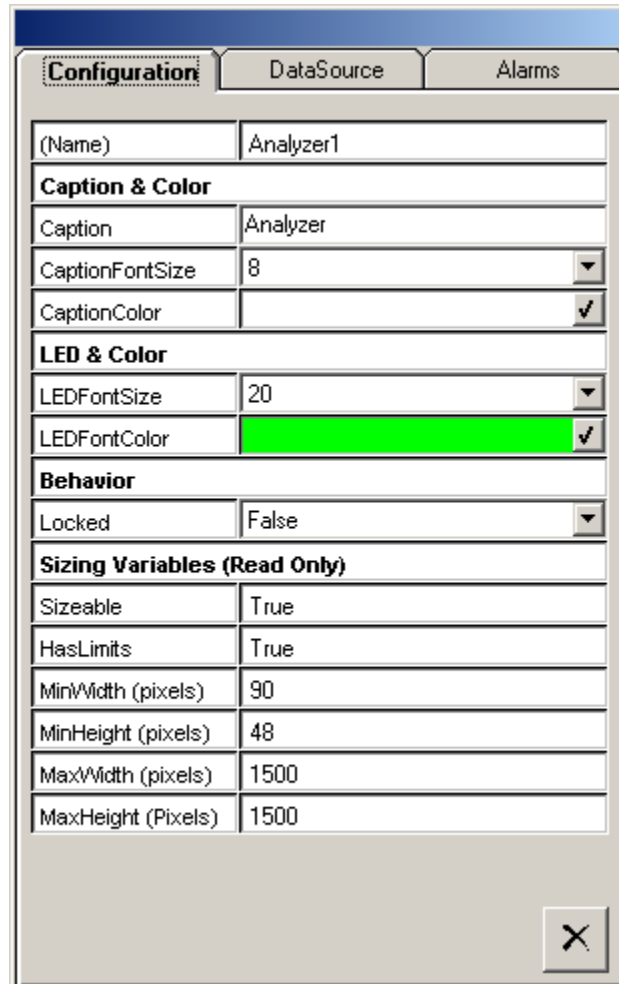
4.4.12 Graphic Displays

4.4.12.1 Analyzer

Click this button to create an *Analyzer* item on your display. The item will be placed in the upper left corner of your display with default size and you can drag it to the desired location and re-size if needed. This object is linked to either sample data in your RegPerfect® database or register/channel data in your GE/AB PLC via the tag you select on the property sheet. The values in the sample table or the real-time values from the PLC will be automatically written to the item in real time.

The *Analyzer* item is a LED style box that displays data from the Sample table for a single tag in the RegPerfect® database. The item can be used to display data directly read from a PLC as well. You can use *Analyzer* items to create rows or columns of data or you can place it next to or on top of another graphics item to show data in a meaningful way.

When you select an *Analyzer* item, the following property sheet is presented:



The image shows a property sheet for an Analyzer item, divided into three tabs: Configuration, DataSource, and Alarms. The Configuration tab is active and contains the following settings:

Configuration	
(Name)	Analyzer1
Caption & Color	
Caption	Analyzer
CaptionFontSize	8
CaptionColor	<input checked="" type="checkbox"/>
LED & Color	
LEDFontSize	20
LEDFontColor	<input checked="" type="checkbox"/>
Behavior	
Locked	False
Sizing Variables (Read Only)	
Sizeable	True
HasLimits	True
MinWidth (pixels)	90
MinHeight (pixels)	48
MaxWidth (pixels)	1500
MaxHeight (Pixels)	1500

A close button (X) is located in the bottom right corner of the property sheet.

The *Configuration* tab allows you to change the look and feel of the item.

Selecting the *DataSource* tab brings up the following property sheet:

The screenshot shows a dialog box with three tabs: Configuration, DataSource (selected), and Alarms. The DataSource tab contains the following fields:

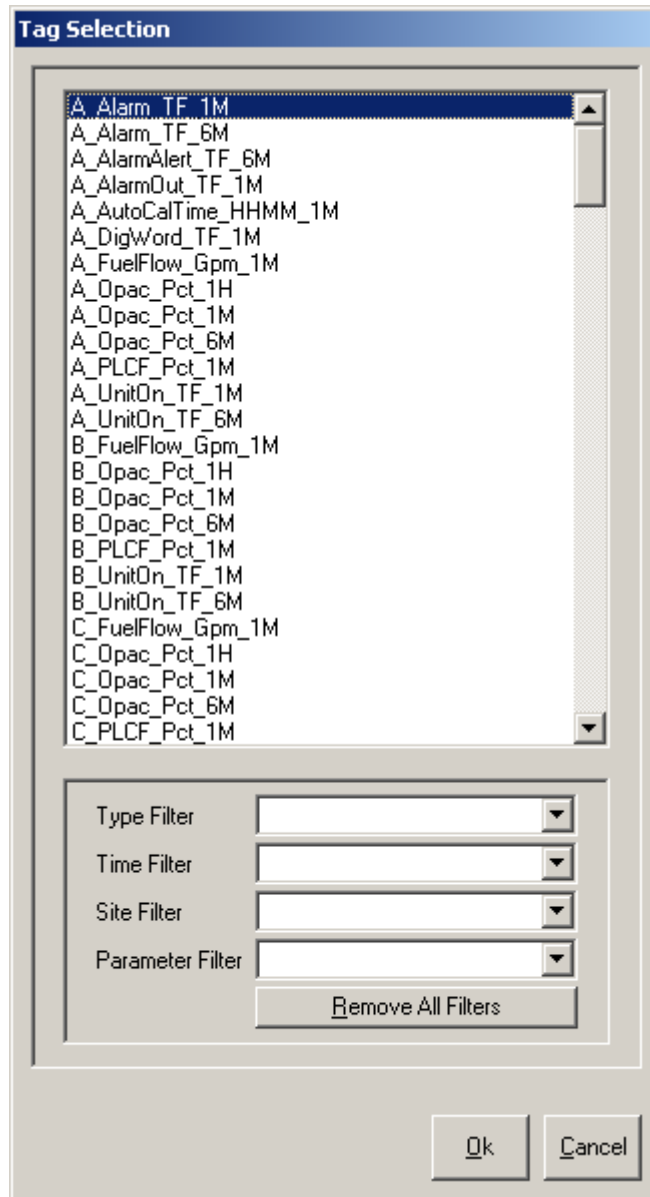
(Name)	Analyzer1
DataSource Properties	
ServerName	EGWSDLT13
DataSourceType	Database
DbFunction	0 - GetValue
FunctionOffset	0
TagName	
ControllerName	
PLCTagName	
DecimalPlaces	1

A close button (X) is located in the bottom right corner of the dialog box.

The *DataSource* tab allows you to select a RegPerfect® server and select a data source type of Database versus PLC.

When you select PLC as your data source type, the *DbFunction*, *FunctionOffset* and *TagName* options are disabled and the *ControllerName*, *PLCTagName* and *DecimalPlaces* options are enabled. The configured PLCs for the selected server are listed in the *ControllerName* pull-down for you to make your selection. After you select a PLC, the configured PLC tags for the selected PLC are listed in the *PLCTagName* pull-down for you to make your selection. The tag you choose will be used to retrieve data to update the item in real time. You can select a decimal precision for a PLC tag to be used for displaying the value.

When you select Database as your data source type, the *ControllerName*, *PLCTagName* and *DecimalPlaces* options are disabled and the *DbFunction*, *FunctionOffset* and *TagName* options are enabled. You can select a database function and optionally a time offset. When you click the button to the right of the *TagName* box, the following tag selection dialog appears:





Depending on the database function you select, the *Time Filter* option may or may not be disabled. You can directly select the tag from the list or you can filter the tag list first and then make your selection. The tag you choose will be used to retrieve sample data to update the item in real time. The decimal precision configured in the database will be used for displaying the value.

Selecting the *Alarms* tab brings up the following property sheet:



The screenshot shows a software window with three tabs: "Configuration", "DataSource", and "Alarms". The "Alarms" tab is selected and active. Below the tabs is a section titled "Alarm Configuration" containing a table of settings. The table has two columns: the property name and its value. The "FatalColor" property is set to a red color swatch with a checkmark in a small box to its right. The "NonFatalColor" property is set to a yellow-green color swatch with a checkmark in a small box to its right. The "HoldOnInvalid" property is set to "False" with a dropdown arrow to its right. The "LowLimitValue" property is set to "0". The "HighLimitValue" property is set to "999999". A close button (an 'X' in a square) is located in the bottom right corner of the window.

Alarm Configuration	
FatalColor	 ✓
NonFatalColor	 ✓
HoldOnInvalid	False ▾
LowLimitValue	0
HighLimitValue	999999

4.4.12.2 ML9800

Click this button to create a *ML9800* item on your display. The item will be placed in the upper left corner of your display with default size and you can drag it to the desired location and re-size if needed. This object is linked to either sample data in your RegPerfect® database or register/channel data in your GE/AB PLC via the tag you select on the property sheet. This means the values in the sample table or from the PLC will be automatically written to the item in real time.

The *ML9800* item is a graphic representation of a ML9800 analyzer. You can use *ML9800* items to create rows or columns of data or you can place it next to or on top of another graphics item to show data in a meaningful way.

When you select a *ML9800* item, the following property sheet is presented:

The image shows a screenshot of a software property sheet for an ML9800 item. The sheet has three tabs: Configuration, DataSource, and Alarms. The Configuration tab is active and contains the following fields:

Configuration	
(Name)	ML98001
Captions & Colors	
TopCaption	ML9800
TopCaptionSize	8
TopCaptionColor	<input checked="" type="checkbox"/>
BottomCaption	Teledyne Monitor Labs
BottomCaptionSize	10
BottomCaptionColor	<input checked="" type="checkbox"/>
LED & Color	
LEDFontSize	20
LEDFontColor	<input checked="" type="checkbox"/>
Behavior	
Locked	False
Sizing Variables (Read Only)	
Sizeable	True
HasLimits	True
MinWidth (pixels)	90
MinHeight (pixels)	48
MaxWidth (pixels)	1500
MaxHeight (Pixels)	1500

At the bottom right of the property sheet, there is a close button (X icon).

The *Configuration* tab allows you to change the look and feel of the item.

Selecting the *DataSource* tab brings up the following property sheet:



The screenshot shows a dialog box with three tabs: Configuration, DataSource (selected), and Alarms. The DataSource tab contains a table of properties for a data source named ML98001. The properties include ServerName (EGWSDLT13), DataSourceType (Database), DbFunction (0 - GetValue), FunctionOffset (0), TagName (checked), ControllerName, PLCTagName, and DecimalPlaces (1). A close button (X) is located in the bottom right corner.

DataSource Properties	
(Name)	ML98001
ServerName	EGWSDLT13
DataSourceType	Database
DbFunction	0 - GetValue
FunctionOffset	0
TagName	<input checked="" type="checkbox"/>
ControllerName	
PLCTagName	
DecimalPlaces	1

The *DataSource* tab is the same as that for the *Analyzer* item. It allows you to select the RegPerfect® server, data source type, tag name, etc. Refer to section 5.4.12.1 for more details.

Selecting the *Alarms* tab brings up the following property sheet:

The screenshot shows a software window titled "Alarms" with three tabs: "Configuration", "DataSource", and "Alarms". The "Alarms" tab is selected and displays an "Alarm Configuration" section with the following settings:

Alarm Configuration	
FatalColor	 ✓
NonFatalColor	 ✓
HoldOnInvalid	False ▾
LowLimitValue	0
HighLimitValue	9999

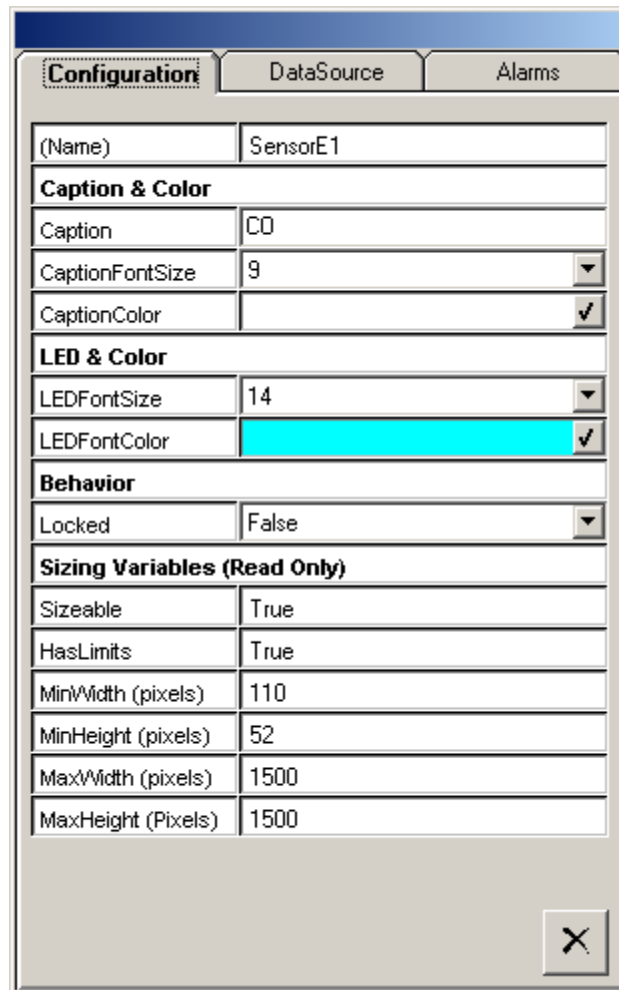
A close button (X) is located in the bottom right corner of the window.

4.4.12.3 *SensorE*

Click this button to create a *SensorE* item on your display. The item will be placed in the upper left corner of your display with default size and you can drag it to the desired location and size. This object is linked to either sample data in your RegPerfect® database or register/channel data in your GE/AB PLC via the tag you select on the property sheet. This means the values in the sample table or from the PLC will be automatically written to the item in real time.

The *SensorE* item is a graphic representation of a Sensor-e gas analyzer. You can use *SensorE* items to create rows or columns of data or you can place it next to or on top of another graphics item to show data in a meaningful way.

When you select a *SensorE* item, the following property sheet is presented:



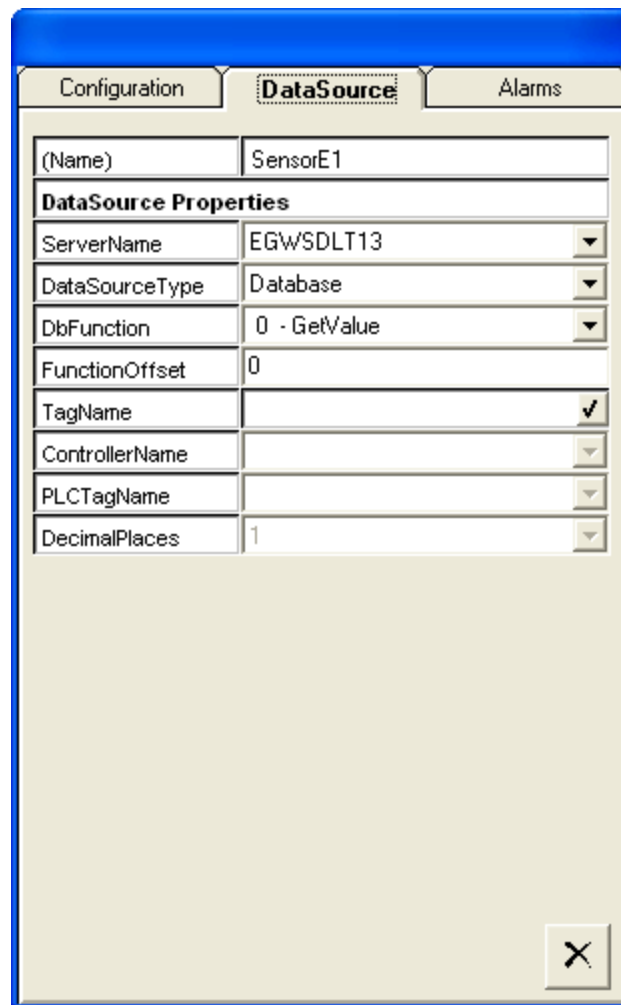
The image shows a property sheet for a *SensorE* item. It has three tabs: **Configuration** (selected), **DataSource**, and **Alarms**. The **Configuration** tab contains the following fields:

(Name)	SensorE1
Caption & Color	
Caption	CO
CaptionFontSize	9
CaptionColor	<input checked="" type="checkbox"/>
LED & Color	
LEDFontSize	14
LEDFontColor	<input checked="" type="checkbox"/>
Behavior	
Locked	False
Sizing Variables (Read Only)	
Sizeable	True
HasLimits	True
MinWidth (pixels)	110
MinHeight (pixels)	52
MaxWidth (pixels)	1500
MaxHeight (Pixels)	1500

A close button (X) is located in the bottom right corner of the property sheet.

The *Configuration* tab allows you to change the look and feel of the item.

Selecting the *DataSource* tab brings up the following property sheet:



The screenshot shows a dialog box with three tabs: Configuration, DataSource (selected), and Alarms. The DataSource tab contains a table of properties for a data source named 'SensorE1'. The properties include ServerName, DataSourceType, DbFunction, FunctionOffset, TagName, ControllerName, PLCTagName, and DecimalPlaces. The TagName field has a checkmark in the right column, indicating it is required or selected.

DataSource Properties	
ServerName	EGWSDLT13
DataSourceType	Database
DbFunction	0 - GetValue
FunctionOffset	0
TagName	<input checked="" type="checkbox"/>
ControllerName	
PLCTagName	
DecimalPlaces	1

The *DataSource* tab is the same as that for the *Analyzer* item. It allows you to select the RegPerfect® server, data source type, tag name, etc. Refer to section 5.4.12.1 for more details.

Selecting the *Alarms* tab brings up the following property sheet:





Alarm Configuration	
FatalColor	 ✓
NonFatalColor	 ✓
HoldOnInvalid	False ▾
LowLimitValue	0
HighLimitValue	999999

4.4.12.4 Cal Gas Bottle

Click this button to create a *Cal Gas Bottle* item on your display. The item will be placed in the upper left corner of your display with default size and you can drag it to the desired location and re-size if needed. This object is linked to either sample data in your RegPerfect® database or register/channel data in your GE/AB PLC via the tag you select on the property sheet. This means the values in the sample table or from the PLC will be automatically used to update the item in real time.

The *Cal Gas Bottle* item is a graphic representation of a gas bottle with a bar in the middle that will display a tag value as height compared to a configurable maximum. You can use *Cal Gas Bottle* items to alert operators to the amount of gas remaining and to display the layout of the calibration plumbing.

When you select a *Cal Gas Bottle* item, the following property sheet is presented:

Configuration		DataSource
(Name)	CalBottle1	
Color Configuration		
NormalBarColor		✓
WarningColor		✓
AlarmColor		✓
Value Configuration		
MaxScaleValue	1000	
WarningValue	0	
AlarmValue	0	
TestValue	0	
Title Text & Font		
Title		
Font	Tahoma	✓
FontColor		✓
Behavior		
Locked	False	▼

The *Configuration* tab allows you to change the look and feel of the item.

Selecting the *DataSource* tab brings up the following property sheet:

The screenshot shows a configuration window with two tabs: "Configuration" and "DataSource". The "DataSource" tab is active. The window contains a table of properties for a data source named "CalBottle1".

(Name)	CalBottle1
DataSource Properties	
ServerName	EGW/SDLT12
DataSourceType	Database
DbFunction	0 - GetValue
FunctionOffset	0
TagName	<input checked="" type="checkbox"/>
ControllerName	
PLCTagName	

A close button (X) is located in the bottom right corner of the window.

The *DataSource* tab is the same as that for the *Analyzer* item. It allows you to select the RegPerfect® server, data source type, tag name, etc. Refer to section 5.4.12.1 for more details.

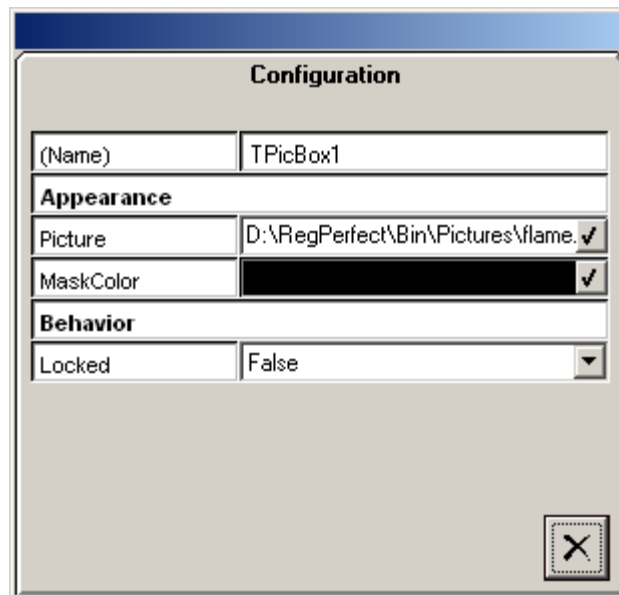
4.4.13 Graphic Items

4.4.13.1 *Picture Box*

Click this button to create a *Picture Box* item on your display. The item will be placed in the upper left corner of your display and you can drag it to the desired location.

The *Picture Box* item displays a .bmp file that you configure. It can be used to display company logos or other non-moving graphical items that depict your operations.

When you double click on a *Picture Box* item or right-click and select *Configure*, the following property sheet is presented:



The image shows a 'Configuration' dialog box with a blue title bar. It contains several sections for configuring a 'Picture Box' item:

- (Name)**: A text field containing 'TPicBox1'.
- Appearance**:
 - Picture**: A text field containing 'D:\RegPerfect\Bin\Pictures\flame.' with a checkmark icon on the right.
 - MaskColor**: A color selection field showing a black color swatch with a checkmark icon on the right.
- Behavior**:
 - Locked**: A dropdown menu currently set to 'False'.

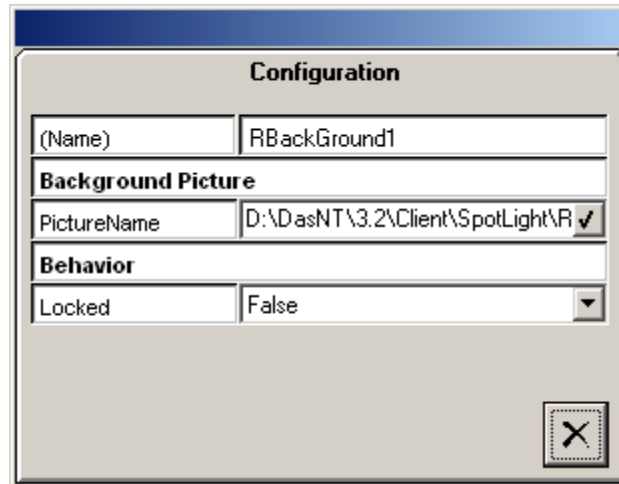
A close button (represented by an 'X' in a square) is located in the bottom right corner of the dialog box.

4.4.13.2 Background Box

Click this button to create a *Background Box* on your display. The item will be placed in the upper left corner of your display and you can drag it to the desired location and size.

The *Background Box* item displays a picture (.jpg, .gif, .bmp) file that you configure. It can be used to display company logos or other non-moving graphical items that depict your operations.

When you double click on a *Background Box* item or right-click and select *Configure*, the following property sheet is presented:



The image shows a 'Configuration' dialog box with a blue title bar. It contains three sections: '(Name)' with the value 'RBackGround1', 'Background Picture' with 'PictureName' set to 'D:\DasNT\3.2\Client\SpotLight\R' and a checkmark, and 'Behavior' with 'Locked' set to 'False' and a dropdown arrow. A close button (X) is in the bottom right corner.

Configuration	
(Name)	RBackGround1
Background Picture	
PictureName	D:\DasNT\3.2\Client\SpotLight\R ✓
Behavior	
Locked	False ▼

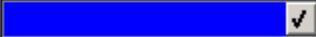
4.4.14 Shapes

The *Shapes* menu has the following selections:

Horizontal Line, Vertical Line, Diagonal Line, Rectangle, Custom Rectangle, Ellipse, Isosceles Triangle, Right Triangle, Rhombus, Trapezoid, Diamond, Pentagon, Octagon.

Click any of the shape buttons to create a *Shape* item on your display. The item will be placed in the upper left corner of your display and you can drag it to the desired location and size. The item is not linked to any database values and is used solely for creating a more presentable display. For example, you can use *Horizontal Line* and *Vertical Line* items to differentiate between different areas of information, such as process and emissions data.

When you double click on a *Shape* item or right-click and select *Configure*, the following property sheet is presented:

Configuration	
(Name)	Shapes1
Appearance	
ShapeColor	<input checked="" type="checkbox"/> 
LineWidth	2 <input type="text"/>
ShapeOrientation	Position1 <input type="text"/>
XArcPercent (0-100)	30 <input type="text"/>
YArcPercent (0-100)	30 <input type="text"/>
GradientFillStyle	aNone <input type="text"/>
GradientStartColor	<input checked="" type="checkbox"/>
GradientEndColor	<input checked="" type="checkbox"/>
Behavior	
Locked	False <input type="text"/>
<input type="button" value="X"/>	

4.4.15 Schematics

In Spotlight version 4.1, the original schematics were replaced with a new set of 2-D schematics, most of which can read from and/or write to a PLC.

4.4.15.1 2-Way Valve

Click this button to create a *2-Way Valve* item on your display. The item will be placed in the upper left corner of your display with default size and you can drag it to the desired location and re-size if needed. This item is linked to one or two discrete GE or AB PLC tags via the tag names you select on the property sheet. The real-time value from the PLC will be automatically used to update the state of the item in real time.

The *2-Way Valve* item is a graphic representation of a 2-way valve that can be turned on and off. If the PLC control bit is configured, clicking the valve to turn it on writes True to the control bit, and clicking the valve to turn it off writes False to the control bit. Meanwhile, the valve's state is also updated by the True/False value of the PLC feedback bit in real time. The valve flashes when the states of the control bit and feedback bit are different indicating that the valve is not allowed to be turned on/off. You can use a *2-Way Valve* item to control and/or display a valve's state.

When you select a *2-Way Valve* item, the following property sheet is presented:

The image shows a software configuration window titled "Configuration" with a sub-tab "PLC Configuration". The window contains several sections for configuring the valve item:

(Name)	Valve2Way1
Appearance	
Orientation	Horizontal
BackColor	<input checked="" type="checkbox"/>
ValveOnColor	<input checked="" type="checkbox"/>
ValveOffColor	<input checked="" type="checkbox"/>
Title Text & Font	
Title	
Font	Tahoma
FontColor	<input checked="" type="checkbox"/>
Test Properties	
Status	On/On
Behavior	
Locked	False

A close button (X) is located in the bottom right corner of the configuration window.

The *Configuration* tab allows you to change the look and feel of the item.

Selecting the *PLC Configuration* tab brings up the following property sheet:

(Name)	Valve2Way1
DataSource Properties	
ServerName	EGWSDLT12
PLCName	
ControlBit	
FeedbackBit	
Confirmation	False
EnableTechs	False
EnableOperators	False

When you select a RegPerfect® server, the configured PLCs for the selected server are listed in the *PLCName* pull-down for you to make your selection. After you select a PLC, the configured tags for the selected PLC are listed in the *ControlBit* and *FeedbackBit* pull-downs for you to make your selection. The tag(s) you choose will be used to write/read to/from the PLC and update the item in real time.

The following describes some of the properties on this tab:

ControlBit: a discrete PLC tag that the valve writes to when clicked

FeedbackBit: a discrete PLC tag that the valve reads feedback from to update the valve state

Confirmation: if set to True, a confirmation dialog pops up to confirm the write action when the valve is clicked in display mode (to prevent accidentally turning a valve on/off).

EnableTechs: used to secure the ability to write to a PLC. If set to False, logon users belonging to the RP_TECHS group will not be able to activate the valve.

EnableOperators: used to secure the ability to write to a PLC. If set to False, logon users belonging to the RP_OPERATORS group will not be able to activate the valve.

4.4.15.2 3-Way Valve

Click this button to create a *3-Way Valve* item on your display. The item will be placed in the upper left corner of your display with default size and you can drag it to the desired location and re-size if needed. This item is linked to one or two discrete GE or AB PLC tags via the tag names you select on the property sheet. The real-time value from the PLC will be automatically used to update the state of the item in real time.

The *3-Way Valve* item is a graphic representation of a 3-way valve that can be turned on and off. It provides the same functionality as the *2-Way Valve* described in the previous section. This valve toggles NC (Normally Closed) and NO (Normally Closed) for on/off states. If the PLC control bit is configured, clicking the valve to turn it on writes True to the control bit, and clicking the valve to turn it off writes False to the control bit. Meanwhile, the valve's state is also updated by the True/False value of the PLC feedback bit in real time. The valve flashes when the states of the control bit and feedback bit are different indicating that the valve is not allowed to be turned on/off. You can use a *3-Way Valve* item to control and/or display a valve's state.

When you select a *3-Way Valve* item, the following property sheet is presented:

The image shows a software window titled "PLC Configuration" with a "Configuration" tab selected. The window contains a property sheet for a 3-Way Valve item named "Valve3Way1". The properties are organized into several sections:

(Name)	Valve3Way1
Appearance	
Common Position	Left
NO Position	Bottom
NC Position	Right
BackColor	<input checked="" type="checkbox"/>
ValveOnColor	<input checked="" type="checkbox"/>
ValveOffColor	<input checked="" type="checkbox"/>
Title Text & Font	
Title	
Font	Tahoma <input checked="" type="checkbox"/>
FontColor	<input checked="" type="checkbox"/>
Test Properties	
Status	On/On
Behavior	
Locked	False

A close button (X) is located at the bottom right of the window.

The *Configuration* tab allows you to change the look and feel of the item. You may choose from the 24 available layouts by setting the position for Common, Normally Closed and Normally Open. The *DataSource* tab is the same as that for the *2-Way Valve* item. Refer to section 5.4.15.1 for details.

4.4.15.3 Tubing

Click this button to create a *Tubing* item on your display. The item will be placed in the upper left corner of your display with default size and you can drag it to the desired location and re-size if needed. This item is linked to one discrete GE or AB PLC tag via the tag name you select on the property sheet. The real-time value from the PLC will be automatically used to update the state of the item in real time.

The *Tubing* item is a graphic representation of a piece of tube that can be turned on and off. Value True of the PLC feedback bit turns the tubing on and value False turns the tubing off. You can use *Tubing* items to display your hardware layout.

When you select a *Tubing* item, the following property sheet is presented:

Configuration		PLC Configuration
(Name)	Tubing1	
Appearance		
Orientation	Horizontal	▼
BackColor		✓
TubingOnColor		✓
TubingOffColor		✓
Flash Properties		
FlashOnEnabled	False	▼
FlashInterval	250	▼
Test Properties		
TestStatus	On	▼
Behavior		
Locked	False	▼

The *Configuration* tab allows you to change the look and feel of the item.

Selecting the *PLC Configuration* tab brings up the following property sheet:

The image shows a software dialog box titled "PLC Configuration". It has two tabs: "Configuration" and "PLC Configuration", with the latter being the active tab. The dialog contains a table with the following fields:

(Name)	Tubing1
DataSource Properties	
ServerName	EGWSDLT12
PLCName	
FeedbackBit	

Each of the three rows under "DataSource Properties" has a small downward-pointing arrow on the right side, indicating they are pull-down menus. A close button (an 'X' in a square) is located in the bottom right corner of the dialog box.

When you select a RegPerfect® server, the configured PLCs for the selected server are listed in the *PLCName* pull-down for you to make your selection. After you select a PLC, the configured PLC tags for the selected PLC are listed in the *FeedbackBit* pull-down for you to make your selection. The tag you choose will be used to retrieve data to update the item in real time.

4.4.15.4 Pump

Click this button to create a *Pump* item on your display. The item will be placed in the upper left corner of your display with default size and you can drag it to the desired location and re-size if needed. This item is linked to up to three discrete GE or AB PLC tags via the tag names you select on the property sheet. The real-time values from the PLC will be automatically used to update the state of the item in real time.

The *Pump* item is a graphic representation of a pump that can be turned on and off. If the PLC control bit is configured, clicking the pump to turn it on writes True to the control bit and clicking the pump to turn it off writes False to the control bit. Meanwhile, the pump's on/off and alarm state is also updated by the True/False value of the PLC feedback bit and alarm bit respectively in real time. The pump flashes when the states of the control bit and feedback bit are different indicating that the pump is not allowed to be turned on/off. You can use a *Pump* item to control and/or display a pump's state and to alert operators to a certain alarm condition.

When you select a *Pump* item, the following property sheet is presented:

Configuration		PLC Configuration
(Name)	Pump1	
Appearance		
BackColor		✓
PumpOnColor		✓
PumpOffColor		✓
AlarmColor		✓
Flash Properties		
AlarmFlashEnabled	False	▼
FlashInterval	250	▼
Title Text & Font		
Title		
Font	Tahoma	✓
FontColor		✓
Test Properties		
Status	On/On	▼
Alarm	False	▼
Behavior		
Locked	False	▼

The *Configuration* tab allows you to change the look and feel of the item.

Selecting the *PLC Configuration* tab brings up the following property sheet:

(Name)	Pump1
DataSource Properties	
ServerName	EG\WSDLT12
PLCName	
ControlBit	
FeedbackBit	
AlarmBit	
Confirmation	False
EnableTechs	False
EnableOperators	False

The following describes some of the properties on this tab:

ControlBit: a discrete PLC tag that the pump writes to when clicked

FeedbackBit: a discrete PLC tag that the pump reads feedback from to update the pump's on/off state

AlarmBit: a discrete PLC tag that the pump reads to set the pump in or out of alarm

Confirmation: if set to True, a confirmation dialog pops up to confirm the write action when the pump is clicked in display mode (to prevent accidentally turning a pump on/off).

EnableTechs: used to secure the ability to write to a PLC. If set to False, logon users belonging to the RP_TECHS group will not be able to activate the pump.

EnableOperators: used to secure the ability to write to a PLC. If set to False, logon users belonging to the RP_OPERATORS group will not be able to activate the pump.

4.4.15.5 Chiller

Click this button to create a *Chiller* item on your display. The item will be placed in the upper left corner of your display with default size and you can drag it to the desired location and re-size if needed. This item is linked to up to three GE or AB PLC tags via the tag names you select on the property sheet. The real-time values from the PLC will be automatically used to update the item in real time.

The *Chiller* item is a graphic representation of a chiller that displays temperature directly read from a PLC. It can also display dewpoint and water slip alarms by reading from two discrete tags in the PLC and turning the *Chiller* to the configured alarm color when either alarm is on.

When you select a *Chiller* item, the following property sheet is presented:

Configuration		PLC Configuration
(Name)	Chiller1	
Appearance		
BackColor		✓
NormalColor		✓
AlarmColor		✓
Flash Properties		
AlarmFlashEnabled	False	▼
FlashInterval	250	▼
Title Text		
Title		
Test Properties		
Alarm	False	▼
Behavior		
Locked	False	▼

The *Configuration* tab allows you to change the look and feel of the item.

Selecting the *PLC Configuration* tab brings up the following property sheet:

(Name)	Chiller1
DataSource Properties	
ServerName	EG'wSDLT12
PLCName	
TagName	
DewpointAlarm	
WaterSlipAlarm	

The PLC tags you choose on this tab will be used to retrieve data to update the item in real time. The following describes the usage for each tag:

TagName: the analog PLC temperature tag used to update the Chiller value

DewpointAlarm: a discrete PLC tag indicating dewpoint alarm

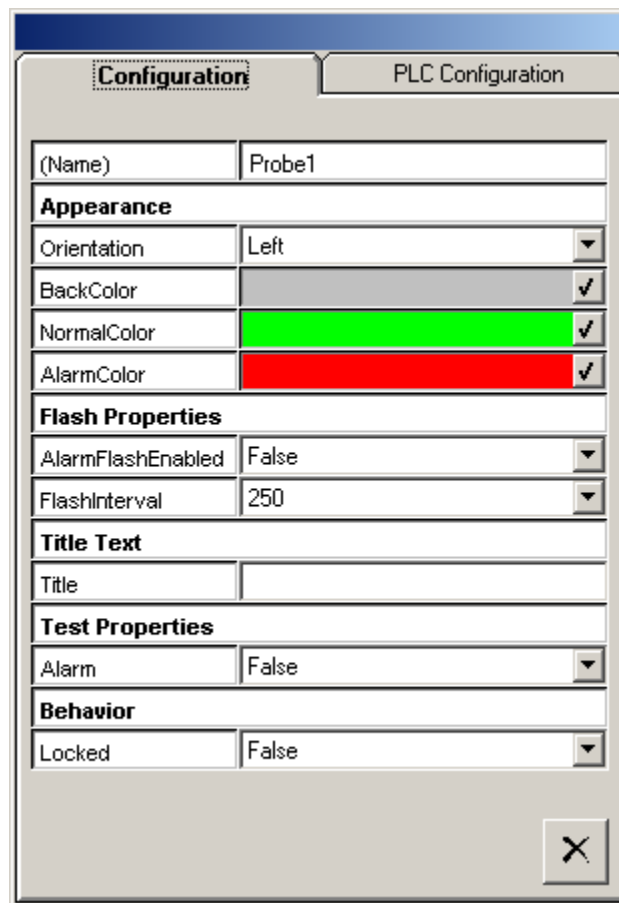
WaterSlipAlarm: a discrete PLC tag indicating water slip alarm

4.4.15.6 Probe

Click this button to create a *Probe* item on your display. The item will be placed in the upper left corner of your display with default size and you can drag it to the desired location and re-size if needed. This item is linked to two discrete GE or AB PLC tags via the tag names you select on the property sheet. The real-time values from the PLC will be automatically used to update the item in real time.

The *Probe* item is a graphic representation of a probe can display probe temperature and straw temperature alarms by reading from two discrete tags in the PLC. The item turns to the configured alarm color when either alarm is on.

When you select a *Probe* item, the following property sheet is presented:



The image shows a software configuration window titled "Configuration" with a sub-tab "PLC Configuration". The window contains several sections for configuring a "Probe" item:

- Name:** Probe1
- Appearance:**
 - Orientation: Left
 - BackColor: (Grey swatch) ✓
 - NormalColor: (Green swatch) ✓
 - AlarmColor: (Red swatch) ✓
- Flash Properties:**
 - AlarmFlashEnabled: False
 - FlashInterval: 250
- Title Text:**
 - Title: (Empty text box)
- Test Properties:**
 - Alarm: False
- Behavior:**
 - Locked: False

A close button (X) is located in the bottom right corner of the window.

The *Configuration* tab allows you to change the look and feel of the item.

Selecting the *PLC Configuration* tab brings up the following property sheet:

(Name)	Probe1
DataSource Properties	
ServerName	EGWSDLT12
PLCName	
ProbeTempAlarm	
StrawTempAlarm	

The PLC tags you choose on this tab will be used to retrieve data to update the item in real time. The following describes the usage for each tag:

ProbeTempAlarm: a discrete PLC tag indicates probe temperature alarm

StrawTempAlarm: a discrete PLC tag indicates straw temperature alarm

4.4.15.7 Pressure Switch

Click this button to create a *Pressure Switch* item on your display. The item will be placed in the upper left corner of your display with default size and you can drag it to the desired location and re-size if needed. This item is linked to a discrete GE or AB PLC tag via the tag name you select on the property sheet. The real-time value from the PLC will be automatically used to update the item in real time.

The *Pressure Switch* item is a graphic representation of a pressure switch that can display an alarm. The alarm is indicated by a discrete tag in the PLC and causes the switch to change to the configured alarm color.

When you select a *Pressure Switch* item, the following property sheet is presented:

The screenshot shows a software window titled 'Configuration' with a sub-tab 'PLC Configuration'. The window contains several sections for configuring the 'PressureSwitch1' item:

(Name)	PressureSwitch1
Appearance	
BackColor	<input checked="" type="checkbox"/>
NormalColor	<input checked="" type="checkbox"/>
AlarmColor	<input checked="" type="checkbox"/>
Flash Properties	
AlarmFlashEnabled	False
FlashInterval	250
Title Text	
Title	
Test Properties	
Alarm	False
Behavior	
Locked	False

A close button (X) is located in the bottom right corner of the window.

The *Configuration* tab allows you to change the look and feel of the item.

Selecting the *PLC Configuration* tab brings up the following property sheet:

(Name)	PressureSwitch1
DataSource Properties	
ServerName	EGWSDLT12
PLCName	
AlarmBit	

The *PLC Configuration* tab allows you to select the RegPerfect® server, PLC and PLC tag. The AlarmBit should be a discrete tag that indicates an alarm state when it's value is True.

4.4.15.8 Water Slip Sensor

Click this button to create a *Water Slip Sensor* item on your display. The item will be placed in the upper left corner of your display with default size and you can drag it to the desired location and re-size if needed. This item is linked to a discrete GE or AB PLC tag via the tag name you select on the property sheet. The real-time value from the PLC will be automatically used to update the item in real time.


The *Water Slip Sensor* item is a graphic representation of a sensor that can display and alarm. The alarm is indicated by a discrete tag in the PLC and causes the switch to change to the configured alarm color.

The property sheet of the *Water Slip Sensor* item is the same as that for the *Pressure Switch* item. Refer to section 5.4.15.7 for configuration details.

4.4.15.9 Regulator

Click this button to create a *Regulator* item on your display. The item will be placed in the upper left corner of your display with default size and you can drag it to the desired location and re-size if needed. This item is not linked to any database or PLC value and is used solely for creating a more presentable display.

When you select a *Regulator* item, the following property sheet is presented, which allows you to change the look of the item:



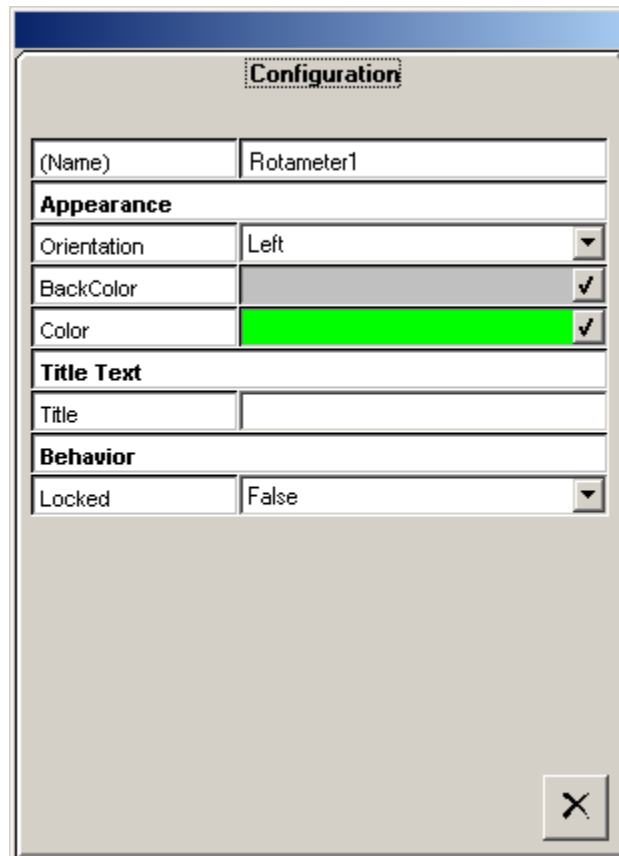
The image shows a 'Configuration' dialog box for a Regulator item. It has a title bar with the word 'Configuration' and a close button (X) in the bottom right corner. The dialog is organized into several sections:

- (Name)**: A text field containing 'Regulator1'.
- Appearance**:
 - BackColor**: A color selection field showing a grey swatch with a checkmark.
 - Color**: A color selection field showing a bright green swatch with a checkmark.
- Title Text & Font**:
 - Title**: An empty text field.
 - Font**: A dropdown menu showing 'Tahoma' with a checkmark.
 - FontColor**: A color selection field showing a black swatch with a checkmark.
- Behavior**:
 - Locked**: A dropdown menu showing 'False' with a downward arrow.

4.4.15.10 Rotameter

Click this button to create a *Rotameter* item on your display. The item will be placed in the upper left corner of your display with default size and you can drag it to the desired location and re-size if needed. This item is not linked to any database or PLC value and is used solely for creating a more presentable display.

When you select a *Rotameter* item, the following property sheet is presented, which allows you to change the look of the item:



The image shows a 'Configuration' dialog box for a Rotameter item. It has a title bar with the word 'Configuration' and a close button (X) in the bottom right corner. The dialog is divided into several sections:

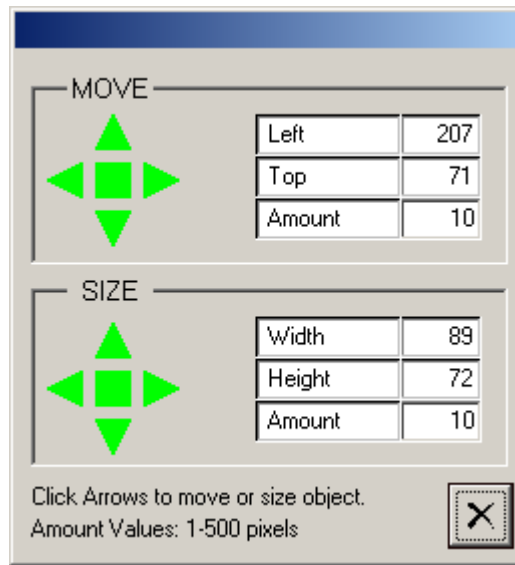
- (Name)**: A text field containing 'Rotameter1'.
- Appearance**:
 - Orientation**: A dropdown menu set to 'Left'.
 - BackColor**: A color selection field showing a grey swatch with a checkmark.
 - Color**: A color selection field showing a bright green swatch with a checkmark.
- Title Text**:
 - Title**: An empty text field.
- Behavior**:
 - Locked**: A dropdown menu set to 'False'.

4.5 Action

The *Action* menu has the following selections:

4.5.1 Move/Resize

Clicking this button after selecting an item on your display brings up the following dialog:



You can move and resize the item you have selected by clicking the arrows on the dialog. Items can also be moved by dragging them to the new location and can also be resized by dragging one of the small handles that appear when the item is highlighted. Some items can only be resized by dragging one of the four handles at the corner diagonally.

Sometimes it is desirable to select multiple items and move them together. You can do either of the following:

Drag and draw a rectangle around the items you wish to move. To be selected, an item must be entirely within the rectangle. Click anywhere inside the rectangle but not on any item and then drag to move all the selected items together to a new location. Click anywhere outside the rectangle but not on any item to remove the rectangle.

Click on the items you wish to move while holding down the Ctrl key. With the Ctrl key down, drag any of the selected items to move all the selected items together. This method has a restriction of selecting and moving a maximum of ten items together at a time.

4.5.2 Configure

Clicking this button after selecting an item on your display brings up the property sheet for that item. Property sheets define the look and feel as well as the data source for an item and are described in the preceding sections.

4.5.3 Replicate

Clicking this button after selecting an item on your display creates a copy of that item with the same attributes.

4.5.4 Delete

Clicking this button after selecting an item on your display deletes the item from the display.

To delete multiple items together, first drag and draw a rectangle around the items you wish to delete. To be selected, an item must be entirely within the rectangle. Then click this button to delete all the selected items from the display.

4.5.5 Bring-To-Front

Clicking this button after selecting an item on your display moves the item to the top of a set of stacked items.

4.5.6 Send-To-Back

Clicking this button after selecting an item on your display moves the item to the bottom of a set of stacked items.

4.6 Scripts

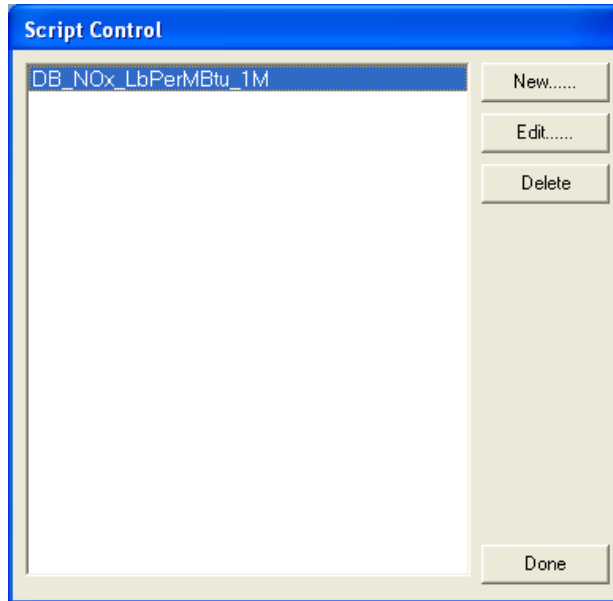
Previous versions of Spotlight could only display values calculated by the RegPerfect® Calculation Engine, but SpotLight v3.2 and later can run VB scripts to perform complex calculations and display the calculated values. This is a powerful new tool, but it is also more complex to use and entirely optional.

You might use scripts to compute heat rates or other values not calculated by your RegPerfect® system, or to pop up message boxes to alert critical events. Scripts add extra power to your display.

All the items on your display can be referred to and manipulated in scripts. Script functions you add to your display are stored in your display (.rpd) file. Scripts can be of type *Db*, *GE*, *AB* or *DL*. The *Db* scripts are executed at the database polling intervals after every database re-query. The *GE* and *AB* scripts are executed at the GE and AB PLC polling intervals respectively. The *DL* scripts are executed at the DataLogger polling intervals.

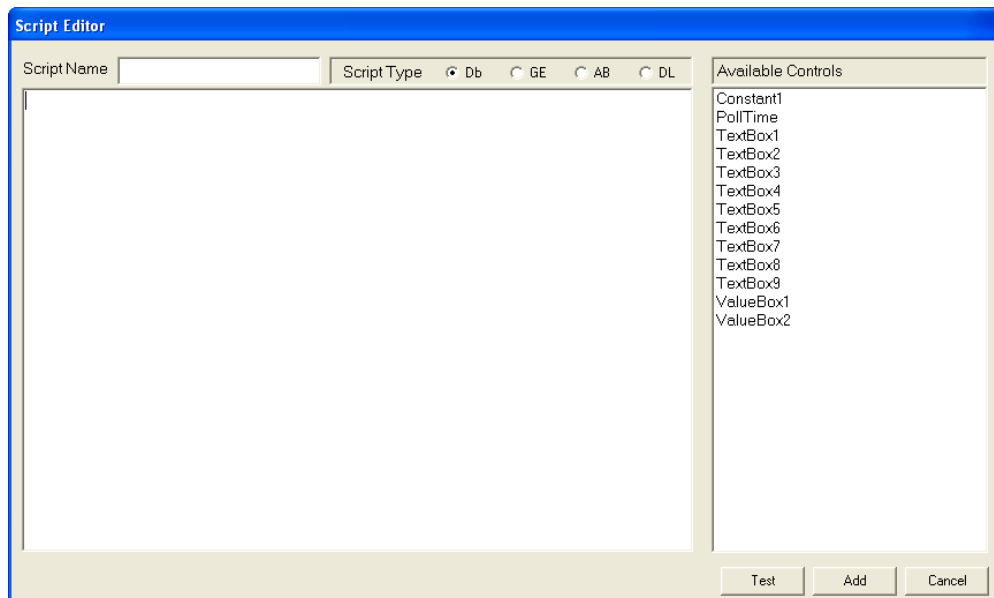
You write SpotLight scripts in VBScript. For complete information and references about VBScript, refer to [VBScript Language Reference](#) on MSDN Web site. An example SpotLight script is also provided in this section for your quick reference.

Clicking *Scripts* on the main menu bar brings up the following dialog:



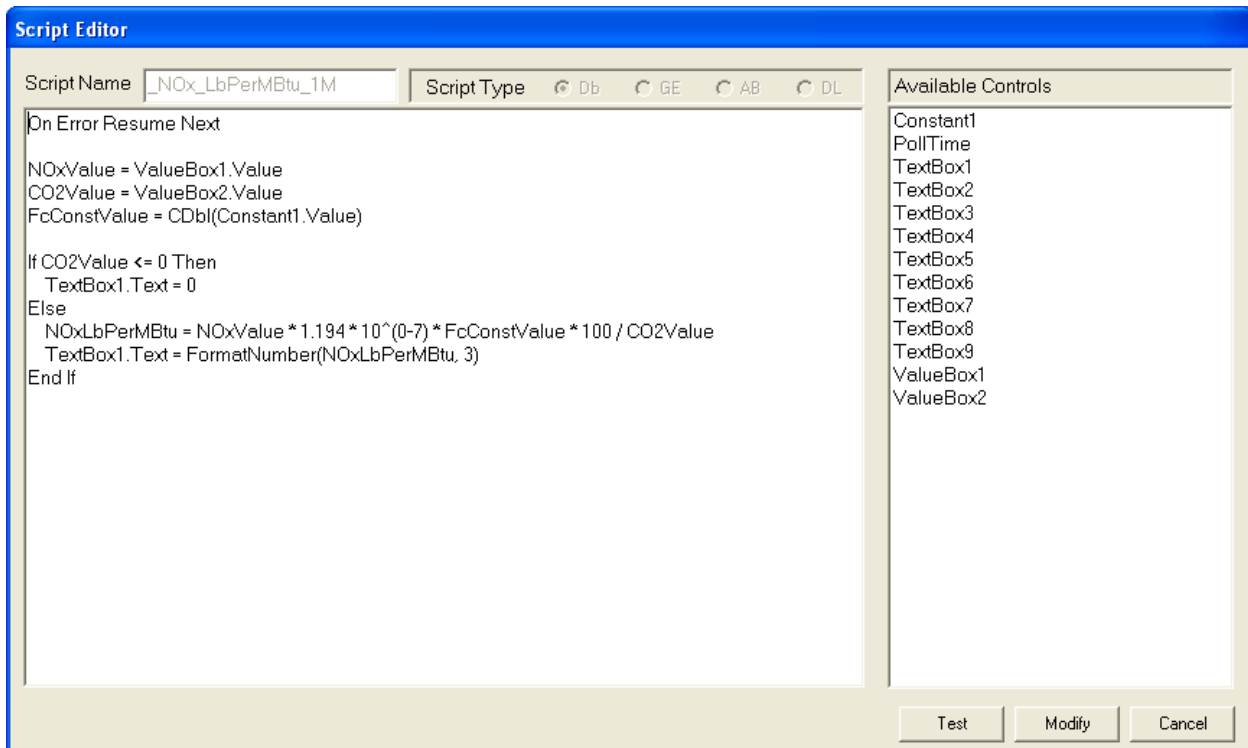
All the script functions previously created, if any, are listed. You can add a new script function or view/modify an existing one.

When you click the [New] button on the *Script Control* dialog, the following script editor dialog is presented:



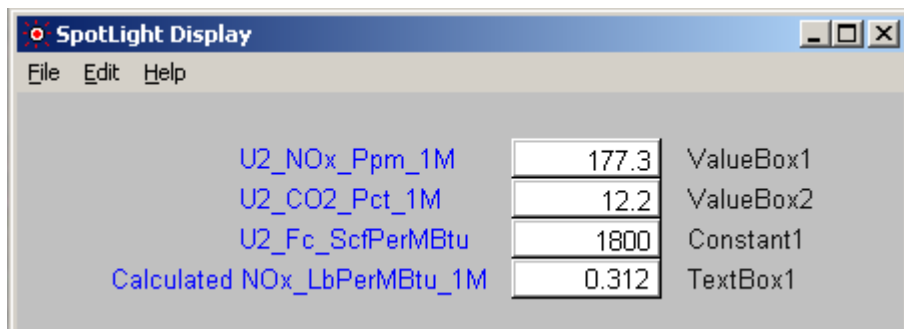
You need to enter a name for the script function and the name will be automatically prefixed with DB or GE or AB based on the script type you select. You do not need to type the *Sub* and *End Sub* statements in the script body section as they will also be added automatically when the script function is saved. You can test the scripts before you click the [Add] button to save them.

When you click the [Edit] button after selecting a script function in the list, the following script editor dialog is presented:



You can modify the scripts and test them. Clicking the [Modify] button saves the changes you made.

The screen shot above also shows an example SpotLight script created for the SpotLight display shown right. This script function calculates 1-minute NOx LbPerMBtu and displays the formatted result in *TextBox1*.



Notes:

- The *Value* property of a *Constant* item is of type String and it needs to be converted to type Double before it may be used in a calculation.
- The *Value* property of a *Constant* item defaults to the item name at design time, which is "Constant1" in the above example. So `CDbl(Constant1.Value)` returns an error when the [Test] button is clicked.
- SpotLight tests the scripts before it saves them and does not allow the save to proceed if an error occurs. The following statement can be used to ignore the error at design time so that the script function can be saved.

```
On Error Resume Next
```




RegPerfect® EDR Setup

User Manual and Help Documentation

Updated: August 2020

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1. Introduction

EDR Setup is used for entering data into the regulatory configuration tables of the RegPerfect database to tailor RegPerfect to the needs of a specific facility's EDR(s). The application is used primarily by Teledyne Monitor Labs DAS Services personnel prior to the delivery of RegPerfect to describe which XML elements to include on EDRs, and for each element, the needed data or where the data may be found.

For more information on the XML EDR Elements referred to in this manual, see the ECMPs Reporting Instructions (one each for Emissions, Q/A Certification and Monitoring Plan) which are available on the internet at <http://ecmps.pqa.com/documents.shtml>.

2. Main Window

The Main Window shows some of the basic information about a single EDR. The record number is shown at bottom left (1 of 2 in this example) – to navigate to a different EDR, use the arrows at bottom left.

The screenshot shows the 'EDR Setup' window for 'm1support (rp_admins) on EDR Generator TestDb server EGW-VSD002B'. It features several input fields and checkboxes for configuration. The 'EDR Description' is 'Unit 1 EDR', 'Facility Name' is 'EDR Generator TestDb', and 'ORIS Code' is '111111'. There are checkboxes for 'Ozone Season Only Reporter' and 'Report All Records in 2nd Qtr'. Below these are three tabs: 'Sites', 'Unit/Stack Configuration', and 'Monitoring Plan Comments'. The 'Sites' tab is active, displaying a table titled 'Units/Stacks/Pipes Comprising this EDR:'. The table has four columns: 'Monitoring Site', 'Unit/Stack/Pipe ID', 'Unit On Tag', and 'Load Tag'. A single row is visible with values: 'Unit 1', 'U1', 'U1_UnitOn_TF_1H', and 'U1_Load_MWe_1H'. An 'Edit Units/Stacks/Pipes' button is located to the right of the table. At the bottom of the window, there are 'Go To EDR' and 'Apply' buttons, and a status bar showing 'Record: 1 of 2' with navigation arrows and a search field.

Monitoring Site	Unit/Stack/Pipe ID	Unit On Tag	Load Tag
Unit 1	U1	U1_UnitOn_TF_1H	U1_Load_MWe_1H

The form has three tabs:

- Sites Tab (shown above)

The list in the center of the tab shows all the units, stacks and pipes that are included in the EDR. For a single unit/stack, there will be only one row. For common or multi stacks/pipes, there will be more than one row.

Double-click the Monitoring Site on any row to open the EDR Site form which contains the monitoring plan and other EDR configuration data for that unit/stack/pipe.

Caution: do not delete any rows in this list. Do not modify the rows in this list (for example by opening one of the drop down lists and changing the selection). Double-click the Monitoring Site if you wish to view monitoring plan and other configuration information for the unit, stack or pipe.

Use the arrow controls at the bottom of the form to navigate among your facility's different EDRs.

- Unit/Stack Configuration Tab (formerly RT503)

This form identifies the relationships between units and common or multiple stacks/pipes (this information is part of the monitoring plan but is shown on the main form for technical reasons).

The data on this form corresponds to XML Element UnitStackConfigurationData.

Define the relationship between units and stacks/pipes:
 - for common stacks/pipes, create 1 record per unit.
 - for multi stacks/pipes, create 1 record per stack/pipe.

Enabled	Common/Multiple Stack/Pipe ID	Associated Unit ID	Begin Date	End Date
<input checked="" type="checkbox"/>	CS0001	BLR1	01/01/01	
<input checked="" type="checkbox"/>	CS0001	BLR2	01/01/01	
<input checked="" type="checkbox"/>	CS0001	BLR3	01/01/01	
<input checked="" type="checkbox"/>	CS0001	BLR4	01/01/01	
<input checked="" type="checkbox"/>	CS0001	BLR5	01/01/01	
<input type="checkbox"/>				

- Monitoring Plan Comments Tab (new with XML)

Use this form to enter monitoring plan comments. To be included on a monitoring plan EDR, the comment must be Enabled and the Begin Date must fall between the EDR start and end dates.

Monitoring Plan Comment Data

Enabled	Begin Date / End Date	Comment
<input checked="" type="checkbox"/>		

The data on this form corresponds to XML Element MonitoringPlanCommentData.

3. EDR Site (Unit/Stack/Pipe) Window

From the *Sites* tab of the Main Window, double click a monitoring site to open the EDR Site form. From here you may access most of the configuration data for a unit/stack/pipe including the monitoring plan.

The screenshot shows the 'EDR Site (Unit/Stack/Pipe)' window. At the top, there are fields for 'Unit/Stack/Pipe ID' (CS3), 'Stack/Pipe Active Date', 'EDR Description' (CS3), and 'Stack/Pipe Retire Date'. A 'Go To Unit/Stack/Pipe' button is on the right. Below this are three tabs: 'Monitor Values', 'Derived Values', and 'Monitoring Plan'. The 'Monitor Values' tab is active, showing a sub-tab for 'SO2'. Under 'SO2', there are several sub-tabs: 'NOx', 'CO2', 'CO2D', 'O2', 'H2O', 'Stackflow', 'MATS', 'GFM', and 'Daily/W/weekly QA Tests'. The 'SO2 Concentration (formerly RT200)' sub-tab is selected and is marked as 'Enabled'. It contains a list of configuration items with dropdown menus and checkboxes:

- Unadjusted Hourly SO2 (Tag): CS3_SO2_Ppm_1H
- Adjusted Hourly SO2 (Tag): CS3_SO2BA_Ppm_1H
- Percent Availability (Tag): CS3_AvailSO2_PMA_1H
- Missing Data Procedure: Part 75
- Availability Start Date: CS3_RT200_AvailabilityStart, 01/01/00 0:00
- Missing Data Maximum: CS3_RT200_MissingDataMax, 475
- May Burn Low Sulfur Fuel:
- Burning Low Sulfur Fuel (Tag): [dropdown]
- Emissions Calculation for Low Sulfur Fuel: [dropdown]
- Control Equipment is Used:
- Control Equipment Operating (Tag): [dropdown]

At the bottom of the form are 'Undo Record' and 'Add New' buttons.

The form has three tabs:

- Monitor Values Tab (shown above)

This tab consists of several sub-tabs that allow Teledyne personnel to configure which *Monitor Hourly Value* Elements will be printed on the XML Emissions EDR and, for each, where in RegPerfect the data needed for each element can be found. Changes to your CEMs may require changes to this data.

Caution: modifying the data on these forms requires an advanced understanding of RegPerfect. Contact the TML Call Center for help if you think changes are needed.

- Derived Values Tab

This tab consists of several sub-tabs that allow Teledyne personnel to configure which *Derived Hourly Value* Elements will be reported on the XML Emissions EDR and, for each, where in RegPerfect the data needed for each element can be found. Changes to your CEMs may require changes to this data.

Caution: modifying the data on these forms requires an advanced understanding of RegPerfect. Contact the TML Call Center for help if you think changes are needed.

- Monitoring Plan Tab

This tab contains sub-tabs for each of the XML Elements that constitute a monitoring plan (with the exceptions of Unit Stack Configuration and Monitoring Plan Comment which are accessed from the Main Window).

Monitor Values	Derived Values	Monitoring Plan														
Monitoring Location Attribute Data (formerly RTs 503, 504)																
Location Attribs	Unit	Unit Capacity	Unit Control	Unit Fuel	Qualifications	Components	Systems	Formulas	Spans	Defaults	Rect Duct	Load	Fuel Flow	Methods	Supplemental MATS	MATS LEE
Enabled	Duct Indicator	Bypass Indicator	Ground Elevation	Stack Height	Stack Material	Stack Shape	Cross Area Flow	Cross Area Stack Exit	Begin Date	End Date						
▶ <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	464	277	OTHER ▾	ROUND ▾	216	164	11/15/93						
* <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			▾	▾								

Unlike much of the other information in EDR Setup, the monitoring plan may need to be modified by end users from time to time, and doing so does not require an advanced knowledge of RegPerfect in most cases. The forms used for viewing and modifying the monitoring plan are described in Section 4.

4. Maintaining the Monitoring Plan

The introduction of the Client Tool has resulted in a new and different philosophy for maintaining monitoring plans.

4.1 Make Changes in the Client Tool First

Prior to the ECMPS/XML project, RegPerfect contained the “official” monitoring plan(s) and the information was reported on every EDR. It was crucial that monitoring plan changes, ANY monitoring plan changes, were immediately updated in the RegPerfect monitoring plan tables.

When considering when and where to make monitoring plan changes in the new ECMPS/XML world, several factors were considered:

- The Client Tool and mainframe, not RegPerfect, contain the official copy of each monitoring plan
- Making separate/duplicate manual edits to the monitoring plan in the Client Tool and in RegPerfect, apart from being very inconvenient, would likely result in more errors
- All monitoring plan changes, whether made initially in RegPerfect or the Client Tool, must pass the Client Tool’s error evaluation before they may be submitted to the mainframe

In the end, the question of how to maintain monitoring plans was put to a representative group of customers, and the response was nearly unanimous:

Monitoring Plan changes should first be made in the Client Tool, evaluated and corrected until free of errors, then imported into RegPerfect.

Alternatively, the changes may be made manually in both.

One of the primary advantages of this strategy is that it is a “single pass” algorithm whereas the alternative – making monitoring plan changes first in RegPerfect and importing them into the Client Tool – might often have required several repeats until the changes evaluated without error in the Client Tool.

4.2 RegPerfect's Copy of the Monitoring Plan is Still Necessary

Given that the recommended method of making monitoring plan changes is to use the Client Tool and then import into RegPerfect, one might ask why it is necessary or even desirable for RegPerfect's EDR Setup to contain screens that allow monitoring plan data to be edited. One reason is that defects in either the Client Tool or RegPerfect may occasionally make it impossible to export and/or import the MP XML file. In such a situation, the backup method is to manually make the changes in both applications.

One might further ask why we need to store MP information in RegPerfect database at all. If the Client Tool has the official copy of this data, and if we are never going to update the Client Tool's copy from RegPerfect's copy, then why do we need it? There are two reasons:

1. Some monitoring plan data are used by other components of RegPerfect

Maximum load is used when calculating load range. Component, System and Formula IDs are also used in hourly calculations. Normal and second normal load levels are used when you enter RATA tests. There are many other examples.

2. There are a few, crucial fields in RegPerfect's monitoring plan database tables that do not exist in the Client Tool database and screens.

There is an instrument field in RegPerfect's XML Component table. This field must be set to the name of the instrument corresponding to the component so that calibration and interference tests can be found and printed on emissions EDRs.

For each LK component, RegPerfect has fields for tracking the start and end date/hour of every period during which the LK component was in service. The Client Tool does not.

For each gas monitoring system, RegPerfect has fields for entering the tag names from which load and CEMs RATA values may be calculated.

The above are examples of data that cannot be imported from the Client Tool. In fact, RegPerfect's import utility asks users to manually input these fields during the import of an MP XML file. If you are unable to supply the information at the time of the import, or if you need to correct the information later, you may do so using EDR Setup screens.

Don't try to make just the "necessary" monitoring plan changes in RegPerfect. It would be quite difficult to remember which data are needed and which are not, and the list is always changing.

The safest course of action is to make all changes in both the Client Tool and RegPerfect. The easiest way to accomplish that is to change the data in the Client Tool and then import it into RegPerfect.

4.3 Monitoring Plan Forms

This section describes the forms used to view and edit monitoring plan data in RegPerfect.

4.3.1 Overview

The documentation for most of the forms in this section is rather sparse and is intended primarily to ensure that you can find, add, edit and delete records. The reason for the sparse content is that the detailed information about *how* to edit these records is already documented in the ECMPS Monitoring Plan Reporting Instructions. Repeating the information in this manual would be would result in synchronization issues as EPA continues to update their reporting instructions.

Use the ECMPS Monitoring Plan Reporting Instructions for detailed guidance on how to modify your monitoring plan.

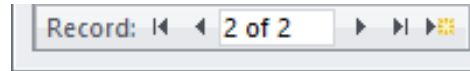
At the time this manual was published, the ECMPS Reporting Instructions could be downloaded from <http://ecmps.pqa.com/documents.shtml>

EDR Setup's monitoring plan forms do contain a few fields used only by RegPerfect that are not a part of the monitoring plan, and these are fully documented in this manual.

4.3.2 Navigating to the Monitoring Plan Forms

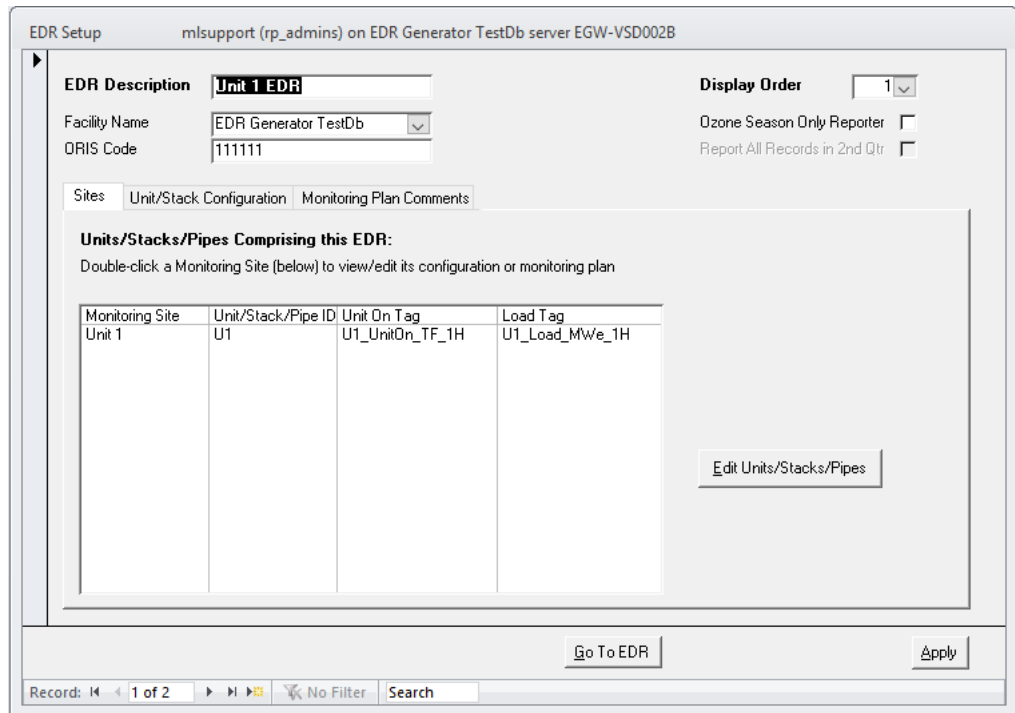
Two XML Elements – Unit Stack Configuration and Monitoring Plan Comment – are accessed from EDR Setup’s Main Window (see chapter 1). The remainder are accessed as follows.

From EDR Setup’s Main Window, navigate to the desired EDR by using the arrow buttons at lower left.

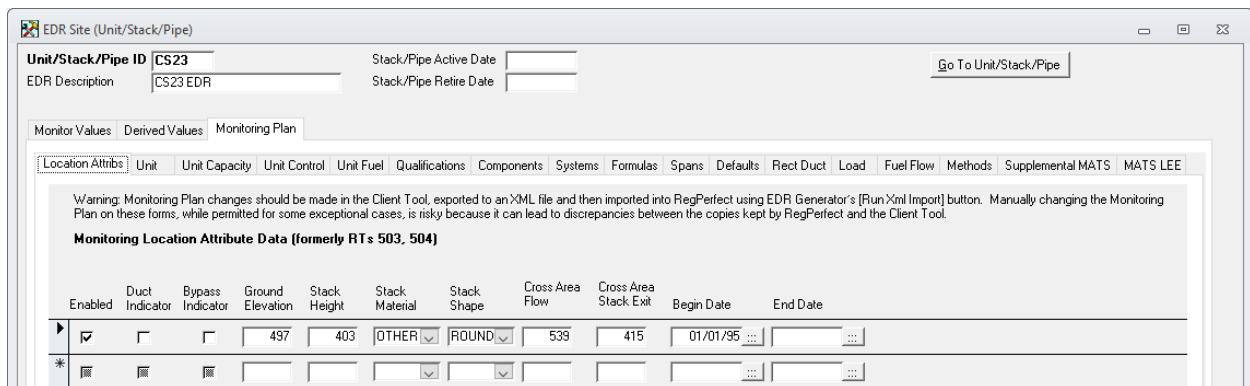


Each EDR consists of one or more units, stacks and pipes shown in the list on the *Sites* tab.

Double-click the Monitoring Site name of the desired unit, stack or pipe to open the EDR Site form.

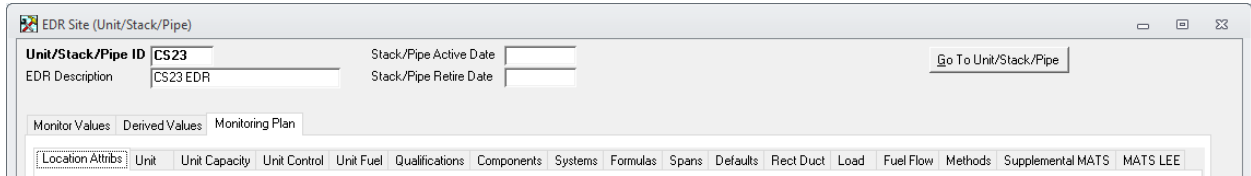


On the EDR Site form, select the *Monitoring Plan* tab. Each of the sub-tabs allows you to view/edit the monitoring plan data for a single MP XML Element.



4.3.3 Header of the EDR Site Form

The header is identical for all the monitoring plan forms:



Unit/Stack/Pipe ID The ID reported on the EDR of the unit, stack or pipe with which the monitoring plan records are associated (read-only)

EDR Description The EDR on which the unit, stack or pipe is included (read-only)

Stack/Pipe Active Date For stacks and pipes only, the activation date (XML element StackPipeData.ActiveDate)

Stack/Pipe Retire Date If applicable, the date on which the stack or pipe was retired (XML element StackPipeData.RetireDate)

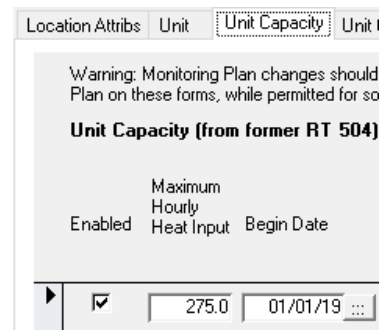
[Go To Unit/Stack/Pipe] This button allows you to navigate immediately to a different unit, stack or pipe of the same EDR without backing out to the Main Window first

4.3.4 The Enabled Field

The *Enabled* field, which shows as a checkbox on almost every monitoring plan form, is not a part of the actual monitoring plan but is used by RegPerfect for 2 purposes.

First, only records for which Enabled is true (checked) are included in an EDR report file.

Second, other RegPerfect applications contain dropdown lists that show data from the monitoring plan. Those lists do not include rows for which Enabled is false (unchecked).



4.3.5 Standard Monitoring Plan Forms

Most of the monitoring plan forms work identically and are documented as a group in this section. The following tabs/forms are included in this group:

Tab/Form Name	Corresponding XML Element
Location Attribs	Monitoring Location Attribute Data
Unit Capacity	Unit Capacity Data
Unit Control	Unit Control Data
Unit Fuel	Unit Fuel Data
Qualifications	Monitoring Qualification Data
Formulas	Monitoring Formula Data
Spans	Monitoring Span Data
Defaults	Monitoring Default Data
Rect Duct	Rectangular Duct WAF Data
Load	Monitoring Load Data
Fuel Flow	Monitoring System Fuel Flow Data
Methods	Monitoring Method Data
Supplemental MATS	Supplemental MATS Monitoring Method Data
MATS LEE	Monitoring Qualification LEE Data

To select/view any of the above forms, click the sub-tab with corresponding name. The Spans form, shown below, is used as an example for all these forms.

For guidance on the individual fields, consult the ECMPs Monitoring Plan Reporting Instructions.

To delete a record, click the record selector at the far left of the row and press the Delete key on the keyboard. In the screen shot at right, the FLOW record has been selected. To select multiple records, use Shift-Click.

	Component Enabled	Type	Scale	Method	MEC	MPC	Span Value
<input type="checkbox"/>	<input checked="" type="checkbox"/>	CO2	H			11.3	20
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FLOW		HD			22000000
<input type="checkbox"/>	<input checked="" type="checkbox"/>	NOX	H	TB		420	500

To add a record, begin filling in fields on the empty row at the bottom of the list. The record selector shows a pencil icon (at far left) to indicate you are

<input type="checkbox"/>	<input checked="" type="checkbox"/>	NOX	H	TB		420	500
	<input checked="" type="checkbox"/>						
*	<input type="checkbox"/>	Code	Description				
		CO2	CO2 Concentration (%)				

editing the record. To save, click on any other row or on a different tab. To abort, press the Esc key.

4.3.6 The Components Form

Components are found on the *Components* sub-tab of the EDR Site form's *Monitoring Plan* tab. The main form displays a list of all components for the unit, stack or pipe.

Warning: Monitoring Plan changes should be made in the Client Tool, exported to an XML file and then imported into RegPerfect using EDR Generator's [Run Xml Import Plan on these forms, while permitted for some exceptional cases, is risky because it can lead to discrepancies between the copies kept by RegPerfect and the Client Tool

Components (DbI-click to view/edit)

Enabled	Comp ID	Type	Range	Basis	Method	Manufacturer	Model/Version	Instrument
Yes	700	PRB			DIL	EPM	797	
Yes	701	PRB			DIL	EPM	797	
Yes	905	DAHS				TELEDYNE MONITOR LABS	REGPERFECT V	
Yes	A01	SO2	H	W	DIL	TELEDYNE API	100E	CS23_SO2L_B_Instrument
Yes	A02	SO2	H	W	DIL	TELEDYNE API	100E	CS23_SO2R_P_Instrument
Yes	A03	NOX	H	W	DIL	TELEDYNE API	200E	CS23_NOXL_B_Instrument
Yes	A04	NOX	H	W	DIL	TELEDYNE API	200E	CS23_NOXR_P_Instrument
Yes	A05	CO2	H	W	DIL	MILTON ROY	3300A	CS23_CO2L_B_Instrument
Yes	A06	CO2	H	W	DIL	MILTON ROY	3300A	CS23_CO2R_P_Instrument
Yes	A07	FLOW		W	U	TELEDYNE/MONITOR LABS	UF150	CS23_FLOWL_P_Instrument
Yes	A08	FLOW		W	U	TELEDYNE/MONITOR LABS	UF150	CS23_FLOWR_B_Instrument
Yes	A09	OP			ISC	TELEDYNE/MONITOR LABS	560	CS23_OPAC_P_Instrument

Sort by: Component ID Type Code

Filter On: Enabled True Type Code

Remove All Filters

Add New

Double-click any row in the list to edit that component.

[Add New] Add a new component

Sort By Check Component ID or Type Code to immediately resort the list

Filter On: Enabled Select True to see only enabled components, False to see only disabled components or blank to see both

Filter On: Type Code Select a type code to immediately filter the list on that component type

Open the Component form by double-clicking a component in the list or by clicking the [Add New] button.

Component ID Enter a component ID up to 3 characters. Component IDs must be unique within a unit/stack/pipe, but may be reused on different units. If the analyzer is a like kind replacement, the component ID must be of the form LK/*x*] where *x* is an integer not previously used at the unit/stack/pipe.

Instrument Select the appropriate instrument from the list (only for component type codes that represent a monitor or analyzer). This field is not a part of the monitoring plan or the Client Tool. It is used by RegPerfect to link the component with daily cal tests, interference checks and linearity tests performed on the instrument.

For guidance on the other fields, consult the ECMPs Monitoring Plan Reporting Instructions.

Analyzer Range History

Only for component types CO₂, O₂, NO_x and SO₂

Analyzer Range History		Range	Dual Range	Begin Date Hour	End Date Hour
			<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
*	H	High Range		<input type="text"/>	<input type="text"/>
	L	Low Range		<input type="text"/>	<input type="text"/>
	A	Auto Ranging		<input type="text"/>	<input type="text"/>

Range Select the range of the analyzer

Dual Range Check the box if the analyzer is dual range

Begin Date/Hour Indicate when the range of the analyzer took effect. Note that this date must be equal to or prior to the date on which the analyzer was placed in service.

Like Kind Installation History

Only for like kind components – those with component IDs of the form LK[x]. Each row represents a different period during which the LK analyzer was in service. When the LK analyzer is currently in service, leave the Removal Date blank.

Like Kind Installation History	
Installation Date	Removal Date
▶ 04/23/09 6:45
04/02/09 13:00 ...	04/09/09 12:15 ...
*

Installation Date The date/time the LK analyzer was placed in service

Removal Date The date/time the LK analyzer was removed from service

The installation and removal date fields are not a part of the monitoring plan or the Client Tool. These fields are used by RegPerfect to correctly calculate the component ID each hour and to assign the LK component ID to the appropriate set of daily calibration tests.

It is crucial that you add a new row each time the LK analyzer is placed in service (as opposed to just changing the Installation Date of an existing row).

Open the Monitoring System form by double-clicking a system in the list or by clicking the [Add New] button. The fields on the top half of the form are monitoring system properties. The list in the lower half shows all of the components that make up the system.

Monitoring System

Unit/Stack/Pipe ID: CS23
 Monitoring System ID: 1LF
 Enabled:
 System Type: FLOW
 System Designation: P
 Fuel Code: NFS
 Begin Date/Hour: 01/01/95 0:00
 End Date/Hour:
 Rata CEMs Tag:
 Rata Load Tag:
 SFSR Stackflow tag: (1-min scfh)
 SFSR K Constant:
 Hg MATS EmissionsLimit ugPerScm:
Monitoring System's Components (Dbl-click to view/edit)

Comp ID	Type	Begin Date/Hour	End Date/Hour
S01	DAHS	01/01/1995 00:00	12/31/2010 23:00
905	DAHS	01/01/2011 00:00	
A07	FLOW	01/01/1995 00:00	
D01	PLC	01/01/1995 00:00	12/31/2010 23:00

Add Component

Monitoring System ID

Enter a system ID up to 3 characters. System IDs must be unique within a unit/stack/pipe, but may be reused on different units.

Rata CEMs Tag

For monitoring systems that require RATA testing, select a 1-minute tag. RegPerfect's EDR Generator application will use this tag to compute the average CEMs value for each RATA run.

Rata Load Tag

For monitoring systems that require RATA testing, select the 1-minute load tag. RegPerfect's EDR Generator application will use this tag to compute the average load value for each RATA run.

[Add Component]

Add to the list of components that comprise the monitoring system.

Monitoring System's Components list

Double-click a component in the Monitoring System's Components list to edit or delete that component.

For Sorbent trap systems, additional tags and constants can be configured.

SFSR Stackflow tag: U2_StackFlow_scfh_1M (1-min scfh)
 SFSR K Constant: U2_HgSorbentSFVtoSFMMultiplier
 Hg MATS EmissionsLimit ugPerScm: U2_Hg_MATS_EmissionsLimit_ugPerScm

Hg MATS EmissionsLimit upPerScm Pick a constant whose values are in ugPerScm units.

For guidance on the other fields, consult the ECMPs Monitoring Plan Reporting Instructions.

Click [Add Component] or double-click a component in the Monitoring System's Component list to open the Monitoring System Component form.

Monitoring System's Component	
Unit/Stack/Pipe ID	CS0001
Monitoring System ID	100
Component ID	LK1
Component Type	NOXA
Enabled	<input checked="" type="checkbox"/>
Begin Date/Hour	4/13/09 12:00
End Date/Hour	
Remove Component Ok Cancel	

Component ID Select a component ID to add to the Monitoring System. The component type will be filled in automatically.

Begin Date/Hour The first hour during which the component was used in the system.

End Date/Hour The last hour during which the component was ever used in the system. This field should be blank unless the component has been permanently retired.

[Remove Component] This button deletes the component from the monitoring system. It does not delete the component from the component table/list. Nevertheless this button should only be used to correct mistakes – the correct way to remove a component from a system is to supply a value for the End Date/Hour, not to delete it.

The data on this form corresponds to XML Element MonitoringSystemComponentData

4.3.8 The Formulas Form

Formulas are found on the *Formulas* sub-tab of the EDR Site form's *Monitoring Plan* tab. The form displays a list of all formulas for the unit, stack or pipe.

Warning: Monitoring Plan changes should be made in the Client Tool, exported to an XML file and then imported into RegPerfect using EDR Generator's [Run XML Import] button. Manually changing the Monitoring Plan on these forms, while permitted for some exceptional cases, is risky because it can lead to discrepancies between the copies kept by RegPerfect and the Client Tool.

Monitoring Plan Formula (formerly RT520)

Enabled	Formula ID	Parameter Monitored	Formula Code	Start Date/Hour	End Date/Hour	Multiple Formulas for Primary/Backup Systems
<input type="checkbox"/>	101	SO2	F-1	01/01/95 0:00	12/31/08 23:00	<input type="checkbox"/> Using P/RB Monitors with Separate Formulas Component 1 P/B Designation: <input type="text"/> Component 2 P/B Designation: <input type="text"/>
<input checked="" type="checkbox"/>	104	NOxR	F-6	01/01/95 0:00		<input type="checkbox"/> Using P/RB Monitors with Separate Formulas Component 1 P/B Designation: <input type="text"/> Component 2 P/B Designation: <input type="text"/>

Formula: [1.66 TIMES 10e(-7)] TIMES S#[A01-1LS] TIMES S#[A07-1LF]

Formula: [1.194 TIMES 10e(-7)] TIMES Fc TIMES 100 TIMES S#[A03-1LN] OVER S#[A05-1LN]

Most of the fields on this form are part of the monitoring plan, and guidance for these fields can be found in the ECMPs Monitoring Plan Reporting Instructions. However, the fields in the box at far right are for RegPerfect's internal use and are explained below.

Using P/RB Monitors with Separate Formulas

For monitoring systems that include redundant backup analyzers, you may use separate/different formulas for the various combinations of primary and backup analyzers. If so, check this box to open the help window:

Multiple Formulas for Primary/Backup Systems

Using P/RB Monitors with Separate Formulas

Component 1 P/B Designation:

Component 2 P/B Designation:

S#[003-300]

Help with P/RB and Separate Formulas

Configuring Separate Formulas for Parameters which use Primary and Backup Monitor(s)

By checking this box, you have indicated that this parameter is calculated using data from primary and/or backup monitors and that separate formulas are used for each combination. To ensure that RegPerfect will correctly assign these formula IDs on the EDR, you must designate the analyzer components of the calculation as primary or backup. Use the tabs below for help – there is a separate tab for each supported parameter.

SO2 Mass Emissions | **NOx Emission Rate** | Heat Input | CO2 Mass Emissions | Moisture | Other

For NOx emission rate (formerly EDR record 320) calculated using NOx and CO2 or O2, configure the Primary/Backup Designation as follows:

1st Component (NOx): "P" to indicate NOx is from the primary NOx monitor
 "B" to indicate NOx is from the backup NOx monitor

2nd Component (diluent): "P" to indicate the diluent is from the primary diluent monitor
 "B" to indicate the diluent is from the backup diluent monitor

Follow the instructions on the help window to fill out Component 1 P/B Designation and Component 2 P/B Designation.

Completing this configuration requires advanced knowledge of RegPerfect and tag calculation scripts. Contact the Call Center for help if you need to support this scenario.

5. Special Wizards and Reports

5.1 Span Evaluation Report

From the answer to Policy Manual Question 10.33:

To comply with the annual span and range evaluation provisions of Part 75, you must examine your historical CEMS data at least once per year to see if the current span and range values meet the guideline in Section 2.1 in Appendix A ... if the majority (> 50%) of the historical data are found to be within the 20.0 to 80.0% band, the current span and range values are acceptable and may continue to be used.

EDR Setup has a report that calculates the percent of values between 20 and 80%. Navigate to the Spans sub-tab of the Monitoring Plan tab on the EDR Site form.

Monitor Values | Derived Values | Monitoring Plan

Location Attribs | Unit | Unit Capacity | Unit Control | Unit Fuel | Qualifications | Components | Systems | Formulas | **Spans** | Defaults | Rect Duct | Load | Fuel Flow | Methods | Supplemental MATS | MATS LEE

Warning: Monitoring Plan changes should be made in the Client Tool, exported to an XML file and then imported into RegPerfect using EDR Generator's [Run XML Import] button. Manually changing the Monitoring Plan on these forms, while permitted for some exceptional cases, is risky because it can lead to discrepancies between the copies kept by RegPerfect and the Client Tool.

Monitoring Span Data (formerly RT530)

Enabled	Component Type	Scale	Method	MEC	MPC	Span Value	Span Units	Full Scale	Scale Transition Point	Default High Range	Stackflow Only		Begin Date/Hr	End Date/Hr
											MPF (scfh)	Span Value (scfh)		
<input checked="" type="checkbox"/>	CO2	H	TB	0	14	20	PCT	24	0	0	0	0	01/01/95 0:00	
<input type="checkbox"/>	NOX	H	TB	0	800	1000	PPM	1500	0	0	0	0	06/09/95 0:00	01/17/02 13:00
<input type="checkbox"/>	NOX	H	HD	0	574.9	700	PPM	735	0	0	0	0	01/17/02 14:00	12/31/09 23:00
<input type="checkbox"/>	NOX	H	HD	574	575	700	PPM	735	0	0	0	0	01/01/10 0:00	09/13/11 4:00
<input checked="" type="checkbox"/>	NOX	H	HD	169	170	200	PPM	210	0	0	0	0	09/13/11 5:00	
<input type="checkbox"/>	SO2	H	F	0	577	700	PPM	700	0	0	0	0	01/01/95 0:00	01/17/02 13:00
<input checked="" type="checkbox"/>	SO2	H	HD	0	640	800	PPM	840	0	0	0	0	01/17/02 14:00	
*														

Span Evaluation Report

Click [Span Evaluation Report], at bottom right, to open the Span and Range Evaluation form.

Span and Range Evaluation form

Unit/Stack/Pipe ID: CS0001

Evaluation Start Date: 04/29/08 00:00

Evaluation End Date: 04/28/09 23:00

Select a component and click [Evaluate] to generate the span and range evaluation report. If necessary, enter an alternate full scale for Flow before evaluating.

Comp. ID	Parameter	TagName	InstrumentRange
003	CO2	CS1_CO2_Pct_1H	High
002	FLOW	CS1_StackFlow_scfh_1H	High
001	NOx	CS1_NOx_Ppm_1H	High
005	SO2	CS1_SO2_P75_Ppm_1H	High

Alternate Full Scale: ?

Select Alternative Tag ? Evaluate Close

This form shows a list of components and corresponding hourly average tags.

Click to select one component row at a time, then click [Evaluate] to run the report.

If the report results are suspect, you may need to select an alternative tag for a component. For stack flow, you may need to enter an alternate full scale.

Unit/Stack ID	Defaults to the current unit, stack or pipe but can be changed so that you may run the evaluation on components of other units, stacks or pipes.
Evaluation Start & End Dates	Defaults to 1 year ago through current time, but may be changed to any interval.
[Evaluate]	Click to select a component in the list, then click the [Evaluate] button to run the calculation and open the report (shown below).
[Select Alternative Tag]	In rare cases, the tag name automatically chosen and associated with the component may not be the desired hourly average tag. In such cases, click this button to select a different tag.
Alternate Full Scale	By default, the span evaluation calculation is performed using the full scale configured for the instrument associated with the component you select from the list. For stack flow, the input signal to RegPerfect is often in units kscfm – the instrument full scale must be configured in the same units in order to correctly scale 1-minute averages from the PLC or other controller. However, the hourly averages used in this calculation are in units scfh. In this case, you'll need to convert the configured full scale to units scfh and enter the value here before running the evaluation.

When you click [Evaluate], RegPerfect displays a report like the one below:

Span and Range Evaluation Test

Span and Range Evaluation Test Report

Unit ID: CS0001
Parameter: CO2
Component ID: 003
Tag Name: CS1_CO2_Pct_1H
Full Scale: 20
Interval: 04/29/08 0:00 through 04/28/09 23:00

Test Result: PASS

- 99.5 % of readings are between 20% and 80% of full scale
- 0.5 % of readings are < 20% of full scale
- 0 % of readings are > 80% of full scale

5.2 Load Usage Wizard

To help with the initial or recalculation of normal load and the two most frequently used load levels, EDR Setup has a load usage wizard. From 40CFR 75, Appendix A, 6.5.2.1(d)(1):

If the manner of operation of the unit changes significantly, such that the designated normal load(s) or the two most frequently used load levels change, the owner or operator shall repeat the historical load analysis and shall redesignate the normal load(s) and the two most frequently used load levels, as appropriate.

To use the wizard, navigate to the *Load* sub-tab of the *Monitoring Plan* tab on the EDR Site form.

Warning: Monitoring Plan changes should be made in the Client Tool, exported to an XML file and then imported into RegPerfect using EDR Generator's [Run Xml Import] button. Manually changing the Monitoring Plan on these forms, while permitted for some exceptional cases, is risky because it can lead to discrepancies between the copies kept by RegPerfect and the Client Tool.

Monitoring Load Data (formerly RTs 535, 536)

Enabled	Maximum Load	Load Units	Lower Operation Boundary	Upper Operation Boundary	Normal Level	Second Level	Second Normal Indicator	Load Analysis Date	MATS Maximum Load	Begin Date/Hr	End Date/Hr
<input checked="" type="checkbox"/>	600	Mw	205	540	H	L	<input checked="" type="checkbox"/>	04/01/09		04/01/09 1:00	04/01/10 0:00
<input type="checkbox"/>							<input type="checkbox"/>				

[Load Usage Wizard](#)

Click [Load Usage Wizard], at bottom right, to open the Load Analysis Wizard form.

1. Enter the Minimum Safe and Maximum load values. Click the [?] button for help if needed.

2. Review the default analysis period and change as needed. Click the [?] button for help.

3. Click the [Calculate Load Levels] button.

4. Click [Next]

Load Analysis Wizard

Unit/Stack/Pipe ID CS23

Step 1 of 2) Define the Load Range and Analysis Period and calculate Load Levels

Load Analysis Parameters

Load Range

Minimum Safe

Maximum

Analysis Period

Start Date

End Date

Load Levels

Low Load Level: >= and <= (>= 0% and <= 30% of operating range)

Mid Load Level: > and <= (> 30% and <= 60% of operating range)

High Load Level: > and <= (> 60% and <= 100% of operating range)

5. If the results show no changes to the Normal and Second load levels, click [Cancel]. Otherwise continue with step 6.

6. If desired, click the Second Normal Indicator checkbox to choose the 2nd most used load level as a second normal load.

7. Click [Done]

8. Back on the Monitoring Load Data form, review the results and set the End Date/Hr of the previous load analysis record to the hour before the Begin Date/Hr of the new analysis record.

Load Analysis Wizard

Unit/Stack/Pipe ID CS23

Step 2 of 2) Review and save Monitoring Load record (optionally, you may select a 2nd designated normal load)

Historical Load Usage By Level

Total Operating Hours (excluding hours in which Load < Minimum Safe or > Maximum)

Low Level Operating Hours Percent

Mid Level Operating Hours Percent

High Level Operating Hours Percent

Monitoring Load Record

Analysis Date

Begin Date/Hour

End Date/Hour

Maximum Load MW

Normal Level

Second Level

Second Normal Indicator

Monitoring Load Data (formerly RTs 535, 536)

Enabled	Maximum Load	Load Units	Lower Operation Boundary	Upper Operation Boundary	Normal Level	Second Level	Second Normal Indicator	Load Analysis Date	MATS Maximum Load	Begin Date/Hr	End Date/Hr
<input type="checkbox"/>	600	MW	205	540	H	L	<input checked="" type="checkbox"/>	04/01/09		04/01/09 1:00	04/01/10 0:00
<input checked="" type="checkbox"/>	600	MW	205	600	L	H	<input type="checkbox"/>	10/24/19		10/24/19 16:00	

6. Monitoring Plan Changes for Analyzer Replacement

The next two sections describe a few common CEMs changes and how to change your monitoring plan to account for them. Screen shots are from RegPerfect for those that wish or need to make the changes manually in both Client Tool and RegPerfect.

Because this document is the manual for EDR Setup, not the Client Tool, these instructions show how to make the changes manually in EDR Setup.

For those that wish to make the changes in the Client Tool and import them into RegPerfect, the following sections may still be very helpful since the same data would need to be modified in the Client Tool.

6.1 Temporary Replacement with Like Kind Analyzer

Previous additions to RegPerfect to support like kind analyzers have been made obsolete by ECMPs/XML – an entirely new design was made necessary by the XML schema. The changes needed for the initial use of a like kind analyzer are different than those for subsequent uses. Note that if the configuration changes below are made hours or days after the actual installation of the LK analyzer, some recalculations may be required.

6.1.1 Use a Like Kind Analyzer for the First Time

1. Do NOT add a new Instrument in RegPerfect

There is no need to add a new instrument in RegPerfect’s Configuration application, and doing so can actually cause some issues and complications.

2. Add the new component

Open the EDR Setup application.

Use the arrow controls at bottom left of the main window to navigate to the desired EDR.

Double-click the Monitoring Site column of the appropriate row to open the EDR Site form for that unit/stack/pipe.

Click to select the *Monitoring Plan* tab and the *Components* sub-tab.

Enabled	Comp ID	Type	Range	Basis	Method	Manufacturer	Model/Version	Instrument
Yes	700	PRB			DIL	EPM	797	
Yes	701	PRB			DIL	EPM	797	
Yes	905	DAHS				TELEDYNE MONITOR LABS	REGPERFECT V	
Yes	A01	SO2	H	W	DIL	TELEDYNE API	100E	CS23_SO2L_B_Instrument
Yes	A02	SO2	H	W	DIL	TELEDYNE API	100E	CS23_SO2R_P_Instrument

Click [Add New] to open the Component form and enter information about the LK component.

The screenshot shows the 'Component' form with the following details:

- Unit/Stack/Pipe ID:** CS23
- Component ID:** LK1
- Enabled:**
- Component Type:** NOX
- BasisCode:** W
- SFSR Sample Flow Tag:** (1-min rate)
- Instrument:** CS23_NOXL_B_Instrument
- Manufacturer:** TELEDYNE API
- Model/Version:** 200E
- Serial Number:** (empty)
- Sample Acq Method:** DIL

Analyzer Range History Table:

Range	Dual Range	Begin Date Hour	End Date Hour
H	<input type="checkbox"/>	01/01/19 0:00	
*	<input type="checkbox"/>		

Like Kind Installation History Table:

Installation Date	Removal Date
01/01/19 0:00	
*	

- The component ID must be LK/*x* where *x* is an integer not previously used for other LK components on this unit/stack/pipe
- After you enter the LK component ID and component type code, RegPerfect will attempt to automatically set the instrument to the same instrument being used by the original component. If for some reason this does not work, select the instrument yourself and verify afterward that it is the same one configured on the original component.
- At lower left, the analyzer range history must match the original analyzer except for the Begin Date/Hour which may be set to the time of initial use.
- At lower right, enter the Installation Date for the initial use of the LK analyzer. If you are doing this after the LK has been removed, also supply the Removal Date.

Note: the set of dates during which your LK analyzer is in service is tracked in the Like Kind Installation History at bottom right of the above form.

It is not necessary to have a different set of dates to track usage periods for the original analyzer as in previous versions, because RegPerfect assumes the original analyzer is in use for all periods other than those defined for the LK analyzer(s).

Close the Component form and check the updated component list. Except for the component ID, your LK analyzer should have the same values as the original analyzer:

Components (DbI-click to view/edit)

Enabled	Comp ID	Type	Range	Basis	Method	Manufacturer	Model/Version	Instrument
Yes	A03	NOX	H	W	DIL	TELEDYNE API	200E	CS23_NOXL_B_Instrument
Yes	A04	NOX	H	W	DIL	TELEDYNE API	200E	CS23_NOXR_P_Instrument
Yes	LK1	NOX	H	W	DIL	TELEDYNE API	200E	CS23_NOXL_B_Instrument

3. Add the LK component to one or more monitoring systems

On the EDR Site form, click the *Systems* tab, then click the monitoring system to which your LK component will be added. The current components of the system will show on the right.

Warning: Monitoring Plan changes should be made in the Client Tool, exported to an XML file and then imported into RegPerfect using EDR Generator's [Run XML Import] button. Manually Plan on these forms, while permitted for some exceptional cases, is risky because it can lead to discrepancies between the copies kept by RegPerfect and the Client Tool.

Monitoring Systems (Dbl-click to view/edit)							Components			
Enabled	Sys ID	Type	P/B	Fuel	Begin Date/Hour	End Date/Hour	Comp ID	Type	Begin Date/Hour	End Date/Hour
Yes	1LC	CO2	RB	NFS	01/01/1995 00:00		A05	CO2	01/01/1995 00:00	
Yes	1LF	FLOW	P	NFS	01/01/1995 00:00		S01	DAHS	01/01/1995 00:00	03/31/2003 23:00
Yes	1LN	NOX	RB	NFS	01/01/1995 00:00		905	DAHS	01/01/2011 00:00	
Yes	1LS	SO2	RB	NFS	01/01/1995 00:00		S01	DAHS	04/01/2003 00:00	12/31/2010 23:00

Double-click the monitoring system (above, in the list at left) to open the Monitoring System form. Click the [Add Component] button to open the Monitoring System's Component form (pictured below).

Select the new LK component from the Component ID list.

Set the Begin Date/Hour to the first hour in which the LK analyzer was used.

Note: do not change this Begin Date/Hour upon subsequent installations of the LK analyzer – this date specifically represents the first time it was used in the system. Also, do not provide an end date/hour when the LK is removed from service unless and until it is being permanently retired.

The screenshot shows the 'Monitoring System' form with the 'Monitoring System's Component' dialog box open. The dialog box contains the following fields:

- Unit/Stack/Pipe ID: CS23
- Monitoring System ID: 1RN
- Component ID: LK1
- Component Type: NOX
- Enabled:
- Begin Date/Hour: 01/01/19 00:00
- End Date/Hour: (empty)

Buttons for 'Remove Component', 'Ok', and 'Cancel' are visible at the bottom of the dialog. In the background, the 'Monitoring System' form shows a list of components with an 'Add Component' button at the bottom right.

If your LK component is in more than one monitoring system, repeat the above steps for each additional monitoring system.

Note: do not edit the original component to supply an end date/hour. The only time a component is assigned an end date/hour is when it is being permanently removed from a monitoring system.

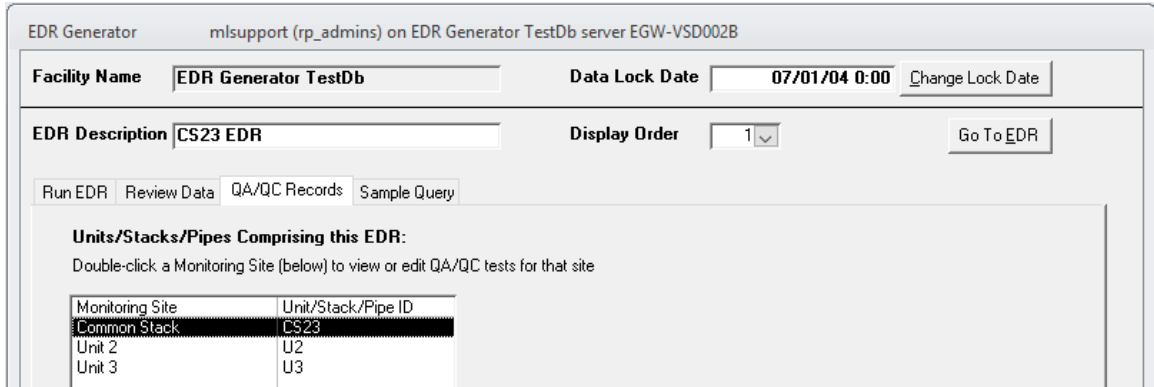
Click [Ok] to save your changes and close both forms.

4. Do not add the new Component's Daily Cal Test to the list of reported tests

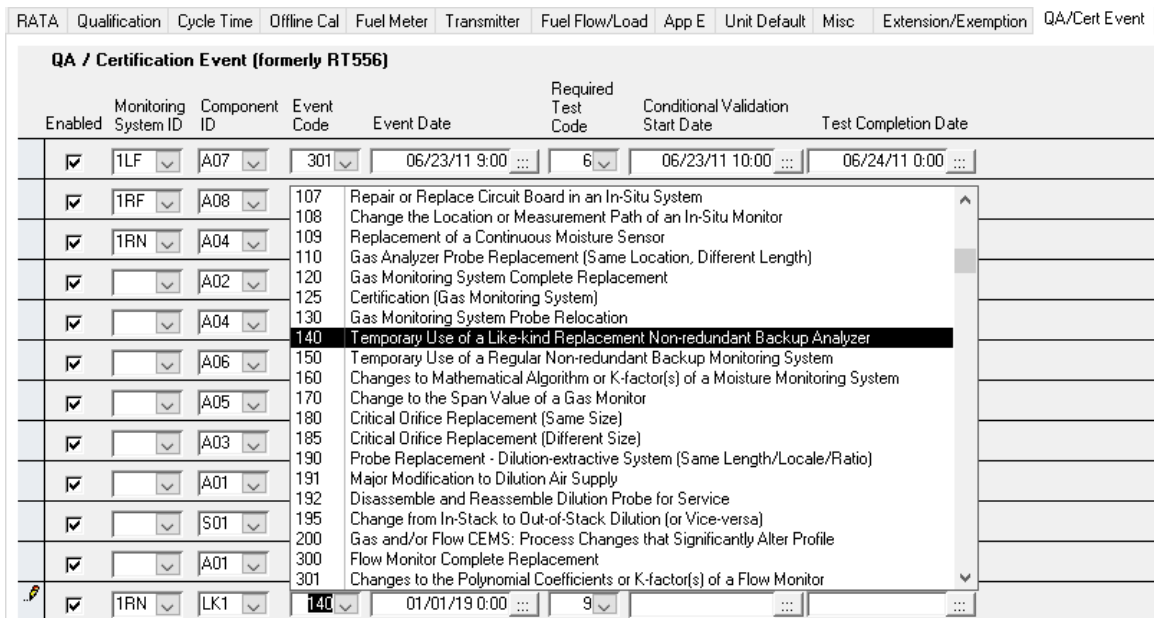
In previous versions, it was necessary to add the daily cal test for the LK analyzer to the form on the *Monitor Values* tab / *Daily QA Tests* sub-tab. This is no longer required for like kind analyzers.

5. Add a QA/Certification Event

Open the EDR Generator application and click the QA/QC Records tab.



Double-click the Monitoring Site name of the appropriate unit, stack or pipe to open the Unit/Stack/Pipe QA/Certification Tests form, then click to select the *QA/Cert Event* tab at far right. Add a new QA/Certification event with Event Code 140 and Required Test Code 9 as shown below.



6.1.2 Move a Like Kind Analyzer In or Out of Service

After the initial installation, subsequent uses of a like kind analyzer require much less configuration effort. The component should already be in the monitoring plan and have already been assigned to the appropriate monitoring system(s). Only the LK component's installation history needs to be adjusted.

1. Adjust the LK Component's Installation History

Open EDR Setup. Use the arrow keys at bottom left to navigate to the desired EDR, then double-click the appropriate unit/stack/pipe to open the EDR Site form. Click to select the Monitoring Plan tab, then the Components sub-tab.

Location	Attribs	Unit	Unit Capacity	Unit Control	Unit Fuel	Qualifications	Components	Systems	Formulas	Spans	Defaults	Rect Duct
Warning: Monitoring Plan changes should be made in the Client Tool, exported to an XML file and then imported into RegPerfect using EDR General Plan on these forms, while permitted for some exceptional cases, is risky because it can lead to discrepancies between the copies kept by RegPerfect.												
Components (dbl-click to view/edit)												
Enabled	Comp ID	Type	Range	Basis	Method	Manufacturer	Model/Version	Instrument				
Yes	700	PRB			DIL	EPM	797					
Yes	701	PRB			DIL	EPM	797					
Yes	905	DAHS				TELEDYNE MONITOR LABS	REGPERFECT V					
Yes	A01	SO2	H	W	DIL	TELEDYNE API	100E	CS23_SO2L_B_Instrument				
Yes	A02	SO2	H	W	DIL	TELEDYNE API	100E	CS23_SO2R_P_Instrument				
Yes	A03	NOX	H	W	DIL	TELEDYNE API	200E	CS23_NOXL_B_Instrument				
Yes	A04	NOX	H	W	DIL	TELEDYNE API	200E	CS23_NOXR_P_Instrument				
Yes	A05	CO2	H	W	DIL	MILTON ROY	3300A	CS23_CO2L_B_Instrument				
Yes	A06	CO2	H	W	DIL	MILTON ROY	3300A	CS23_CO2R_P_Instrument				
Yes	A07	FLOW		W	U	TELEDYNE/MONITOR LABS	UF150	CS23_FLOWL_P_Instrument				
Yes	A08	FLOW		W	U	TELEDYNE/MONITOR LABS	UF150	CS23_FLOWR_B_Instrument				
Yes	A09	OP			ISC	TELEDYNE/MONITOR LABS	560	CS23_OPAC_P_Instrument				
Yes	LK1	NOX	H	W	DIL	TELEDYNE API	200E	CS23_NOXL_B_Instrument				

Double-click to edit the LK component that has been removed from or placed in service. On the Component form, edit the Like Kind Installation History at bottom right.

Component
✕

Unit/Stack/Pipe ID CS23

Component ID LK1

Enabled

Component Type NOX

BasisCode W

SFSR Sample Flow Tag (1-min rate)

Instrument CS23_NOXL_B_Instrument

Manufacturer TELEDYNE API

Model/Version 200E

Serial Number

Sample Acq Method DIL

Analyzer Range History

Range	Dual Range	Begin Date Hour	End Date Hour
H	<input type="checkbox"/>	01/01/19 0:00	
*	<input type="checkbox"/>		

Like Kind Installation History

Installation Date	Removal Date
01/01/19 0:00	
*	

Note: a separate row is needed for each period of time that the LK analyzer was in service. Each time you place the analyzer in service, you should add a new row rather than overwrite the dates of an existing row.

Example: the physical changes described on the left should be accompanied by the configuration changes shown on the right.

LK initially installed on 1/1/19 at 0:00

	Installation Date	Removal Date
▶	01/01/19 0:00
*

LK removed on 1/9/19 at 12:00

	Installation Date	Removal Date
	01/01/19 0:00 ...	01/09/19 12:00 ...
▶

LK placed back in service on 1/23/19 at 06:45

	Installation Date	Removal Date
	01/01/19 0:00 ...	01/09/19 12:00 ...
	01/23/19 6:45

2. Add a QA/Certification Event

Open the EDR Generator application and click the QA/QC Records tab. Double-click the Monitoring Site name of the appropriate unit, stack or pipe to open the Unit/Stack/Pipe QA/Certification Tests form, then click to select the QA/Cert Event tab at far right.

If you placed the LK in service, add a row with Event Code 140. If you removed the LK analyzer from service, add a new row with Event Code 141.

RATA	Qualification	Cycle Time	Offline Cal	Fuel Meter	Transmitter	Fuel Flow/Load	App E	Unit Default	Misc	Extension/Exemption	QA/Cert Event
QA / Certification Event (formerly RT556)											
Enabled	Monitoring System ID	Component ID	Event Code	Event Date	Required Test Code	Conditional Validation Start Date	Test Completion Date				
<input checked="" type="checkbox"/>	1LF	A07	301	06/23/11 9:00 ...	6	06/23/11 10:00 ...	06/24/11 0:00 ...				
<input checked="" type="checkbox"/>	1RF	A08	301	06/23/11 9:00 ...	6	06/23/11 10:00 ...	06/24/11 0:00 ...				
<input checked="" type="checkbox"/>	1RN	A04	50					Recertification required following Long Term Cold Storage (reusing previously certified sys			
<input checked="" type="checkbox"/>		A02	51					Recertification required following Long Term Cold Storage (systems modified or replaced)			
<input checked="" type="checkbox"/>		A04	141					Replacement of primary analyzer after temporary use of Like-kind Replacement Analyzer			
<input checked="" type="checkbox"/>		A04	151					Replacement of primary analyzer after temporary use of Non-redundant Backup System			
<input checked="" type="checkbox"/>		A06	250					Initial Certification of PEMS			
<input checked="" type="checkbox"/>		A05	251					For PEMS, Modification to Flue Gas Handling System or Unit Operation			
<input checked="" type="checkbox"/>		A01	252					Changes to Instrumentation Used as Input to PEMS			
<input checked="" type="checkbox"/>		A01	253					Minor Change to PEMS Software			
<input checked="" type="checkbox"/>		A01	254					Expansion of PEMS Operating Envelope			
<input checked="" type="checkbox"/>		A03	255					PEMS Replacement			
<input checked="" type="checkbox"/>		A01	900					Sorber Material Changed (Appendix K Event)			
<input checked="" type="checkbox"/>		A01	950					Change in Coal Rank in Fuel (Hg LME Event)			
<input checked="" type="checkbox"/>		S01	1					DAHS Vendor Change			
<input checked="" type="checkbox"/>		A01	2					DAHS Software Version Upgrade			
<input checked="" type="checkbox"/>		A01	3					DAHS Failure			
<input checked="" type="checkbox"/>		A01	5					New Temp, Pressure or Molec Weight Correction Algorithms in DAHS			
<input checked="" type="checkbox"/>		A01	10					New Mathematical Algorithms in DAHS to convert NO concentration to total Nox			
<input checked="" type="checkbox"/>		A01	15					Change Missing Data Algorithms			
<input checked="" type="checkbox"/>	1RN	LK1	20					Installation of Add-on SO2 Emission Controls			
<input checked="" type="checkbox"/>	1RN	LK1	25					Installation of Add-on NOx Emission Controls			
<input checked="" type="checkbox"/>	1RN	LK1	141	01/09/19 12:00 ...							

Conditional Validation Start Date

When a like-kind analyzer is placed in service, its data becomes conditionally valid after passing a calibration test (the date/time may be found on the daily calibration report).

Test Completion Date

When a like-kind analyzer is placed in service, a linearity test must be conducted/passed within 168 operating hours. Enter the linearity test date/time in this field.

3. Optionally retire the LK component

If the LK analyzer is being permanently removed from service, the LK component should be removed from all monitoring systems. To "remove" a component, don't delete it. Instead, supply an end date/hour for the component in each monitoring system in which it resides.

From EDR Setup's EDR Site form, click the Monitoring System tab and then the Systems sub-tab.

Monitor Values | Derived Values | Monitoring Plan

Location Attribs | Unit | Unit Capacity | Unit Control | Unit Fuel | Qualifications | Components | Systems | Formulas | Spans | Defaults | Rect Duct | Load | Fuel Flow

Warning: Monitoring Plan changes should be made in the Client Tool, exported to an XML file and then imported into RegPerfect using EDR Generator's [Run Xml Impo Plan on these forms, while permitted for some exceptional cases, is risky because it can lead to discrepancies between the copies kept by RegPerfect and the Client To

Monitoring Systems (Dbl-click to view/edit)							Components			
Enabled	Sys ID	Type	P/B	Fuel	Begin Date/Hour	End Date/Hour	Comp ID	Type	Begin Date/Hour	End Date/Hour
Yes	1LC	CO2	RB	NFS	01/01/1995 00:00		A06	CO2	01/01/1995 00:00	
Yes	1LF	FLOW	P	NFS	01/01/1995 00:00		S01	DAHS	01/01/1995 00:00	12/31/2010 23:00
Yes	1LN	NOX	RB	NFS	01/01/1995 00:00		905	DAHS	01/01/2011 00:00	
Yes	1LS	SO2	RB	NFS	01/01/1995 00:00		A04	NOX	01/01/1995 00:00	
Yes	1RC	CO2	P	NFS	01/01/1995 00:00		LK1	NOX	01/01/2019 00:00	
Yes	1RF	FLOW	RB	NFS	01/01/1995 00:00		D02	PLC	01/01/1995 00:00	12/31/2010 23:00
Yes	1RN	NOX	P	NFS	01/01/1995 00:00		701	PRB	01/01/1995 00:00	

Double-click the monitoring system to open the Monitoring System form, then double-click the LK component to open the Monitoring System's Component form.

Monitoring System

Unit/Stack/Pipe ID: CS23
 Monitoring System ID: 1RN
 Enabled:
 System Type: NOX
 System Designation: P
 Fuel Code:
 Begin Date/Hour:
 End Date/Hour:
 Rata CEMs Tag:
 Rata Load Tag:
 SFSR Stackflow ta:
 SFSR K Constant:
 Hg MATS Emission:

Monitoring System's Component

Unit/Stack/Pipe ID: CS23
 Monitoring System ID: 1RN
 Component ID: LK1
 Component Type: NOX
 Enabled:
 Begin Date/Hour: 01/01/19 0:00
 End Date/Hour: 05/04/19 0:00

Remove Component Ok Cancel

Comp ID	Type	Begin Date/Hour	End Date/Hour
A06	CO2	01/01/1995 00:00	
S01	DAHS	01/01/1995 00:00	12/31/2010 23:00
905	DAHS	01/01/2011 00:00	
A04	NOX	01/01/1995 00:00	
LK1	NOX	01/01/2019 00:00	

(1-min scfh)

Add Component

Enter the date the component was retired in the End Date/Hour field. Repeat these steps for each monitoring system that contains the LK component

6.2 Permanently Retire and Replace an Analyzer

Prior to ECMPs/XML, sources were allowed to install a replacement analyzer and to reuse the same component ID provided that there was no overlap in reporting data from the old analyzer and QA tests from the new one (see Policy Manual question 10.14). This option is no longer supported under ECMPs/XML.

When permanently replacing an analyzer, you must use a new component ID.

Recipe:

1. Modify the existing RegPerfect instrument if needed, or add a new instrument *only if absolutely necessary*

If the new and old instrument are similar in that both measure the same range (low, high or both), use the existing instrument and do not add a new one. If the new instrument has a different full scale and/or span, simply edit those constants.

You may access the full scale and span constants from Editor or, as shown at right, from the Instrument form of the Configuration application.

Range	Enabled	Parameter	Constant Name (click to add/edit values)	Current Value
High Range	<input checked="" type="checkbox"/>	Full Scale	CS23_NOXR_P_Instrument_HighRangeFullScale	735
		Span	CS23_NOXR_P_Instrument_HighRangeSpan	700
Low Range	<input type="checkbox"/>	Full Scale		
		Span		

Double-click each of the constant names (in turn) in the lower, center section of the Instrument form to open the Constant Value Editor form.

Add a new row with the Effective From date/time and new Value as shown at right.

Effective From	Effective Through	Value
01/01/00 0:00		735
06/01/19 0:00		700

When you save or close the form, the Effective Through column of the old value will be automatically set to 1 minute prior to the Effective From of the new value.

Effective From	Effective Through	Value
06/01/19 0:00		700
01/01/00 0:00	05/31/19 23:59	735

Note: do NOT simply change the Value of Constant During Effective Period – to make calibration reports and other calculations work, you must add a new row so that RegPerfect can tell which full scale or span value was effective at any given time.

If you must add a new instrument

Add a new instrument only if the new and old analyzers have different ranges or some other fundamental difference. Complete the steps below *as soon as possible after making the physical change to the CEMs*. These steps assume you have a fairly thorough understanding of the Configuration application – contact the Call Center if you need help.

- a. Rename the old instrument

Open the Configuration application. From the Menu, select Instrumentation Menu, then Setup Instruments. In the list that opens, find and double-click the old instrument. Change the qualifier to "Old".

Range	Enabled	Parameter	Constant Name (click to add/edit values)	Current Value
High Range	<input checked="" type="checkbox"/>	Full Scale	CS23_NOXR_Old_P_Instrument_HighRangeFullScale	700
		Span	CS23_NOXR_Old_P_Instrument_HighRangeSpan	700
Low Range	<input type="checkbox"/>	Full Scale		
		Span		

Save the changes. When prompted whether to change the instrument name, click [Yes]. Afterward (using the above example), the instrument will appear in the list as CS23_NOXR_Old_P_Instrument.

b. Add the new instrument and calibration setup

Add the new instrument, a daily calibration definition and, if applicable, a quarterly calibration definition. Be sure to supply initial values for the full scale, span and cal reference value constants.

c. Change the controller mapping (Configuration App)

On the Controller Form, find the register or Bailey Tag or channel mapped to the old instrument name and change it to map to the new instrument name:

Register to Instrument/Tag Mapping						
DB		PLC				
Address	Type	Bit	I/O	Instrument Name / Range	Scaling Constant (dbl-click to view/edit)	
0	Channel		Input	CS23_NOXR_Old_P_Instrument	High	CS23_NOXR_Old_P_Instrument_HighR
*	Channel		Input	CS23_NOXL_B_Instrument		
				CS23_NOXR_Old_P_Instrument		

After changing the instrument name, click the Scaling Constant to the right and you'll be prompted whether you'd like it to be changed to the new instrument's full scale constant – respond by clicking [Yes]. If you are changing from a single range to dual range, you'll also need to add a new row for the low range. After completing these changes, stop and restart RegPerfect services.

Note: until you complete this step and restart services, both raw data values and calibration results will be incorrectly collected. Data values will be scaled using the old instrument's full scale, and calibration tests will be incorrectly attached to the old instrument causing them to later be reported on the EDR with the wrong component ID.

2. Add the new component (EDR Setup application)

Whether or not you added a new instrument in step 1, you must always add a new component for the new analyzer.

Open EDR Setup. Navigate to the desired EDR using the arrow buttons at lower left, then double-click the monitoring site name of the desired unit, stack or pipe. Select the *Monitoring Plan* tab and the *Components* sub-tab.

Click the [Add New] button at the far right.

Monitor Values Derived Values Monitoring Plan

Location Attribs Unit Unit Capacity Unit Control Unit Fuel Qualifications **Components** Systems Formulas Spans Defaults Rect Duct Load Fuel Flow

Warning: Monitoring Plan changes should be made in the Client Tool, exported to an XML file and then imported into RegPerfect using EDR Generator's [Run Xml Import Plan on these forms, while permitted for some exceptional cases, is risky because it can lead to discrepancies between the copies kept by RegPerfect and the Client Tool

Components (Dbl-click to view/edit)

Enabled	Comp ID	Type	Range	Basis	Method	Manufacturer	Model/Version	Instrument
Yes	700	PRB			DIL	EPM	797	
Yes	701	PRB			DIL	EPM	797	
Yes	905	DAHS				TELEDYNE MONITOR LABS	REGPERFECT V	
Yes	A01	SO2	H	W	DIL	TELEDYNE API	100E	CS23_SO2L_B_Instrument
Yes	A02	SO2	H	W	DIL	TELEDYNE API	100E	CS23_SO2R_P_Instrument
Yes	A03	NOX	H	W	DIL	TELEDYNE API	200E	CS23_NOXL_B_Instrument
Yes	A04	NOX	H	W	DIL	TELEDYNE API	200E	CS23_NOXR_Old_P_Instrument
Yes	A05	CO2	H	W	DIL	MILTON ROY	3300A	CS23_CO2L_B_Instrument
Yes	A06	CO2	H	W	DIL	MILTON ROY	3300A	CS23_CO2R_P_Instrument
Yes	A07	FLOW		W	U	TELEDYNE/MONITOR LABS	UF150	CS23_FLOWL_P_Instrument
Yes	A08	FLOW		W	U	TELEDYNE/MONITOR LABS	UF150	CS23_FLOWR_B_Instrument
Yes	A09	OP			ISC	TELEDYNE/MONITOR LABS	560	CS23_OPAC_P_Instrument
Yes	LK1	NOX	H	W	DIL	TELEDYNE API	200E	CS23_NOXL_B_Instrument

Add New

On the Component form, supply all the requested information. If you added a new instrument in step 1, select it from the Instrument drop-down list. If not, select the old, existing instrument. Remember to supply the range history (at lower left) if the instrument is a gas analyzer. Set the Begin Date Hour to the date and time at which the analyzer was installed.

Component

Unit/Stack/Pipe ID: CS23

Component ID: A10

Enabled:

Component Type: NOX

BasisCode: W

SFSR Sample Flow Tag: (1-min rate)

Instrument: CS23_NOXL_B_Instrument

Manufacturer: CS23_CO2L_B_Instrument

Model/Version: CS23_CO2R_P_Instrument

Serial Number: CS23_FLOWL_P_Instrument

Sample Acq Method: CS23_FLOWR_B_Instrument

CS23_NOXL_B_Instrument

CS23_NOXR_Old_P_Instrument

CS23_OPAC_P_Instrument

CS23_SO2L_B_Instrument

CS23_SO2R_P_Instrument

Analyzer Range History

Range	Dual Range	Begin Date Hour	End Date Hour
H	<input type="checkbox"/>	06/01/19 0:00	
*	<input type="checkbox"/>		

Like Kind Installation History

Note: if you are reusing an existing instrument, the Manufacturer, Model/Version and Serial Number may be incorrectly defaulted after you select the Instrument from the dropdown list. If so, you'll need to overwrite those defaults with the correct information.

3. Add the new component to the existing monitoring system and retire the old component

Select the *Systems* sub-tab and single-click the monitoring system(s) (on the left) to which the new analyzer is being added. The components currently in that system will appear on the right.

Monitor Values Derived Values Monitoring Plan

Location Attribs Unit Unit Capacity Unit Control Unit Fuel Qualifications Components Systems Formulas Spans Defaults Rect Duct Load Fuel Flow

Warning: Monitoring Plan changes should be made in the Client Tool, exported to an XML file and then imported into RegPerfect using EDR Generator's [Run Xml Import Plan on these forms, while permitted for some exceptional cases, is risky because it can lead to discrepancies between the copies kept by RegPerfect and the Client Tool.

Monitoring Systems (Dbl-click to view/edit)							Components			
Enabled	Sys ID	Type	P/B	Fuel	Begin Date/Hour	End Date/Hour	Comp ID	Type	Begin Date/Hour	End Date/Hour
Yes	1LC	CO2	RB	NFS	01/01/1995 00:00		A06	CO2	01/01/1995 00:00	
Yes	1LF	FLOW	P	NFS	01/01/1995 00:00		S01	DAHS	01/01/1995 00:00	12/31/2010 23:00
Yes	1LN	NOX	RB	NFS	01/01/1995 00:00		905	DAHS	01/01/2011 00:00	
Yes	1LS	SO2	RB	NFS	01/01/1995 00:00		A04	NOX	01/01/1995 00:00	
Yes	1RC	CO2	P	NFS	01/01/1995 00:00		LK1	NOX	01/01/2019 00:00	05/04/2019 00:00
Yes	1RF	FLOW	RB	NFS	01/01/1995 00:00		D02	PLC	01/01/1995 00:00	12/31/2010 23:00
Yes	1RN	NOX	P	NFS	01/01/1995 00:00		701	PRB	01/01/1995 00:00	

Double-click the monitoring system (in list at left) to open the Monitoring System form.

To retire the old component, double-click the component (in the list at bottom) to open the Monitoring System's Component form. Supply the date/hour on which the analyzer was last used to record data.

Monitoring System

Unit/Stack/Pipe ID: CS23
 Monitoring System ID: 1RN
 Enabled:
 System Type: NOX
 System Designation: P
 Fuel Code:
 Begin Date/Hour:
 End Date/Hour:
 Rata CEMs Tag:
 Rata Load Tag:
 SFSR Stackflow tag:
 SFSR K Constant:
 Hg MATS Emission:

Monitoring System's Component

Unit/Stack/Pipe ID: CS23
 Monitoring System ID: 1RN
 Component ID: A04
 Component Type: NOX
 Enabled:
 Begin Date/Hour: 01/01/95 0:00
 End Date/Hour: 5/31/19 23:00

Remove Component Ok Cancel

Comp ID	Type	Begin Date/Hour	End Date/Hour
A06	CO2	01/01/1995 00:00	
S01	DAHS	01/01/1995 00:00	12/31/2010 23:00
905	DAHS	01/01/2011 00:00	
A04	NOX	01/01/1995 00:00	

Add Component

Click [Ok] to save and return to the Monitoring System form.

Click the [Add Component] button and enter the information for the new component. After saving your changes, make certain that the Begin Date/Hour for the new component is 1 hour later than the End Date/Hour for the old component.

Monitoring System's Components (Dbl-click to view/edit)

Comp ID	Type	Begin Date/Hour	End Date/Hour
A06	CO2	01/01/1995 00:00	
S01	DAHS	01/01/1995 00:00	12/31/2010 23:00
905	DAHS	01/01/2011 00:00	
A04	NOX	01/01/1995 00:00	05/31/2019 23:00
A10	NOX	06/01/2019 00:00	

Add Component

Until you complete this step and restart RegPerfect services, hourly calculations of the component ID will produce incorrect results. However, the incorrect CIDs can be relatively easily repaired after the fact by recalculating the appropriate hourly tag.

In cases where the existing monitoring system has poor historical data availability, you may wish to retire the existing monitoring system (rather than just the old component) and add an entirely new monitoring system. You may want to discuss the particulars of your scenario with EPA or your region rep before creating a new monitoring system.

4. Add the new Component's Daily Test(s) to the list of reported tests (EDR Setup application)

Still on the EDR Site form of EDR Setup , select the *Monitor Values* tab and then the *Daily QA Tests* sub-tab, and click the [Add New] button at the bottom of the screen. The Add Daily Test to Emissions EDR form will open. Click to select the new component in the list, then click [OK].

Monitor Values | Derived Values | Monitoring Plan

SO2 | NOx | CO2 | CO2D | O2 | H2O | Stackflow | MATS | GFM | Daily/Weekly QA Tests

Daily Calibration Tests and Interference Checks

Daily and Weekly Tests to be Included in Emissions EDR (Dbl-click to edit)

Enabled	Comp ID	Comp Type	Instrument	Range	Test Type
Yes	A01	SO2	CS23_SO2L_B_Instrument	High	Daily Cal
Yes	A02	SO2	CS23_SO2R_P_Instrument	High	Daily Cal
Yes	A04	NOX	CS23_NOXR_Old_P_Instrument	High	Daily Cal

Add Daily Test to Emissions EDR

Select one or more tests from the list and click Save to include in the Emissions EDR:

Comp ID	Comp Type	Instrument	Range	Test Type
A03	NOX	CS23_NOXL_B_Instrument	High	Daily Cal

5. Add an event code and complete the required certification tests on the new analyzer

After making the above configuration changes, you may begin performing certification tests (see Policy Manual Q&A 13.21).

Open the EDR Generator application and click the QA/QC Records tab. Double-click the Monitoring Site name of the appropriate unit, stack or pipe to open the Unit/Stack/Pipe QA/Certification Tests form, then click to select the *QA/Cert Event* tab at far right.

Remember to add a QA/Certification Event in EDR Generator with the appropriate event code (101, 101, 300 or 400).

RATA										
Qualification	Cycle Time	Offline Cal	Fuel Meter	Transmitter	Fuel Flow/Load	App E	Unit Default	Misc	Extension/Exemption	QA/Cert Event
QA / Certification Event (formerly RT556)										
Enabled	Monitoring System ID	Component ID	Event Code	Event Date	Required Test Code	Conditional Validation Start Date	Test Completion Date			
<input checked="" type="checkbox"/>		A01	102	04/15/10 7:00 ...	17		04/20/10 8:00 ...			
<input checked="" type="checkbox"/>	1RN	A10	100	06/01/19 0:00 ...						
<input checked="" type="checkbox"/>			99 Other							
<input checked="" type="checkbox"/>			100 Permanent Gas Analyzer Replacement (Like-kind per Policy Question 7.13)							



RegPerfect® EDR Generator

User Manual and Help Documentation

Updated: August 2020

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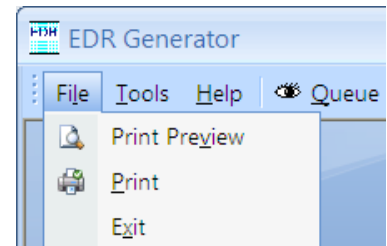
1. Introduction

EDR Generator is used to create, review and correct quarterly emissions and QA/certification XML EDR files that can be imported into EPA's Client Tool. The application also provides an interface for viewing and editing QA and certification test data, such as linearity and RATA tests, that are reported on EDRs.

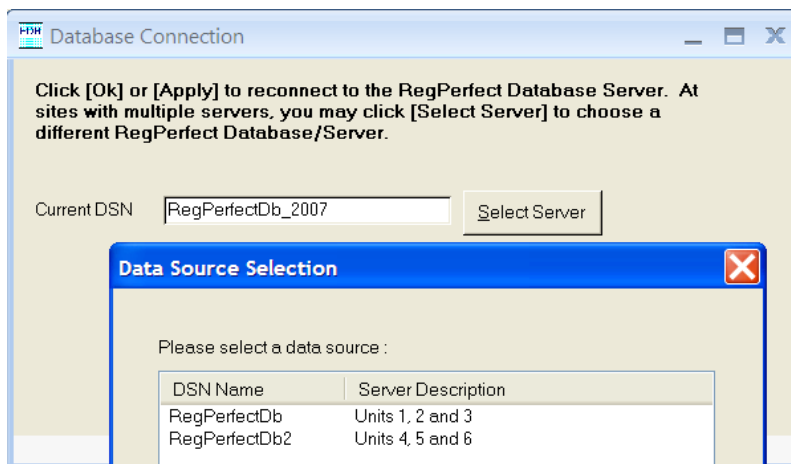
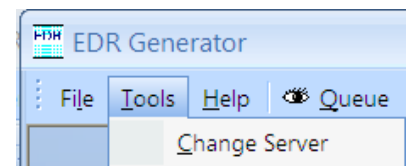
1.1 Menu Bar

EDR Generator's menu bar has several functions:

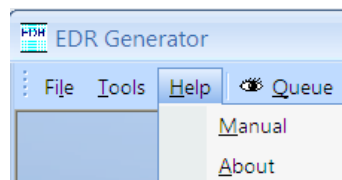
- File / Print Preview
Show a print preview of the open form(s). Press [Esc] to close the preview.
- File / Print
Print the open form(s) to the Windows default printer
- File / Exit
Exit the application



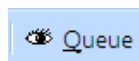
- Tools / Change Server
Opens the Database Connection form. At sites with more than one RegPerfect server, click the [Select Server] button to open the Data Source Selection form which allows you to connect to a different server's RegPerfectDb database without stopping and restarting EDR Generator.

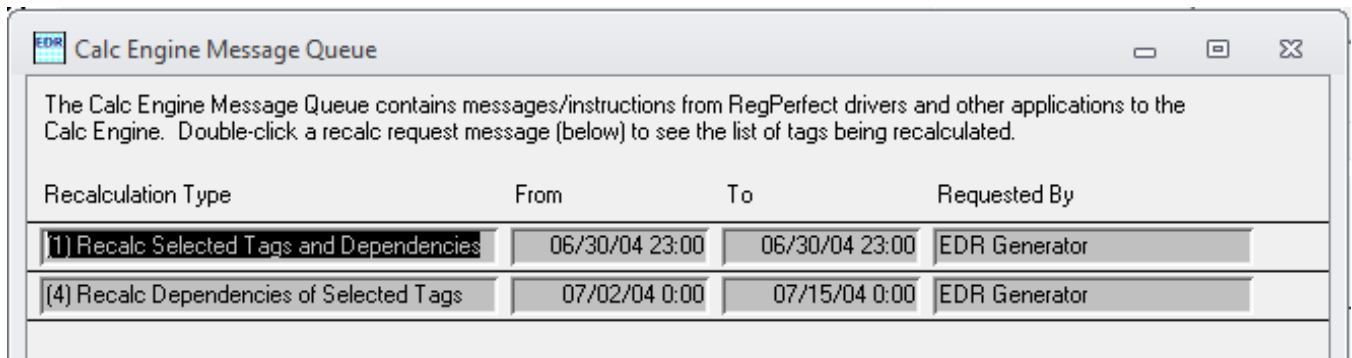


- Help / Manual
Opens the PDF version of this manual
- Help / About
Displays program version information

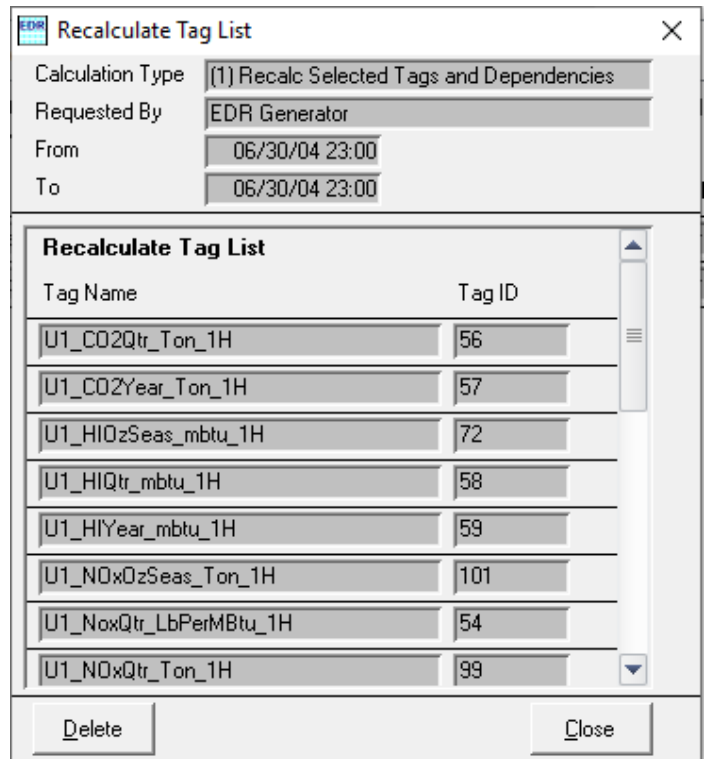


- Queue
Opens the Calc Engine Message Queue form.





This form, which automatically updates every 10 seconds, shows recalculations and other instructions that have been issued to RegPerfect's Calculation Engine. Double-click a message to open the Recalculate Tag List form on which you can view the list of tags affected by that message.



You may delete messages from this form if necessary by using the [Delete] button.

Calc Engine messages should not be deleted during the course of normal operations. Deleting a message may ultimately result in errors on the EDR that have to be corrected by manually issuing re-calc requests.

1.2 Main Window

The Main Window allows you to work with one EDR at a time. For facilities that have multiple EDRs, the record number is shown at bottom left (1 of 2 in the example below). To navigate to a different EDR, click the arrows at bottom left.

EDR Generator mlsupport (rp_admins) on EDR Generator TestDb server EGW-VSD002B

Facility Name Data Lock Date [Change Lock Date](#)

EDR Description Display Order [Go To EDR](#)

Run EDR | Review Data | QA/QC Records | Sample Query

Submission Interval

Complete Quarter: Quarter Year

Data Review Interval

Custom: Start Time End Time

EDR Type

QA/QC Tests

Emissions

Monitoring Plan

Pre-check

[Pre-check EDR](#)

[View Results](#)

EDR Path/File Name [Build File Name](#)

[Generate EDR](#) [View EDR](#) [Run XML Import](#) [Run EDR Setup](#)

Include Out of Use Tags in Tag Lists

Record: 1 of 2 | No Filter | Search

By default, tag lists throughout this application do not include out of use tags. To include them, check the box near the lower left corner.

The four tabs – Run EDR, Review Data, QA/QC Records and Sample Query -- are discussed in depth in ensuing sections.

[Go To EDR] An alternative to the navigation buttons at lower left; click this button to select a different EDR from a pop-up list and navigate to the selected EDR.

[Change Lock Date] Modify the Data Lock Date.

The Data Lock Date is a system-wide setting used to prevent accidental recalculation of data already reported to EPA and other regulatory agencies. Suppose you have just submitted emissions EDRs for quarter 2, 2009 – set Data Lock Date to 7/1/09 00:00 to prevent inadvertent changes to that data (and earlier data) that might result in discrepancies between EPA's and RegPerfect's annual sum calculations.

Data Lock Date

The Data Lock Date is used to prevent inadvertent recalculations of data that has already been reported to EPA or other regulatory agencies. RegPerfect will not modify sample data prior to Data Lock Date.

It is STRONGLY recommended that Data Lock Date only be set to the first hour of a calendar quarter, and only after the EDR and other reports for that quarter have been submitted.

Data Lock Date [Start of Quarter](#)

[Apply](#)

[Ok](#)

[Cancel](#)

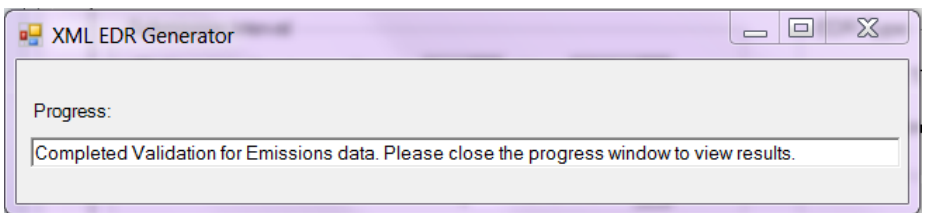
2. PreCheck EDR

Before running an emissions EDR and importing it into ECMPS, you can check your data for some common problems. Select a submission interval and click the [Pre-check EDR] button.

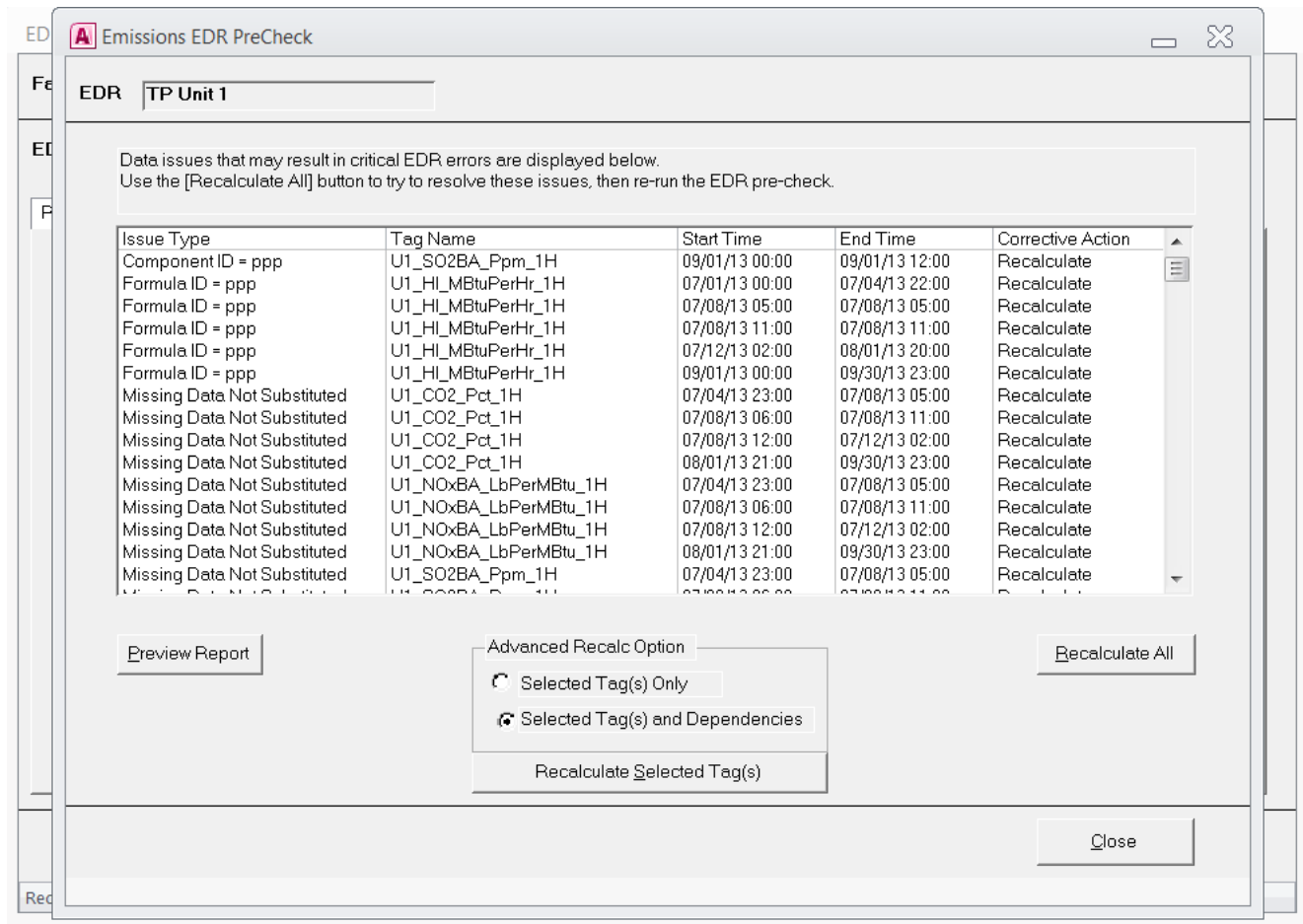
The screenshot shows the EDR Generator application window. The title bar reads "EDR Generator mlsupport (rp_admins) on EDR Generator TestDb server EGW-VSD002B". The main interface includes several sections:

- Facility Name:** EDR Generator TestDb
- Data Lock Date:** 07/01/04 0:00 (with a "Change Lock Date" button)
- EDR Description:** Unit 1 EDR
- Display Order:** 1 (with a "Go To EDR" button)
- Navigation:** Run EDR, Review Data, QA/QC Records, Sample Query
- Submission Interval:** Complete Quarter (selected), Quarter: 2, Year: 2004; Data Review Interval; Custom: Start Time 04/01/04 0:00, End Time 06/30/04 23:00
- EDR Type:** QA/QC Tests, Emissions (selected), Monitoring Plan (with a help icon)
- Pre-check Section (highlighted in red):** Pre-check EDR (button), View Results (button)
- EDR Path/File Name:** C:_RPv7 Testing\Unit 1 EDR.2004q2.EM.xml (with a "Build File Name" button)
- Buttons:** Generate EDR, View EDR, Run XML Import, Run EDR Setup
- Footer:** Include Out of Use Tags in Tag Lists (checkbox), Record: 1 of 2, No Filter, Search

A progress window will be displayed showing periodic progress messages and a validation completion message.



When you close the Progress window, the EDR Pre-check form will open automatically showing all the issues found in your specified date range.



Each row in the list indicates a potentially fatal error that would cause the Client Tool to reject your EDR. These types of issues are detected by the [Pre-Check EDR] function:

- IDs equal to "ppp". This includes component, monitoring system, formula, Appendix E segment IDs and operating condition codes.
- Un-substituted missing data.

Your first attempt to resolve the issues should be a recalculation over the problem interval. Click the [Recalculate All] button, wait for the recalculation to complete, then re-run the EDR Pre-Check. If there are still issues, contact the Call Center for help.

[Recalculate All] Inserts recalculation requests – with dependencies – for all listed tags and intervals

[Recalculate Selected Tag(s)] Advanced users may wish to select one or more rows in the list and recalculate only the selected tags/intervals (use Shift-Click or CTRL-click to select multiple tags). Use the radio buttons to select whether or not to also recalculate dependent tags.

[Preview Report] View the list as a report which may be printed or exported to file.

The safest way to recalculate is by using the [Recalculate All] button. This will ensure that every problem tag is recalculated along with all downstream tags such as quarterly and annual sums.

Recalculation Status:

After clicking [Recalculate All] or [Recalculate Selected Tag(s)], a pop-up window opens – this window will automatically check every few seconds until your recalculations are complete, then close automatically. Alternatively, you may close the window at any time (this will not cancel the recalcs) and check the status manually by viewing the Message Queue.

The screenshot shows the 'Emissions EDR PreCheck' window. The 'EDR' field is set to 'TP Unit 1'. A dialog box titled 'EDRPreCheck Recalculation' is open, displaying the message: 'The request to recalculate has been added to the Calc Engine Message Queue. This form will close automatically to let you know when the recalculation is complete. (Alternatively, you may close this form at any time and manually check the Message Queue.)' with a 'Close' button. Below the dialog, a table lists data issues and their corresponding tags and dates.

Missing Data Not Substituted	U1_NOxBA_LbPerMBtu_1H	07/08/13 06:00	07/08/13 11:00	Recalculate
Missing Data Not Substituted	U1_NOxBA_LbPerMBtu_1H	07/08/13 12:00	07/12/13 02:00	Recalculate
Missing Data Not Substituted	U1_NOxBA_LbPerMBtu_1H	08/01/13 21:00	09/30/13 23:00	Recalculate
Missing Data Not Substituted	U1_SO2BA_Ppm_1H	07/04/13 23:00	07/08/13 05:00	Recalculate

At the bottom of the window, there are buttons for 'Preview Report', 'Recalculate All', and 'Close'. An 'Advanced Recalc Option' section contains radio buttons for 'Selected Tag(s) Only' and 'Selected Tag(s) and Dependencies', with a 'Recalculate Selected Tag(s)' button below it.

After the recalculations are complete, return to the Main Window and run EDR Pre-check again to see if the issues have been resolved.

3. Run EDR

The *Run EDR* tab of the main window is used to create and view emissions and QA/QC EDRs in the XML file format.

Submission Interval Select the interval – normally a complete quarter – for the EDR. Use the Custom option to run the EDR for any interval (even for a single hour), or select Data Review Interval to use the same interval you’ve been working with on the *Review Data* tab.

EDR Type Select QA/QC Tests or Emissions. The Monitoring Plan EDR has been intentionally disabled for this release. Monitoring plan changes should be made first in the Client Tool and corrected until they evaluate cleanly. Afterward, the Client Tool’s MP XML file may be imported into RegPerfect, or the same changes may be manually made using RegPerfect’s EDR Setup application.

EDR Path/File Name Enter the desired path and file name. When you select different submission intervals or EDR types, the file name is automatically updated (though the *path* is left as-is unless you manually change it). You may type over and change the automatically generated file name.

[Generate EDR] Create an XML EDR file based on the above selections. A progress window displays during report generation.

[View EDR] Use Notepad to open the EDR file in the EDR Path/File Name box.

[Run EDR Setup] Open the EDR Setup application which might be needed in rare cases to correct configuration issues causing EDR errors.

For QA/QC EDRs, linearity, RATA and other tests are included in the report if (1) they are enabled AND (2) the test date falls within the selected submission interval.

4. Review Data

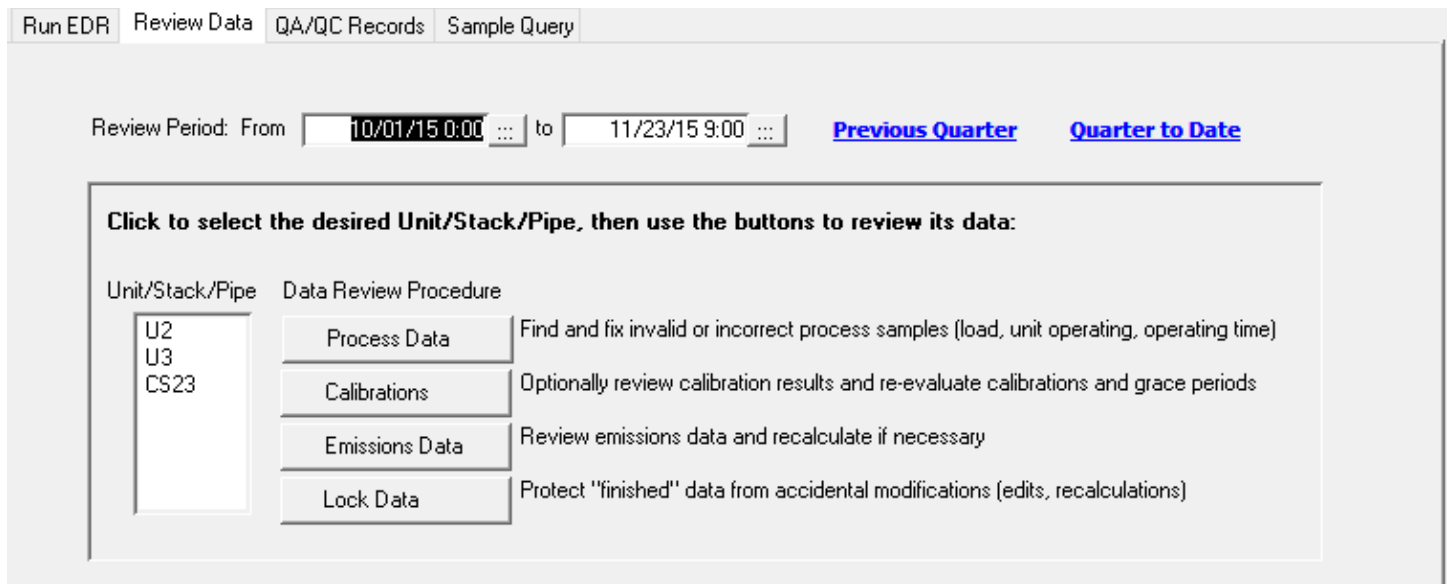
The *Review Data* tab offers a recipe for finding and correcting issues with data reported in the quarterly emissions EDR. All of the suggested steps (1 through 4) are optional, but some or all may be helpful when used:

- proactively to quality assure emissions data on a daily, weekly or monthly basis or
- in reaction to Client Tool emissions evaluation errors when preparing a quarterly submission

The steps for reviewing data are:

1. Find invalid process data
2. Review daily calibration tests, out-of-control periods and expired grace periods
3. View emissions data in an EDR-like format and recalculate data if necessary
4. Set the Data Lock Date after successful submission to prevent inadvertent recalculations

Each of these features are discussed in more detail in ensuing sections.



Run EDR | Review Data | QA/QC Records | Sample Query

Review Period: From to [Previous Quarter](#) [Quarter to Date](#)

Click to select the desired Unit/Stack/Pipe, then use the buttons to review its data:

Unit/Stack/Pipe	Data Review Procedure
<input type="text" value="U2"/> <input type="text" value="U3"/> <input type="text" value="CS23"/>	<input type="button" value="Process Data"/> Find and fix invalid or incorrect process samples (load, unit operating, operating time)
	<input type="button" value="Calibrations"/> Optionally review calibration results and re-evaluate calibrations and grace periods
	<input type="button" value="Emissions Data"/> Review emissions data and recalculate if necessary
	<input type="button" value="Lock Data"/> Protect "finished" data from accidental modifications (edits, recalculations)

Review Period: Enter the dates/times of the interval of data you wish to review.
From / to

[Step 1: Process Data] Described in section 3.1 below.

[Step 2: Calibrations] Described in section 3.2 below.

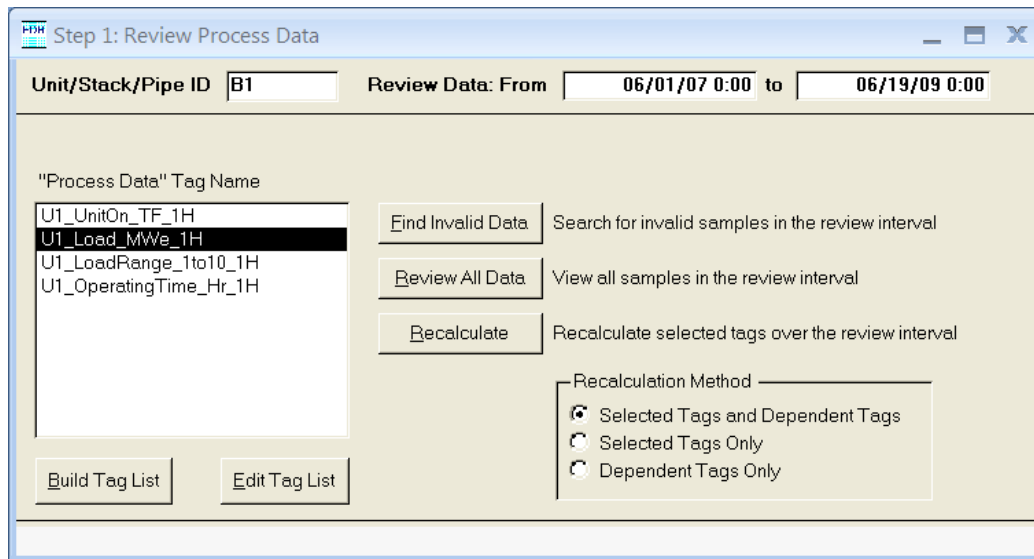
[Step 3: Emissions Data] Described in section 3.3 below.

[Step 4: Data Lock Date] Open the Data Lock Date form described in section 1.2 above.

4.1 Step 1: Process Data

Use this step to find invalid process data during the review interval. This step is probably most useful as part of a proactive Q/A process. If invalid data is found during unit operating periods, the Editor application should be used to edit 1-minute data and recalculate the 1-hour process tags.

Click the [Step 1: Process Data] button to open the *Step 1: Review Process Data* form. The data review interval at top right is defaulted to the setting on the main window's *Review Data* tab, but it can be overridden here. The list box on the left should show all the 1-hour process tags that are reported in the emissions EDR (if not, use the [Build Tag List] button to automatically populate the list). Select one or more tags by left clicking them in the list.



[Find Invalid Data] Search the review interval for invalid data for the selected tag(s).

[Review All Data] Show all data in the review interval for the selected tag(s).

[Recalculate] Recalculate the selected tags over the review interval – use this if you think the hourly tag is not in agreement with the 1-min data, or if you have edited 1-min data.

Recalculation Method Use the default method unless you are an advanced user – this method will ensure that any changes to the recalculated tag are propagated to other tags.

[Build Tag List] Automatically build the list of process tags based on your configuration. The list will not include out of use tags unless the checkbox near the lower left corner of the main window is checked.

[Edit Tag List] Open a form allowing you to manually edit, insert and delete tags from the list. The list will not include out of use tags unless the checkbox near the lower left corner of the main window is checked.

Query results from [Find Invalid Data] and [Review All Data] show the time, tag, value and status flags:

Query Results

Date/Time	Tag Name	Value	SI	EV	ES	EC	M	C	OS	FF	OD	OM	QA	<	IT	IF	IQ	Z1	Z2	Z4	H1	H2	H4	5D	ZT	LT	MT	HT
06/18/09 12:00	U1_Load_MWe_1H	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
06/18/09 13:00	U1_Load_MWe_1H	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
06/18/09 14:00	U1_Load_MWe_1H	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
06/18/09 15:00	U1_Load_MWe_1H	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
06/18/09 16:00	U1_Load_MWe_1H	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.2 Step 2: Calibrations

Use this step to review daily calibration and interference tests, out-of-control periods and grace periods. If you think data validation is suspect, for example after changing a bottle value that was originally entered incorrectly, you can reassess daily tests from this form.

Click the [Step 2: Calibrations] button to open the *Step 2: Review Calibrations and Data Validity* form. The data review interval at top right is defaulted to the setting on the main window's *Review Data* tab, but it can be overridden here. The list box on the left should show all calibrated instruments (if not, use the [Build Instrument List] button to automatically populate the list). Select one or more instruments by left clicking them in the list.

Calibrated Instrument	Validated Tag
U1_CO2_P_Instrument (High range) Daily Cal Error Test	U1_CO2Dil_Pct_1M
U1_DP_P_Instrument (High range) Daily Cal Error Test	U1_DeltaP_InH2O_1M
U1_NOX_P_Instrument (High range) Daily Cal Error Test	U1_NOx_Ppm_1M
U1_OPAC_P_Instrument (High range) Daily Cal Error Test	U1_Opac_Pct_1M
U1_SO2DualRg_P_Instrument (High range) Daily Cal Error Test	U1_SO2Hi_Ppm_1M
U1_DP_P_Instrument Daily Interference Test	U1_DeltaP_InH2O_1M
U1_SO2DualRg_P_Instrument (Low range) Daily Cal Error Test	U1_SO2Lo_Ppm_1M
U1_H2S_P_Instrument (High range) Daily Cal Error Test	U1_H2S_Ppm_1M

View Calibrations View calibration results for selected instrument

View Sample Data View sample data during Out-of-Control periods

Reassess Calibrations Reassess calibrations and grace periods

[View Calibrations] Shows daily cal and/or interference test results during the review interval for the selected instrument(s).

[View Sample Data] Shows invalidated data in the review interval for the selected tag(s). Initially, when the Query Results form is opened, it only shows minutes for which the tag was invalidated due to a failed cal or expired grace period. To see all minutes in the review interval, you can click the filter icon in the toolbar to remove the filter.

[Reassess Calibrations] Reassess daily cal and/or interference tests over the review interval – use this if you think the data validation is incorrect, or after changes to bottle values or unit operating data.

[Build Instrument List] Automatically build the list of process tags based on your configuration.

[Edit Instrument List] Open a form allowing you to manually edit, insert and delete tags from the list.

You may use this form to compare calibration test results with the status of 1-minute, measured data. Select an instrument, click [View Calibrations] to open the *Calibration Browser* form, then click [View Sample Data] to open the *Query Results* form. Place the forms side by side to view daily cal results next to the out-of-control and grace period status of the associated tag. In the example below, you can see that the 1-min NOx tag was flagged out-of-control (the "OD" flag is checked) beginning at 4/8/09 16:32 which matches the time of a failed daily NOx cal test.

The screenshot shows the EDR Generator interface with two windows open: 'Calibration Browser' and 'Query Results'.

Calibration Browser: Daily Calibration Error Tests for U1_NOX_P_Instrume

End Time	Use For QA	Conducted Online	Status
04/08/09 6:39	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Pass
04/08/09 16:32	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Fail
04/09/09 6:39	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Fail
04/09/09 12:37	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Fail
04/09/09 13:47	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Pass
04/10/09 6:39	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Fail
04/10/09 9:00	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Pass

Query Results

Tag ID / Name: 3 U1_NOx_Ppm_1M

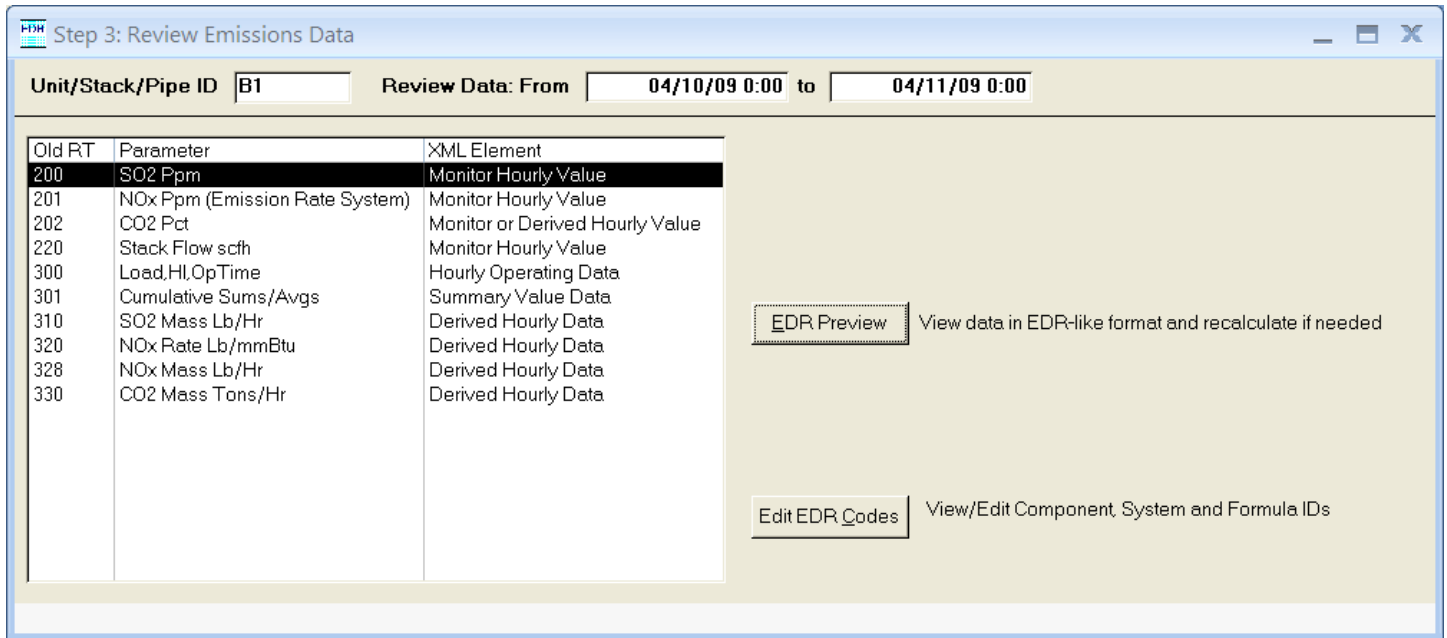
Date/Time	Value	Unit Operating	SI	C	OD	QA
04/08/09 16:28	105.6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
04/08/09 16:29	104.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
04/08/09 16:30	102.9	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
04/08/09 16:31	101.6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
04/08/09 16:32	100.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
04/08/09 16:33	99.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
04/08/09 16:34	97.9	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
04/08/09 16:35	96.8	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

If daily test results and 1-minute tag status don't appear to match, use the [Reassess Calibrations] button to redo the data validation. This is particularly useful if you have had to belatedly enter new bottle values or edit the unit operating tag.

4.3 Step 3: Emissions Data

Use this step to review emissions data in an EDR-like format and, if necessary, to perform recalculations to correct issues. If you encounter an evaluation error in the Client Tool for your quarterly emissions file, this is a good place to troubleshoot the problem.

Click the [Step 3: Emissions Data] button to open the *Step 2: Review Emissions Data* form. The data review interval at top right is defaulted to the setting on the main window's *Review Data* tab, but it can be overridden here. The list box shows all the XML Elements that have been configured to be included in the EDR. The "Old RT" column shows the corresponding record type from the old and now obsolete text based EDR.



[EDR Preview] To open the EDR Preview, double-click an element in the list, or left click to select the desired XML Element in the list and click this button.

[Edit EDR Codes] Click to open the EDR Codes form to view/edit calculated component, system and formula IDs. This is an advanced and rarely needed function that should be used only by the TML Call Center or advanced users.

The EDR Previews are all very similar in that they show all the fields that are printed on the EDR (for each particular XML element), and the values shown are the same as those that print on the EDR. The previews are useful when correcting issues primarily because it is so much faster to check a corrected value, component ID or MODC on the preview than to run the EDR, import it into the Client Tool and evaluate the data.

4.3.1 SO2 Monitor Hourly Value EDR Preview

With the exception of the cumulative sums (old RT301), all of the previews have the same features shown and described below for the SO2 Monitoring Hourly Value.

Time	Unit Operating	Component ID	System ID	SO2 Availability		Measured SO2		Adjusted SO2		
				Value	SI	Value	SI	Value	SI	MODC
04/10/09 0:00	<input checked="" type="checkbox"/>	011	411	99.5	<input type="checkbox"/>	120.8	<input type="checkbox"/>	120.8	<input type="checkbox"/>	1
04/10/09 1:00	<input checked="" type="checkbox"/>	011	411	99.5	<input type="checkbox"/>	139.8	<input type="checkbox"/>	139.8	<input type="checkbox"/>	1
04/10/09 2:00	<input checked="" type="checkbox"/>	011	411	99.5	<input type="checkbox"/>	141.1	<input type="checkbox"/>	141.1	<input type="checkbox"/>	1
04/10/09 3:00	<input checked="" type="checkbox"/>	011	411	99.5	<input type="checkbox"/>	133.8	<input type="checkbox"/>	133.8	<input type="checkbox"/>	1
04/10/09 4:00	<input checked="" type="checkbox"/>	011	411	99.5	<input type="checkbox"/>	141.5	<input type="checkbox"/>	141.5	<input type="checkbox"/>	1
04/10/09 5:00	<input checked="" type="checkbox"/>	011	411	99.5	<input type="checkbox"/>	139.7	<input type="checkbox"/>	139.7	<input type="checkbox"/>	1
04/10/09 6:00	<input checked="" type="checkbox"/>			99.5	<input type="checkbox"/>	0.0	<input checked="" type="checkbox"/>	139.7	<input type="checkbox"/>	6
04/10/09 7:00	<input checked="" type="checkbox"/>			99.5	<input type="checkbox"/>	0.0	<input checked="" type="checkbox"/>	139.7	<input type="checkbox"/>	6
04/10/09 8:00	<input checked="" type="checkbox"/>			99.5	<input type="checkbox"/>	0.0	<input checked="" type="checkbox"/>	139.7	<input type="checkbox"/>	6

Features:

- the box at the top of the form shows the RegPerfect tags used to calculate the values reported in the EDR
- hours are shown only if they would be reported on the EDR, so offline hours are not shown for most XML elements
- component, system and other IDs show as blank in the preview for hours where they would be reported as blank/null on the EDR
- none of the data shown on the preview are directly editable

[Requery] Re-read all preview data from the database. You might use this to see changes to the data after recalculations.

[Recalculate] Open the Recalculate form which allows you to recalculate some or all the pertinent tags.

If there are incorrect values, IDs (component/system/formula) or MODCs shown on the preview, you should first try to recalculate the tag(s) for the affected hour(s). If that doesn't solve the problem, use the Editor application to look at 1-minute measured data to diagnose the issue. If you find it necessary to edit 1-minute data, recalculate the downstream tags from Editor or from here.

4.3.2 Summary Value EDR Preview

Open this preview by double-clicking the Summary Value Data row in the list of XML Elements:

Unlike the other EDR previews which show hourly data over the entire review interval, the Summary Value preview shows data for only the last hour of the review interval – typically you'll want to see the last hour of a calendar quarter since those are the values reported on the EDR.

Step 3: Review Emissions Data		
Unit/Stack/Pipe ID	B1	Review Data: From 01/01
Old RT	Parameter	XML Element
200	SO2 Ppm	Monitor Hourly Value
201	NOx Ppm (Emission Rate System)	Monitor Hourly Value
202	CO2 Pct	Monitor or Derived Hourly Value
220	Stack Flow scfh	Monitor Hourly Value
300	Load,HI,OpTime	Hourly Operating Data
301	Cumulative Sums/Avggs	Summary Value Data

Summary Value Preview (RT301/RT307)

SO2 Quarter Tag	<input type="text" value="U1_SO2Qtr_Ton_1H"/>	Op. Hours Quarter Tag	<input type="text" value="U1_OpHoursQtr_Hr_1H"/>
SO2 Year Tag	<input type="text" value="U1_SO2Year_Ton_1H"/>	Op. Hours Year Tag	<input type="text" value="U1_OpHoursYear_Hr_1H"/>
CO2 Quarter Tag	<input type="text" value="U1_CO2Qtr_Ton_1H"/>	Op. Hours Ozone Tag	<input type="text"/>
CO2 Year Tag	<input type="text" value="U1_CO2Year_Ton_1H"/>	Op. Time Quarter Tag	<input type="text" value="U1_OpTimeQtr_Hr_1H"/>
NOx Rate Quarter Tag	<input type="text" value="U1_NOxQtr_LbPerMBtu_1H"/>	Op. Time Year Tag	<input type="text" value="U1_OpTimeYear_Hr_1H"/>
NOx Rate Year Tag	<input type="text" value="U1_NOxYear_LbPerMBtu_1H"/>	Op. Time Ozone Tag	<input type="text"/>
HI Quarter Tag	<input type="text" value="U1_HIQtr_Mbtu_1H"/>	NOx Mass Quarter Tag	<input type="text"/>
HI Year Tag	<input type="text" value="U1_HIYear_Mbtu_1H"/>	NOx Mass Year Tag	<input type="text" value="U1_HIYear_Mbtu_1H"/>
HI Ozone Tag	<input type="text"/>	NOx Mass Ozone Tag	<input type="text"/>

<input type="text" value="03/31/2009 23:00"/>	Quarter	Year	Ozone Season
SO2 Sum	<input type="text" value="1535.7"/>	<input type="text" value="1535.7"/>	
CO2 Sum	<input type="text" value="1026894"/>	<input type="text" value="1026894"/>	
NOx Rate Average	<input type="text" value="0.366"/>	<input type="text" value="0.366"/>	
Heat Input Sum	<input type="text" value="9432302"/>	<input type="text" value="9432302"/>	
Operating Hours Sum	<input type="text" value="2123"/>	<input type="text" value="2123"/>	
Operating Time Sum	<input type="text" value="2120.37"/>	<input type="text" value="2120.37"/>	
		<input type="text" value="9432302"/>	

Other than the fact that only one record is displayed, the Summary Value Preview operates just like all the other previews as described in the previous section.

4.3.3 Recalculate Emissions From EDR Previews

From any of the EDR previews, click the [Recalculate] button. The *Recalculate* form opens with all tags selected and from/to times set to the data review interval. You may change the default interval and the selected tags. Unless you are an advanced user, leave the Recalculation Method set to the default to ensure that your recalculation is propagated to all dependent tags such as quarterly sums/averages.

Recalculate

From: 04/10/2009 00:00

To: 04/11/2009 00:00

Tags (click to select/deselect)

- U1_SO2_Ppm_1H
- U1_SO2BA_Ppm_1H
- U1_AvailSO2_PMA_1H

Recalculation Method

- Selected Tags and Dependent Tags
- Selected Tags Only
- Dependent Tags Only

Ok

Cancel

After clicking [Ok], you may optionally open the Message Queue from the toolbar. Your recalculation request will show in the list until it has been completed.

Calc Engine Message Queue

The Calc Engine Message Queue contains messages/instructions from RegPerfect drivers and other applications to the Calc Engine. Double-click a recalc request message (below) to see the list of tags being recalculated.

Recalculation Type	From	To	Requested By
(1) Recalc Selected Tags and Dependencies	04/10/09 0:00	04/11/09 0:00	EDR Generator

Re-calc requests and other messages are stored in a database table and are deleted by Calc Engine only after the successful completion of the request. The above form re-reads the message table every 10 seconds, so that you can see your re-calc message disappear and know that the recalculation is complete.

If your re-calc requests stays in the list for an unreasonably long time, it may indicate a problem in a tag calculation script. Contact the Call Center for help.

5. QA/QC Records

The *QA/QC Records* tab provides access to the QA and QC test records for each unit/stack/pipe.

Many EDRs only have a single unit/stack as in the example at right. However, if you have a multi or common stack (or pipe), the list will contain one row per unit and stack or pipe.

To work with the QA/QC records, double-click the desired site in the list to open the *Unit/Stack/Pipe Certification Tests* form.

EDR Description: TP Unit 1 [Go To EDR]

Run EDR | Review Data | **QA/QC Records** | Sample Query

Units/Stacks/Pipes Comprising this EDR:
Double-click a Monitoring Site (below) to view or edit QA/QC tests for that site

Monitoring Site	Unit/Stack/Pipe ID
Unit 1	B1

This form contains tabs for each of the QA/QC tests that might be required on an EDR. The unit/stack/pipe and EDR you are working with are shown at top left.

Unit/Stack/Pipe ID: B1 [Go To Unit/Stack/Pipe] View Q/A Reports

EDR Description: TP Unit 1

7-Day Cal | **Linearity** | Flow/Load | RATA | Qualification | Cycle Time | Offline Cal | Fuel Meter | Transmitter | Fuel Flow/Load | App E | Misc | Extension/Exemption | QA/Cert Event

7-Day Calibration Error Test Data (formerly RT600)

Enabled	Component	Monitoring System	Start Date	End Date	Test No.	Instrument Name	Span Scale	Result
<input checked="" type="checkbox"/>	SO2A (011)		05/01/09	05/07/09	5	U1_SO2DualRg_P_Instrumei	H	Passed
<input checked="" type="checkbox"/>	NOX (013)		05/01/09	05/06/09	2	U1_NOX_P_Instrument	H	Passed
<input checked="" type="checkbox"/>	CO2 (012)		05/01/09	05/06/09	3	U1_CO2_P_Instrument	H	Passed
<input checked="" type="checkbox"/>	FLOW (014)		05/01/09	05/04/09	4	U1_DP_P_Instrument		Passed

[Go To Unit/Stack/Pipe] For EDRs that consist of more than one unit/stack/pipe, click this button to choose a different site from a list, and the form will refresh to show that site's QA/QC tests.

[View Q/A Reports] Open a form from which you may run RATA, 7-day cal and linearity reports.

The individual tabs are described in the ensuing sections, but the documentation for most of the forms is rather sparse and is intended primarily to ensure that you can find, add, edit and delete records. The reason for the sparse content is that details about *how* to edit these records are already documented in the ECMPs Quality Assurance and Certification Reporting Instructions. Repeating the information in this manual would be redundant and would result in synchronization issues as EPA continues to update their reporting instructions.

Use the ECMPs Quality Assurance and Certification Reporting Instructions for detailed guidance on how to enter your QA/QC test results.

At the time this manual was published, the ECMPs Reporting Instructions could be downloaded from <http://ecmps.pqa.com/documents.shtml>

5.1 7-Day Calibration Error Test

The *7-Day Cal* tab shows all 7-day calibration tests conducted at the unit/stack/pipe.

Double-click any field to view/edit the results on the *7-Day Calibration Error Test* form (shown below).

[Report] Open a report in preview mode for the selected test.

[Add] Starts the 7-Day Cal Test wizard – follow the prompts to create a new test.

[View/Edit] View the results of the selected test on the 7-Day Calibration Error Test form (shown below).

7-Day Cal | Linearity | Flow/Load | RATA | Qualification | Cycle Time | Offline Cal | Fuel Meter | Transmitter | Fuel Flow/Load | A

7-Day Calibration Error Test Data (formerly RT600)

Enabled	Component	Monitoring System	Start Date	End Date	Test No.	Instrument Name	Span Scale	Result
<input checked="" type="checkbox"/>	SO2A (011)		05/01/09	05/07/09	5	U1_SO2DualRg_P_Instrumei	H	Passed
<input checked="" type="checkbox"/>	NOX (013)		05/01/09	05/06/09	2	U1_NOX_P_Instrument	H	Passed
<input checked="" type="checkbox"/>	CO2 (012)		05/01/09	05/06/09	3	U1_CO2_P_Instrument	H	Passed
<input checked="" type="checkbox"/>	FLOW (014)		05/01/09	05/04/09	4	U1_DP_P_Instrument		Passed

On the *7-Day Calibration Error Test* form, you may modify the following fields:

- Enabled
- Reason for Test
- Test Number
- Comment

The remainder of the data is not directly editable and is pulled from calibration tables and calculated by the Add wizard.

7-Day Calibration Error Test

EDR Site ID | B1 | Instrument Name/Range | U1_SO2DualRg_P_Instrument | High | Group | 5

Enabled Reason For Test | INITIAL | Pass/Fail | Passed

Test Number | 5

Comment |

600 Records (not directly editable)

UnitID	CompID	SysID	Date	Hour	SpanValue	RefValue	MeasValue	Results	AltPS	Level	Span	Test	Reason
B1	011		5/1/2009	6	1200	0	0	0	0	Z	H	5	INITIAL
B1	011		5/1/2009	6	1200	1026	1022.5	0.3	0	H	H	5	INITIAL
B1	011		5/2/2009	6	1200	0	0.7	0.1	0	Z	H	5	INITIAL
B1	011		5/2/2009	6	1200	1026	1026.8	0.1	0	H	H	5	INITIAL
B1	011		5/3/2009	6	1200	0	-0.7	0.1	0	Z	H	5	INITIAL
B1	011		5/3/2009	6	1200	1026	1027	0.1	0	H	H	5	INITIAL
B1	011		5/4/2009	6	1200	0	0.3	0	0	Z	H	5	INITIAL
B1	011		5/4/2009	6	1200	1026	1025.3	0.1	0	H	H	5	INITIAL
B1	011		5/5/2009	6	1200	0	-0.5	0	0	Z	H	5	INITIAL
B1	011		5/5/2009	6	1200	1026	1029.2	0.3	0	H	H	5	INITIAL
B1	011		5/6/2009	6	1200	0	0.5	0	0	Z	H	5	INITIAL
B1	011		5/6/2009	6	1200	1026	1023.3	0.2	0	H	H	5	INITIAL
B1	011		5/7/2009	6	1200	0	-1	0.1	0	Z	H	5	INITIAL
B1	011		5/7/2009	6	1200	1026	1028.2	0.2	0	H	H	5	INITIAL

If you make a mistake when adding a 7-day cal test or have to change a bottle value after the fact, just delete it and add it again. When you delete, only the 7-day cal test is removed – each of the individual daily calibration tests remain in the database.

5.2 Linearity Test

The *Linearity* tab shows all the linearity tests conducted at the unit/stack/pipe – the list is sorted to show the most recent tests first.

Double-click a row in the list to view/edit the results on the *Linearity Test* form.

[Report] Open a report in preview mode for the selected test(s).

[View/Edit] View results of the selected test on the *Linearity Test* form (shown below).

[Add New] Starts the Linearity Test wizard – follow the prompts to create a new test.

[Protocol Gas] Enter/View Protocol Gas Verification Program data for the selected test on the *Protocol Gas Data* form (shown on next page).

Linearity Check Data (formerly RTs 601, 602)

To view/edit test detail, double click the desired test, or single click to highlight the test and click [View/Edit]
 To add a new linearity test, click [Add New]
 To run a report, click to select the desired tests (use Shift-Click or Ctrl-Click for multiples), and click [Report]
 To filter the list of tests, use the optional filters at bottom left

Qtr Performed	Unit/Stack	Component	System ID	Date	Test Number	Instrument	Scale	Result
Qtr 3 - 2008	MB	NOX (B11)	114	7/29/2008	52	MB_NO_B_Instrument	H	Pass
Qtr 3 - 2008	MB	O2W (A12)	112	7/29/2008	51	MB_O2W_P_Instrument	H	Pass
Qtr 3 - 2008	MB	NOX (A11)	111	7/29/2008	50	MB_NO_P_Instrument	H	Pass
Qtr 2 - 2008	MB	NOX (B11)	114	4/28/2008	49	MB_NO_B_Instrument	H	Pass
Qtr 2 - 2008	MB	O2W (A12)	112	4/28/2008	48	MB_O2W_P_Instrument	H	Pass
Qtr 2 - 2008	MB	NOX (A11)	111	4/28/2008	47	MB_NO_P_Instrument	H	Pass
Qtr 2 - 2008	MB	NOX (B11)	114	4/7/2008	46	MB_NO_B_Instrument	H	Pass
Qtr 2 - 2008	MB	O2W (A12)	112	4/7/2008	45	MB_O2W_P_Instrument	H	Pass
Qtr 2 - 2008	MB	NOX (A11)	111	4/7/2008	44	MB_NO_P_Instrument	H	Pass
Qtr 1 - 2008	MB	NOX (B11)	114	2/19/2008	43	MB_NO_B_Instrument	H	Pass
Qtr 1 - 2008	MB	O2W (A12)	112	2/19/2008	42	MB_O2W_P_Instrument	H	Pass
Qtr 1 - 2008	MB	NOX (A11)	111	2/19/2008	41	MB_NO_P_Instrument	H	Pass
Qtr 3 - 2007	MB	NOX (B11)	114	8/16/2007	40	MB_NO_B_Instrument	H	Pass
Qtr 3 - 2007	MB	O2W (A12)	112	8/16/2007	39	MB_O2W_P_Instrument	H	Pass

Unit/Stack Filter: Main Boiler
 Instrument Filter:
 Quarter/Year Filter:
 Remove All Filters

Protocol Gas Report View/Edit Add New

Filters Use the drop-down boxes at bottom left to filter the list of linearity tests on the desired criterion.

On the *Linearity Test* form, you may modify the following fields:

- Enabled
- Test Number
- Reason for Test
- Grace Period Indicator
- Comment

The remainder of the data is not directly editable and is pulled from calibration tables and calculated by the Add wizard.

[Protocol Gas] Enter/View Protocol Gas Verification Program data for this test on the *Protocol Gas Data* form (shown on next page).

Linearity Test

EDR Site ID: B001 Instrument Name/Range: MB_NO_P_Instrument High Group: 51

Enabled: Test Number: 50 Reason For Test: QA Grace Period Indicator: Result: Pass

Comment:

Summaries (Dbl-click to view std and all spec results)

UnitID	CompID	SysID	Date	SpanValue	ReferenceMean	MeasuredMean	Results	AltPS	Level	Span	Reason
B001	A11	111	7/29/2008	300	76.6	75.9	0.9	0	L	H	QA
B001	A11	111	7/29/2008	300	166	165.867	0.1	0	M	H	QA
B001	A11	111	7/29/2008	300	250	252.433	1	0	H	H	QA

Runs

UnitID	CompID	SysID	Date	Time	SpanValue	RefValue	MeasValue	Level	Span	Aborted
B001	A11	111	7/29/2008	0908	300	76.6	75.7	L	H	
B001	A11	111	7/29/2008	0912	300	250	247.5	H	H	
B001	A11	111	7/29/2008	0921	300	166	165.2	M	H	
B001	A11	111	7/29/2008	0937	300	76.6	75.5	L	H	
B001	A11	111	7/29/2008	0945	300	250	253.8	H	H	
B001	A11	111	7/29/2008	0951	300	166	167.6	M	H	
B001	A11	111	7/29/2008	1008	300	76.6	76.5	L	H	
B001	A11	111	7/29/2008	1017	300	250	256	H	H	
B001	A11	111	7/29/2008	1022	300	166	164.8	M	H	

Delete Protocol Gas Cancel Ok

If you make a mistake when adding a linearity test or have to change a bottle value after the fact, just delete it and add it again. When you delete, only the linearity test is removed – each of the individual 3-span calibration tests remain in the database.

Protocol Gas Data [X]

Report a Protocol Gas Data record for each cylinder of gas used during the test.

Unit/Stack/Pipe ID: Test End Date:
Parameter (ID): Test Number:

Test Type	Gas Level	Gas Type	Cylinder ID	Vendor ID	Expiration Date
<input type="text"/>	<input type="text" value="v"/>	<input type="text" value="v"/>	<input type="text"/>	<input type="text" value="v"/>	<input type="text"/>

On the *Protocol Gas Data* form, enter/edit the protocol gas data for each cylinder of gas used during the linearity test. Typically you will have three data records, one each for the low, mid and high gas respectively.

[Auto Retrieve] Automatically retrieve the protocol gas data for this test from the associated Calibration Reference Constants.

5.3 Stack Flow-to-Load Test

The Flow/Load tab shows all the stack flow-to-load tests conducted at the unit/stack/pipe – the most recent tests are shown at top.

7-Day Cal | Linearity | **Flow/Load** | RATA | Qualification | Cycle Time | Offline Cal | Fuel Meter | Transmitter | Fuel Flow/Load | App E | Misc | Extension/Exemption | QA/Cert Event

Flow-to-Load Tests (formerly RTs 605, 606)

To view/edit test detail, double click the desired test, or single click to highlight the test and click [View/Edit]
 To add a new test, click [Add New]
 To filter the list of tests, use the optional filters at bottom left

Qtr, Year	Unit/Stack	System	Test Num	Level	Data Hrs	Ref Ratio	Avg Diff	Diff Limit	Result
Qtr 1 - 2009	U1	10F	31	H	1755	1.6	1.2	10	PASSED
Qtr 4 - 2008	U1	10F	29	H	1958	1.6	1.6	15	PASSED
Qtr 3 - 2008	U1	10F	28	H	1878	1.69	1.3	10	PASSED
Qtr 2 - 2008	U1	10F	27	H	1410	1.69	1.5	10	PASSED
Qtr 1 - 2008	U1	10F	26	H	1147	1.69	3.3	10	PASSED
Qtr 4 - 2007	U1	10F	25	H	1791	1.69	1.5	10	PASSED
Qtr 3 - 2007	U1	10F	24	H	1822	1.75	6.4	10	PASSED
Qtr 2 - 2007	U1	10F	23	H	1685	1.75	7.7	10	PASSED
Qtr 1 - 2007	U1	10F	22	H	2040	1.75	4.7	10	PASSED
Qtr 4 - 2006	U1	10F	21	H	2031	1.75	2.9	10	PASSED
Qtr 3 - 2006	U1	10F	20	H	2094	1.61	6.7	10	PASSED
Qtr 2 - 2006	U1	10F	19	H	2056	1.61	3.4	10	PASSED
Qtr 1 - 2006	U1	10F	18	H	2006	1.62	1.4	10	PASSED
Qtr 4 - 2005	U1	10F	17	H	2136	1.62	1.7	10	PASSED
Qtr 3 - 2005	U1	10F	16	H	1884	1.62	1.7	10	PASSED

Unit/Stack Filter:
 System Filter:
 Quarter/Year Filter:

Double-click a row in the list to view/edit the results on the *Flow-to-Load Check Results* form (see section 4.3.2).

[Report] Open a report in preview mode for the selected test(s).

[View/Edit] View results of the selected test on the *Flow-to-Load Check Results* form (see section 4.3.2).

[Add New] Open the Flow-to-Load Ratio wizard – follow the prompts to create a new test (see section 4.3.1).

Filters Use the drop-down boxes at bottom left to filter the list of flow-to-load tests on the desired criterion.

5.3.1 Flow-to-Load Ratio Wizard

To Add a new quarterly flow-to-load test, click the Flow/Load tab's [Add New] button to open the wizard.

Step 1: select the analysis interval (Quarter/Year), flow system ID, RATA end time and other fields. Click the [?] buttons for help on individual fields.

If you wish to run the analysis for a shorter interval than the entire quarter, enter the interval in the From and Through fields. You can only save results when you select an entire quarter, but you can run a results report for shorter intervals.

Click [Next] to continue.

Flow-to-Load Ratio Wizard

Unit/Stack/Pipe ID 1 Stack Flow Monitoring System ID 10F

Step 1 of 3) Select a quarter and year (or a custom interval), then enter a value for all other fields.

Quarter and Year 2 2009

Custom Analysis Interval From Through Yesterday Today

Test Basis Flow-to-load Ratio Gross Heat Rate

Test Reason QA

Use Bias-adjusted Stack Flow

Stack Flow Monitoring System ID 10F

Operating Level H

Last Normal Load RATA End Date 07/02/2009 13:34

RATA Test Number 46

Cancel < Back Next >

Step 2: review the tags and reference ratio.

Unless you are using gross heat rate, the tag names should be supplied by the wizard. If they are not, select them now. The tag lists will not include out of use tags unless the checkbox near the lower left corner of the main window is checked.

If you selected a RATA from the drop down list in step 1 – a RATA in the RegPerfect database, the reference ratio information will be automatically supplied. If not, enter the average flow and load, then click [Recalculate] to compute the ratio.

Click [Next] to continue.

Flow-to-Load Ratio Wizard

Unit/Stack/Pipe ID 1 Stack Flow Monitoring System ID 10F

Step 2 of 3) Review the tags used for hourly calculations and the RATA reference values.

Note: it is strongly recommended that you do not change the tag names or values automatically supplied by the wizard unless the wizard was unable to supply a name/value.

Tags to Use in Hourly Calculations

Hourly Bias Adjusted Flow Tag U1_StackFlowBA_scfh_1H

Hourly Load Tag U1_Load_MWe_1H

Hourly Unit Operating Tag U1_UnitOn_TF_1H

Reference Values from Last RATA

Average RM Stackflow 32438000

Average Load 188

Reference Ratio 1.73 Recalculate

Cancel < Back Next >

Before the next page of the wizard, a pop-up message will inform you of your test results. There are 3 possibilities:

1. The test passed
2. The test failed
3. There were insufficient data hours

Click [Ok] to dismiss the message and proceed to Step 3.

Step 3: If you are not sure what to do next, click the [What Next] button.

Regardless of the test outcome, click [Done] to save the test to the database and open the *Flow-to-Load Check Results* form (see section 4.3.2).

If the test failed, you will want to try to pass by excluding non-representative hours (see section 4.3.3).

If you are running a test for less than a full quarter, the [Done] button will not be available, but you can click the green report button to print the results.

The screenshot shows the 'Flow-to-Load Ratio Wizard' at Step 3 of 3. The title bar reads 'Flow-to-Load Ratio Wizard'. At the top, there are two input fields: 'Unit/Stack/Pipe ID' with the value '1' and 'Stack Flow Monitoring System ID' with the value '10F'. Below this, the instruction reads: 'Step 3 of 3) Find out if there are sufficient data points to require the test end, if so, whether passing or failing.' The main area is divided into two sections: 'Data Analysis Parameters' and 'Data Analysis Results'. In 'Data Analysis Parameters', 'Interval: From' is set to '4/1/2009' and 'to' is '06/30/09 23:59'. 'Load: Between' is set to '169.2' and 'and' is '206.8'. In 'Data Analysis Results', 'Data Points' is '1309' with a 'Show Data Points' button. 'Average Difference (Et)' is '7.3', 'Average Difference Limit' is '10', and 'Test Result' is 'PASSED' with a 'What Next' button. At the bottom, there are buttons for 'Cancel', '< Back', 'Next >', and 'Done'.

5.3.2 Flow-to-Load Check Results Form (View/Edit/Delete Test Results)

This form is opened at the conclusion of the wizard or after double-clicking any of the tests on the Flow/Load tab. Although not recommended, you may manually edit the fields on this form (if for example, your own calculations disagree with RegPerfect's).

To delete the test, click the record selector at far left and press the [Del] key.

[Report] Open a report in preview mode.

[Exclude Hours] Open the *Exclude Hours* form (see section 4.3.3)

The screenshot shows the 'Flow-to-Load Check Results' form. The title bar reads 'Flow-to-Load Check Results'. At the top, there are several fields: 'Unit/Stack/Pipe ID' (1), 'Flow System ID' (10F), 'Operating Level' (H), 'Enabled' (checked), and 'Test Number' (32). The main area is divided into two columns: 'Flow-to-Load Check' and 'Flow-to-Load Reference'. In 'Flow-to-Load Check', 'Calendar Quarter/Year' is '2' and '2009'. 'Test Result' is 'PASSED', 'Test Reason' is 'QA', 'Test Basis' is 'Q', 'Bias Adjusted Flow Used' is checked, 'Average Pct Difference' is '7.3', 'Percent Difference Limit' is '10', 'Hours Used in Analysis' is '1309', and there is a 'Test Comment' field. Below this is a section for 'Number of Hours Excluded for ...' with checkboxes for 'Different Type of Fuel', 'Load Ramping', 'Scrubber Bypass', 'Preceding Flow RATA', 'Prior to Abbrev. Test', and 'Main & Bypass Stack'. In 'Flow-to-Load Reference', 'Reference RATA Date' is '07/02/09 13:34', 'RATA Test Number' is '46', 'Average Load' is '188', 'Separate Ref Ratios Used' is unchecked, 'Avg Reference Flow Rate' is '32438000', 'Reference Ratio' is '1.73', 'Avg Hourly HI Rate' is empty, 'Reference GHR Value' is empty, and there is a 'Reference Test Comment' field. At the bottom, there are two buttons: 'Report' and 'Exclude Hours'.

5.3.3 Exclude Hours Form

This form shows every data point in the flow-to-load analysis with checkboxes at right. An hour may be excluded from the analysis by checking one of the checkboxes. Use this form when you have failed the quarterly test to find and

exclude rows (if possible) where the hourly % Difference from Reference Ratio is greater than the Total % Difference from Reference Ratio (shown at bottom just right of the "Totals" label).

Date/Time	Hourly Flow Rate or Heat Input	Hourly Load	Ratio	Absolute % Difference from Reference Ratio	Hours Excluded From Analysis					
					Different Fuel	Load Ramping	Scrubber Bypass	Prior to RATA	Prior to Repairs	Bypass Stack
04/01/09 5:00	28770000	179	1.61	6.94	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
04/01/09 6:00	30475000	192	1.59	8.09	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
04/01/09 7:00	30387000	191	1.59	8.09	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
04/01/09 8:00	30619000	192	1.59	8.09	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
04/01/09 9:00	30619000	191	1.6	7.51	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
04/01/09 10:00	30626000	192	1.6	7.51	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
04/01/09 11:00	30751000	192	1.6	7.51	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
04/01/09 12:00	30448000	191	1.59	8.09	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
04/01/09 13:00	29988000	191	1.57	9.25	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
04/01/09 14:00	29988000	191	1.57	9.25	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
04/01/09 15:00	29988000	191	1.57	9.25	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
04/01/09 16:00	29988000	191	1.57	9.25	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Recalculate Results Totals: 7.3 0 0 0 0 0 0
 Save Results Results Hours Used: 1309 Result: **PASSED**

Note that two of the column headers for check boxes are actually buttons:

[Load Ramping] Automatically exclude data points where load ramping occurred. By default, only hours with a % Difference > than the difference limit are excluded.

[Prior to RATA] Automatically exclude data points prior to the reference RATA.

[Recalculate Results] After excluding data points, either manually or by using one of the above buttons, click to recalculate the flow-to-load ratio.

[Save Results] Save your excluded hours and recalculated results.

Totals: 7.3

The goal of excluding hours is to get the difference between the quarterly ratio to be less than the 10% limit, or to reduce the number of data points to 167 or fewer.

When excluding data points, exclude them for at most 1 reason –don't check the "Different Fuel" checkbox and the "Scrubber Bypass" checkbox on the same row – pick one or the other.

5.4 RATA Test

The RATA tab shows all the RATAs conducted at the unit/stack/pipe – the list is sorted to show more recent tests first.

RATA Data To view/edit test detail, double click the desired test, or single click to highlight the test and click [View/Edit]
To add a new RATA, click [Add New]
To run a report, click to select the desired test and click [Report] (only 1 RATA report at a time)
To filter the list of tests, use the optional filters at bottom left

Qtr, Year	Unit/Stack	System	P/B	Date	Test Number	Lvls	Normal	Low	Mid	High	Result
Qtr 2 - 2011	CS23	CO2 (1LC)	RB	06/30/2011	1LC-Q2-2011-1	1		1.16			Pass
Qtr 2 - 2011	CS23	NOX (1LN)	RB	06/30/2011	1LN-Q2-2011-1	1		1.24			Pass
Qtr 2 - 2011	CS23	SO2 (1LS)	RB	06/30/2011	1LS-Q2-2011-1	1		2.72			Pass
Qtr 2 - 2011	CS23	CO2 (1RC)	P	06/30/2011	1RC-Q2-2011-1	1		1.07			Pass
Qtr 2 - 2011	CS23	NOX (1RN)	P	06/30/2011	1RN-Q2-2011-1	1		3.59			Pass
Qtr 2 - 2011	CS23	SO2 (1RS)	P	06/30/2011	1RS-Q2-2011-1	1		1.54			Pass
Qtr 2 - 2011	CS23	FLOW (1LF)	P	06/24/2011	1LF-20110623-103	3		2.44	6.5	1.75	Pass
Qtr 2 - 2011	CS23	FLOW (1RF)	RB	06/24/2011	1RF-20110623-103	3		0.63	2.13	5.1	Pass
Qtr 3 - 2010	CS23	FLOW (1LF)	P	07/14/2010	1LF-Q3-2010-001	2		4.52	5.27		Pass
Qtr 3 - 2010	CS23	FLOW (1RF)	RB	07/14/2010	1RF-Q3-2010-001	2		6.79	2.19		Pass
Qtr 2 - 2010	CS23	CO2 (1LC)	RB	05/12/2010	1LC-Q2-2010-002	1			2.26		Pass
Qtr 2 - 2010	CS23	NOX (1LN)	RB	05/12/2010	1LN-Q2-2010-002	1			3.02		Pass
Qtr 2 - 2010	CS23	SO2 (1LS)	RB	05/12/2010	1LS-Q2-2010-002	1			3.33		Pass
Qtr 2 - 2010	CS23	CO2 (1RC)	P	05/12/2010	1RC-Q2-2010-002	1			2.54		Pass
Qtr 2 - 2010	CS23	NOX (1RN)	P	05/12/2010	1RN-Q2-2010-002	1			3.55		Pass
Qtr 2 - 2010	CS23	SO2 (1RS)	P	05/12/2010	1RS-Q2-2010-002	1			3.46		Pass

Double-click any row in the list to view/edit the results on the *RATA* form (see section 4.4.1).

Filters Use the drop-down boxes at bottom left to filter the list of RATAs on the desired criterion.

[Report] Open a report in preview mode for the selected RATA(s).

[View/Edit] View results of the selected test on the RATA form (shown below).

[Add New] Start the RATA wizard – follow the prompts to create a new test.

[Protocol Gas] Open the *Protocol Gas Data* form from which you may enter/view Protocol Gas Verification Program data for the selected test.

[Air Emission Testing] Open the *Air Emission Testing Data* form from which you may enter/view Air Emission Testing Body data for the selected test.

[Edit RATA Tags] Open the *RATA CEMs and Load Tags Browser* form from which you may review and modify the 1-min tags used to automatically calculate the average load and CEMs value for each run. The tag lists will not include out of use tags unless the checkbox near the lower left corner of the main window is checked.

Unit / Stack ID	Monitoring System ID	System Parameter Monitored	RATA CEMs Values Tag	RATA Load Values Tag
CS23	1RF	FLOW		
CS23	1RN	NOX		
CS23	1RS	SO2		
U1	CO2	CO2	U1_CO2_Pct_1M	U1_Load_MWe_1M
U1	FLW	FLOW	U1_StackFlow_scfh_1M	U1_Load_MWe_1M

5.4.1 RATA Wizard

To Add a new RATA, click [Add New] to open the RATA Wizard.

Step 1: the Unit ID defaults to the current unit, but you may select a different one from the list.

Select the desired monitoring system and click [Next].

RATA Wizard

Unit/Stack/Pipe ID: Monitoring System:

Step 1 of 4) Select a Unit/Stack/Pipe and a monitoring system:

Unit/Stack/Pipe ID:

System ID	Parameter	P/B
10C	CO2	P
10F	FLOW	P
10N	NOX	P
10S	SO2	P
M10	H2O	P

Buttons:

Step 2: enter values for all blank fields and review all defaulted values.

For Flow RATAs, be sure to correctly select Num Load Levels (1, 2 or 3). Click the [Single-Level Flow RATA Analysis] button. The *Single Load Flow RATA Analysis* form opens showing whether you qualify for a single load RATA using the default analysis interval (last Flow RATA through end of previous day relative to PC clock time).

RATA Wizard

Unit/Stack/Pipe ID: Monitoring System:

Step 2 of 4) Review/modify these default RATA settings:

Num Load Levels:

Operating Level: Reason for RATA:

Reference Method: In Grace Period:

Performance Spec:

Run Status Flag:

Buttons:

Change the analysis dates and/or min/max load if needed, and click the [Recalculate] button to re-compute results.

When you are satisfied with the analysis, click [Done] to return to Step 2 of the wizard (above). Adjust the Num Load Levels if necessary and click [Next] to proceed to Step 3.

If you qualified for a single load RATA based on the analysis, you will be prompted later about having a single load qualification record entered automatically.

Single Load Flow RATA Analysis

Unit/Stack ID:

Minimum Safe Load: Minimum Safe and Maximum Load are read from the Monitoring Load record in your Monitoring Plan. If they are blank or incorrect you may supply the values manually and click [Re-calculate].

Maximum Load:

Last Flow RATA: The end date of the last annual Flow RATA is read from your RATA results. If it is blank or incorrect you may manually supply the date and click [Re-calculate].

Analysis Start Date: The analysis period defaults to the last Flow RATA through yesterday. If the dates are blank or incorrect you may manually enter the dates and click [Re-calculate].

Analysis End Date:

Low Operation	<input type="text" value="1.2"/>	Percent: <input type="text" value="42"/>	of <input type="text" value="3482"/>	operating hours with load >= <input type="text" value="95"/>	and <= <input type="text" value="126"/>
Mid Operation	<input type="text" value="6.1"/>	Percent: <input type="text" value="213"/>	of <input type="text" value="3482"/>	operating hours with load > <input type="text" value="126"/>	and <= <input type="text" value="157"/>
High Operation	<input type="text" value="92.7"/>	Percent: <input type="text" value="3227"/>	of <input type="text" value="3482"/>	operating hours with load > <input type="text" value="157"/>	and <= <input type="text" value="199"/>

Result The unit operated 85% or more at the High level and DOES qualify for a single-level Flow RATA.

RATA Wizard

Unit/Stack/Pipe ID: Monitoring System:

Step 3 of 4) Supply information about the first run:

Run Number: Default Time Between Runs: (minutes)

Start Time:

Duration (minutes):

Reference Value:

CEMs Value:

Load Value:

Buttons:

Step 3: enter the Start Time of the first run, the Duration and the Reference Value. Click the two [Retrieve] buttons to calculate the average CEMs and load values from RegPerfect's 1-minute data (you may alternatively enter the values manually).

If you know about how long each run should last, enter it in the Default Time Between Runs – it will be used each time you add a new run to default the run duration.

Step 4: review the information. You may use the [Back] button to make corrections if necessary.

Click [Done] to save the RATA.

If you qualified for a single-load Flow RATA based on the analysis form, you will be prompted whether you want the Test Qualification record to be saved.

If you click [Yes], the Test Qualification will be inserted and can be viewed later on the Qualification tab.

RATA Test Qualification (formerly RT695)										
Enabled	RATA Test Number	Unit / Stack ID	System ID	Test Claim Code	Begin Date	End Date	Low Lvl Usage	Mid Lvl Usage	High Lvl Usage	
<input checked="" type="checkbox"/>	46	1	10F	SLC	11/29/06	07/01/09	1.2	6.1	92.7	
<input type="checkbox"/>		1								

5.4.2 RATA Form

This form is opened at the conclusion of the wizard or after double-clicking any of the RATAs on the RATA tab. From here, you may edit the fields shown above the runs: Enabled, Reason for Rata, Test Number, Reference Method, etc. You may also add/change/delete runs. Each time a change is made to a run, the results at the bottom are recalculated.

RATA

EDR Site ID MonitoringSystem RB Load Levels Group

Enabled Reason For RATA Reference Method(s) Aborted Test Indicator
 Test Number Frequency Code Grace Period Indicator

Comment

RATA Runs/Summary

Runs Runs Dbl-click to edit run

Run	Lvl	Start Time	Duration	Load	CEM Value	RM Value	RM-CEM	Use Run
1	L	06/29/2011 23:30	20	249	9.8	9.6	-0.2	-
2	L	06/30/2011 00:07	20	253	9.8	9.5	-0.3	-
3	L	06/30/2011 00:44	20	254	9.8	9.6	-0.2	-
4	L	06/30/2011 01:25	20	254	9.9	9.8	-0.1	Yes
5	L	06/30/2011 02:09	20	253	10.0	9.9	-0.1	Yes
6	L	06/30/2011 02:50	20	253	10.0	9.9	-0.1	Yes
7	L	06/30/2011 03:31	20	256	10.0	9.9	-0.1	Yes
8	L	06/30/2011 04:12	20	256	9.9	9.8	-0.1	Yes
9	L	06/30/2011 04:53	20	257	9.9	9.8	-0.1	Yes
10	L	06/30/2011 05:34	20	258	10.0	9.9	-0.1	Yes
11	L	06/30/2011 06:15	20	256	10.0	9.9	-0.1	Yes
12	L	06/30/2011 06:56	20	252	9.8	9.8	0.0	Yes

Summary Dbl-click to edit (select bias factor or select relative accuracy vs. mean of difference)

Lvl / Load	Ref Method	CEMs Mean	RM Mean	Difference Mean	Std Deviation	T value	Conf Coeff	Alt Spec	Rel Acc	Result	Bias Factor
L / 255	3A	9.944	9.856	-0.089	0.033	2.306	0.026	-	1.16	Pass	1.000 (Pass)

Double-click any run in the list to view/edit on the Edit RATA Run form.

[Delete] Delete the RATA record and all its constituent runs.

[Edit RATA Tags] Open the *RATA CEMs and Load Tags Browser* form from which you may review and modify the 1-min tags used to automatically calculate the average load and CEMs value for each run. The tag lists will not include out of use tags unless the checkbox near the lower left corner of the main window is checked.

[Protocol Gas] Open the *Protocol Gas Data* form from which you may enter/view Protocol Gas Verification Program data for this test.

[Air Emission Testing] Open the *Air Emission Testing Data* form from which you may enter/view Air Emission Testing Body data for this test.

[Cancel/OK] Close the form and discard (Cancel) or save (Ok) changes to fields above the RATA Runs/Summary tab.

[Add Run]

Open the *Add RATA Run* form.

Change the defaulted Start Date/Time, Duration and Run Status Flag if needed. Enter the Reference Value and use the Retrieve buttons to calculate the average CEMs and Load Values.

The Edit RATA Run form is identical except for the addition of a [Delete] button.

RegPerfect automatically calculates the results of the RATA and bias factor tests. While you are entering runs, the Summary at the bottom of the *RATA* form shows a Result of "<9" indicating that you have less than 9 runs or less than 9 runs marked as being used in the calculation – see the last two columns at far right in the example below.

Summary										
Dbl-click to edit (select bias factor or select relative accuracy versus mean of difference)										
Lvl / Load	CEMs Mean	RM Mean	Difference Mean	Std Deviation	T value	Conf Coeff	Alt Spec	Rel Acc	Result	Bias Factor
H / 189	45.963	51.113	5.150	0.763	2.365	0.638	Yes	11.32	< 9	1.112 (< 9)

After entering 9 or more runs, the Result and Bias Factor columns show the actual results of the tests.

Summary										
Dbl-click to edit (select bias factor or select relative accuracy versus mean of difference)										
Lvl / Load	CEMs Mean	RM Mean	Difference Mean	Std Deviation	T value	Conf Coeff	Alt Spec	Rel Acc	Result	Bias Factor
H / 189	46.167	51.311	5.144	0.714	2.306	0.549	Yes	11.10	Pass	1.111 (Fail)

You may select whether to use the relative accuracy results or the alternate specification, and you may change the calculated BAF. To access these options, double-click the Summary row to open the *RATA Result* form.

Select the Calculation Method by clicking the Relative Accuracy or Mean of Difference radio buttons. In this example, the only way to pass is to select the alternate specification.

For the bias factor, you may select any of the options shown next to the radio buttons. If you feel there are precision errors in RegPerfect's calculated BAF, select the "Manually Entered Value" option and enter the BAF you or your stack tester calculated (1.112 in the example at right).

After adding a RATA test during which the BAF changed, don't forget to add a new value for the corresponding BAF constant using the Editor application.

5.4.3 Multiple Load Flow RATAs

Some users are in the habit of entering multiple load RATAs in a way contrary to the intended method. A programming quirk in earlier versions of RegPerfect allowed these incorrectly entered RATAs to be reported correctly on the EDR. However, beginning with beta versions of XML software and continuing with RegPerfect v5.0, multiple load RATAs must be entered correctly to be reported correctly.

On the RATA form, an incorrectly entered 3-load RATA appears as 3 separate rows in the list:

7-Day Cal | Linearity | Flow/Load | **RATA** | Qualification | Cycle Time | Offline Cal | Fuel Meter | Transmitter | Fuel Flow/Load

RATA Data (formerly RTs 610 - 616)

To view/edit test detail, double click the desired test, or single click to highlight the test and click [View/Edit]
 To add a new RATA, click [Add New]
 To run a report, click to select the desired test and click [Report] (only 1 RATA report at a time)
 To filter the list of tests, use the optional filters at bottom left

Qtr, Year	Unit/Stack	System	P/B	Date	Test Num	Lvls	Normal	Low	Mid	High	Result
Qtr 4 - 2007	U2	FLOW (20F)	P	10/18/2007	35	3		1.4			Pass
Qtr 4 - 2007	U2	FLOW (20F)	P	10/18/2007	33	3			0.93		Pass
Qtr 4 - 2007	U2	FLOW (20F)	P	10/17/2007	31	3				3.31	Pass

You can see from the Date and Lvls columns that this is actually a single 3-load RATA, not 3 separate RATA tests. The problem is that this RATA was entered using the RATA Wizard three times. The first time, only the High level runs were entered. The second time, only the Mid level runs were entered, and finally on the third try, only the low level runs were entered.

Here is how a 3-load RATA test should appear in the list:

Qtr, Year	Unit/Stack	System	P/B	Date	Test Num	Lvls	Normal	Low	Mid	High	Result
Qtr 4 - 2007	U1	FLOW (10F)	P	10/19/2007	40	3		0.84	2.23	3.8	Pass

To get the desired result, you must enter all the runs (low, mid and high) on the Rata form as shown at right:

Each time you add a run, the Operating Level and Run Number default to the same level and next run number. If you are entering a multiple load Flow RATA, change the Operating Level after you have entered all runs at one level and are ready to enter runs at the next level. When you change the Operating Level, the Run Number will automatically reset to 1 and begin incrementing from there with subsequent runs for that level.

Add RATA Run

Operating Level: **H** (High) | Run Number: **1**

Default Time Between: **N** (Normal) (minutes from start of one run to start of next run)

Options: **H** High, **N** Normal, **M** Mid, **L** Low

RATA Runs/Summary

Run	Lvl	Start Time
9	H	10/18/2007 21:40
10	H	10/18/2007 21:50
1	M	10/18/2007 23:25
2	M	10/18/2007 23:31
3	M	10/18/2007 23:44
4	M	10/18/2007 23:51
5	M	10/19/2007 00:25
6	M	10/19/2007 00:31
7	M	10/19/2007 00:36
8	M	10/19/2007 00:42
9	M	10/19/2007 00:49
1	L	10/19/2007 02:17
2	L	10/19/2007 02:23
3	L	10/19/2007 02:29

Enter the runs in the order in which they actually occurred: if mid level runs came first, enter them first (and so on).

5.5 RATA Test Qualification

The Qualification tab shows all the single-load RATA qualifications for the unit. The tests are sorted to show the most recently added at the top of the list.

There are three ways to enter a RATA Test Qualification record:

4. When you use the wizard on the *RATA* tab to enter a Flow RATA, you can click a button to automatically do the analysis and enter the record (see section 4.4.1)
5. If you have performed the calculations outside of RegPerfect, for example in a spreadsheet, you may simply type in the values on the empty row at the bottom of the list.
6. Use the [Single-Level Flow RATA Analysis] button at bottom right of the Qualification tab

All of these methods are fine, but consider these questions:

- How can you enter the Test Qualification RATA Test Number if you haven't already entered the RATA?
- How can you perform and enter the RATA if you don't know whether you're testing at single or multiple loads?

This issue may easily be solved a number of ways. Perhaps the most common, easiest way is to perform the analysis from this screen to determine whether you qualify. If you do, the analysis will optionally insert a record with a blank RATA test number. Later, after performing and entering the RATA test, come back to this screen and supply the RATA test number.

[Single-Level Flow RATA Analysis] Click to open the *Single Load Flow Analysis* form.

Change the analysis dates and/or min/max load if needed, and click the [Re-calculate] button to re-compute results.

When you are satisfied with the analysis, click [Done]. You'll be prompted whether to insert the results as a "partial" qualification record – partial because you'll have to return later to enter the RATA test number and flow system ID.

Operation Level	Usage	Percent	Count	Total	Operating Hours	Load >=	Load <=
Low Operation	1.2	Percent: 42	of 3482	operating hours with load >=	95	and <=	126
Mid Operation	6.1	Percent: 213	of 3482	operating hours with load >	126	and <=	157
High Operation	92.7	Percent: 3227	of 3482	operating hours with load >	157	and <=	199

Result
The unit operated 85% or more at the High level and DOES qualify for a single-level Flow RATA.

5.6 Cycle Time Test

The Cycle Time tab shows all the cycle time tests for the unit. The tests are sorted by Test Number to show the most recent at the top of the list.

Cycle Time Test Data (formerly RT621)													
Enabled	Unit / Stack ID	Comp. ID	Span Scale	Reason For Test	Test Number	Total Time	Test Result	Begin Date / End Date	Gas Level / Gas Value	Start Value / End Value	Injection Cycle Time	Comment	
<input checked="" type="checkbox"/>	1	122	H	INITIAL	2	4	PASSED	12/30/02 9:46 12/30/02 9:50	ZERO 0	7 135.3	4		
<input checked="" type="checkbox"/>	1	122	H	INITIAL	2	4	PASSED	12/30/02 9:36 12/30/02 9:40	HIGH 1260	1254.8 110.8	4		
<input checked="" type="checkbox"/>	1	222	H	INITIAL	1	12	PASSED	11/22/02 14:36 11/22/02 14:40	ZERO 0	-1.5 348.1	4		
<input checked="" type="checkbox"/>	1	222	H	INITIAL	1	12	PASSED	11/22/02 14:15 11/22/02 14:19	HIGH 1260	1307.5 379.8	4		
<input type="checkbox"/>	1												

To enter a new test, scroll to the empty row at the bottom and begin entering field values. For each cycle time test, you must enter two rows – one for Zero, one for High – *and both of these rows, which comprise a single cycle time test, must have the same Test Number*. In the example above, note that the top two rows have Test Number 2 and the next two rows, another Zero/High pair, have Test Number 1.

Detailed guidance on the other fields is available in the ECMPs Reporting Instructions.

To delete a test, select it by clicking its record selector (the box left of the Enabled checkbox), then press the [Del] key. The second test is selected in the example.

Cycle Time Test Data (formerly RT621)					
Enabled	Unit / Stack ID	Comp. ID	Span Scale	Reason For Test	
<input checked="" type="checkbox"/>	1	122	H	INITIAL	
<input type="checkbox"/>	1	122	H	INITIAL	
<input checked="" type="checkbox"/>	1	222	H	INITIAL	

5.7 Online/Offline Calibration Demonstration

The *Offline Cal* tab lists all online/offline cal demonstrations for the unit sorted by highest test number first.

7-Day Cal															Linearity															Flow/Load															RATA															Qualification															Cycle Time															Offline Cal															Fuel Meter															Transmitter															Fuel Flow/Load															App E															Misc															Extension/Exemption															QA/Cert Event														
Online/Offline Calibration Demonstration (formerly RT623)															View Old RT623 Records																																																																																																																																																																																																		
Enabled	Unit / Stack ID	Comp. ID	Span Scale	Reason For Test	Test Number	Upscale Gas Level	Test Result	Reference	Measured	Error	APS	Injection Date/Hour																																																																																																																																																																																																					
<input checked="" type="checkbox"/>	1	141	H	INITIAL	2	HIGH	PASSED	Online Zero	0	0.1	0	<input type="checkbox"/>	01/01/09 12:00 ...																																																																																																																																																																																																				
								Online Upscale	201.3	199.8	1.2	<input type="checkbox"/>	01/01/09 12:00 ...																																																																																																																																																																																																				
Comment: <input type="text"/>								Offline Zero	0	1.1	0.6	<input type="checkbox"/>	01/01/09 13:00 ...																																																																																																																																																																																																				
								Offline Upscale	201.3	202.8	0.9	<input type="checkbox"/>	01/01/09 13:00 ...																																																																																																																																																																																																				
<input checked="" type="checkbox"/>	1	102	H	INITIAL	1	HIGH	PASSED	Online Zero	0	0	0	<input type="checkbox"/>	01/01/09 14:00 ...																																																																																																																																																																																																				
								Online Upscale	19.6	20.1	0.6	<input type="checkbox"/>	01/01/09 14:00 ...																																																																																																																																																																																																				
Comment: <input type="text"/>								Offline Zero	0	0	0	<input type="checkbox"/>	01/01/09 15:00 ...																																																																																																																																																																																																				
								Offline Upscale	19.6	21.3	1.4	<input type="checkbox"/>	01/01/09 15:00 ...																																																																																																																																																																																																				
<input checked="" type="checkbox"/>	1							Online Zero				<input checked="" type="checkbox"/>																																																																																																																																																																																																					
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To enter a new test, scroll to the empty row at the bottom and begin supplying field values. Detailed guidance is available in the ECMPS Reporting Instructions.

[View Old RT623 Records]

This button opens a form to show the old RT623 records that were in your database (if any) prior to the XML upgrade. Unlike all of your other QA/QC data, RT623 records are not automatically converted to the new XML format during the upgrade, so you may need to refer to the old records to correctly re-enter them in the new format.

To delete a test, select it by clicking its record selector (the box left of the Enabled checkbox), then press the [Del] key. The first test is selected in the example.

7-Day Cal															Linearity															Flow/Load															RATA														
Online/Offline Calibration Demor																																																											
Enabled	Unit / Stack ID	Comp. ID	Span Scale																																																								
<input checked="" type="checkbox"/>	1	141	H																																																								
Comment: <input type="text"/>																																																											
<input checked="" type="checkbox"/>	1	102	H																																																								
Comment: <input type="text"/>																																																											

5.8 Fuel Flowmeter Accuracy Test

The *Fuel Meter* tab lists all fuel flowmeter tests for the unit sorted by highest test number first.

Fuel Flowmeter Accuracy Test (formerly RT627)													
7-Day Cal	Linearity	Flow/Load	RATA	Qualification	Cycle Time	Offline Cal	Fuel Meter	Transmitter	Fuel Flow/Load	App E	Misc	Extension/Exemption	QA/Cert Event
Enabled	Unit / Stack ID	Comp. ID	Reason For Test	Test Number	Test Result	Test Completion Date	Test Method	Low Fuel Accuracy	Mid Fuel Accuracy	High Fuel Accuracy	Reinstallation Date		
<input checked="" type="checkbox"/>	1	011	QA	2	PASSED	10/27/09 0:00	AGA7	1.1	2.6	3.1	11/02/09 12:00	Comment:	
<input checked="" type="checkbox"/>	1	011	QA	1	PASSED	11/03/08 0:00	AGA7	1	2	3	11/07/08 13:00	Comment:	
* <input checked="" type="checkbox"/>	1											Comment:	

To enter a new test, scroll to the empty row at the bottom and begin supplying field values. Detailed guidance is available in the ECMPs Reporting Instructions.

To delete a test, select it by clicking its record selector (the box left of the Enabled checkbox), then press the [Del] key. The first test is selected in the example.

Fuel Flowmeter Accuracy Test													
Enabled	Unit / Stack ID	Comp. ID	Reason For Test	Test Number	Test Result	Test Completion Date	Test Method	Low Fuel Accuracy	Mid Fuel Accuracy	High Fuel Accuracy	Reinstallation Date		
<input checked="" type="checkbox"/>	1	011	QA									Comment:	
<input checked="" type="checkbox"/>	1	011	QA									Comment:	

5.9 Transmitter/Transducer Accuracy Test

The *Transmitter* tab lists all accuracy tests for the unit sorted by highest test number first.

Transmitter/Transducer Accuracy Test (formerly RT628)												
	Unit / Enabled Stack ID	Comp. ID	Reason For Test	Test Number	Test Result	Test Completion Date	Low Level Accuracy / Spec		Mid Level Accuracy / Spec		High Level Accuracy / Spec	
<input checked="" type="checkbox"/>	1	022	QA	2	PASSED	02/02/09 10:00	1.3	ACT	2.5	ACT	3.6	ACT
Comment: <input type="text"/>												
<input checked="" type="checkbox"/>	1	022	QA	1	PASSED	01/08/13 14:00	1.2	ACT	2.3	ACT	3.4	ACT
Comment: <input type="text"/>												
* <input checked="" type="checkbox"/>	1											
Comment: <input type="text"/>												

To enter a new test, scroll to the empty row at the bottom and begin supplying field values. Detailed guidance is available in the ECMP Reporting Instructions.

To delete a test, select it by clicking its record selector (the box left of the Enabled checkbox), then press the [Del] key. The first test is selected in the example.

Transmitter/Transducer Accuracy Test (formerly RT628)												
	Unit / Enabled Stack ID	Comp. ID	Reason For Test	Test Number	Test Result	Test Completion Date	Low Level Accuracy / Spec		Mid Level Accuracy / Spec		High Level Accuracy / Spec	
<input checked="" type="checkbox"/>	1	022	QA	2	PASSED	02/02/09 10:00	1.3	ACT	2.5	ACT	3.6	ACT
<input checked="" type="checkbox"/>	1	022	QA	1	PASSED	01/08/13 14:00	1.2	ACT	2.3	ACT	3.4	ACT

5.10 Fuel Flow-to-Load Test

The *Fuel Flow/Load* tab lists all baseline fuel flow-to-load tests for the unit sorted by highest test number first.

Fuel Flow-to-Load Test (formerly RTs 629, 630)								
Enabled	Unit Stack or Pipe ID	System ID	Test Number	Most Recent Accuracy Test	Baseline Start Date/Time	Baseline End Date/Time	Baseline Ratio/GHR	
<input checked="" type="checkbox"/>	LM5	512	1	10/13/04 13:00	04/05/05 8:00	12/19/05 12:00	80.07	

Double-click a row in the list to view/edit the baseline and associated quarterly tests on the *Baseline and Quarterly Fuel Flow-to-Load Tests* form (see section 4.10.2).

[View/Edit] View results of the selected baseline and associated quarterly tests on the *Baseline and Quarterly Fuel Flow-to-Load Tests* form (see section 4.10.2).

[Add New] Start the Fuel Flow-to-Load Baseline wizard – follow the prompts to create a new test (see section 4.10.1).

This form shows 1 row for each baseline fuel flow-to-load test. To add or view quarterly tests, double-click the row of the desired baseline test.

5.10.1 Fuel Flow-to-Load Baseline Wizard

To Add a new baseline fuel flow-to-load test, click [Add New] on the Fuel Flow/Load tab to open the wizard.

Step 1: select the analysis interval (Quarter/Year), fuel flow system ID, last PEI test (if applicable) and accuracy test.

The wizard defaults the analysis start date to the latest of the PEI test, accuracy test and reinstallation date.

The analysis end date defaults to the end of the previous calendar quarter (relative to current PC clock time) or to four quarters after the analysis start date if that many quarters have elapsed.

Click [Next] to continue.

Fuel Flow-to-Load Baseline Wizard

Unit/Stack/Pipe ID Fuel Flow Monitoring System ID

Step 1 of 3) Supply a value for each field

Quarter and Year

Test Basis Flow-to-load Ratio Gross Heat Rate

Fuel Flow Monitoring System ID

Most Recent PEI Test

Most Recent Accuracy Test Reinstallation Date

Baseline Analysis Start Date/Time

Baseline Analysis End Date/Time

You may manually override both the analysis start and end dates on Step 1 of the wizard.

Step 2: review the tags. The tag names should be supplied by the wizard. If they are not, select them now. In the example at right, the Multiple Fuels tag is blank which is normal for a source that only combusts only one fuel. The tag lists will not include out of use tags unless the checkbox near the lower left corner of the main window is checked.

Click [Next] to continue.

Fuel Flow-to-Load Baseline Wizard

Unit/Stack/Pipe ID Fuel Flow Monitoring System ID

Step 2 of 3) Review the tags used for the baseline calculation.

Note: it is strongly recommended that you do not change the information automatically supplied by the wizard (unless the wizard was unable to supply a tag name).

Tags to Use in Baseline Calculations

Hourly Fuel Flow Tag

Hourly Load Tag

Multiple Fuels Combusted Tag

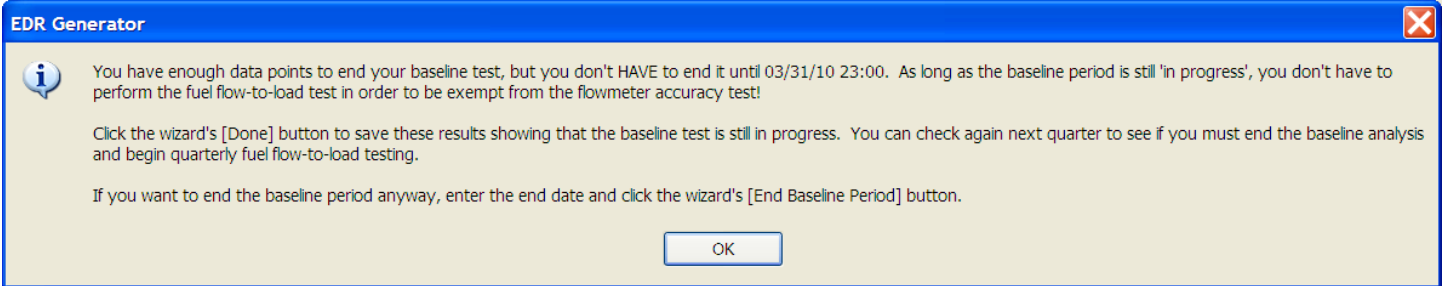
Hourly Fuel Usage Time Tag

A pop-up message will inform you of your test results before the next page of the wizard. There are 3 possibilities:

1. There are insufficient data points to end the baseline period
Click [Ok] to dismiss the message, then click [Done] to save the results as a baseline in progress.
2. There are sufficient data points to end the baseline period, but the maximum allowed baseline duration of four quarters has not elapsed
Click [Ok] to dismiss the message, then click [Done] to save the results as a baseline in progress. You may enter a baseline end date and click [End Baseline Period] before clicking [Done], but this is not recommended.
3. The maximum allowed baseline duration of four quarters has elapsed
Click [Ok] to dismiss the message, click [End Baseline Period] and then [Done] to save the results as a completed baseline. You may optionally exclude non-representative hours after exiting the wizard.

For cases 1 and 2, the wizard will automatically create a quarterly test record showing that the baseline is in progress. For case 3, you must use the quarterly test wizard to create (and pass!) a quarterly check.

The example pop-up message below explains that there are sufficient tests to end the baseline, but that it is neither necessary or advisable to do so – this corresponds to the 2nd possible test result in the list on the previous page.

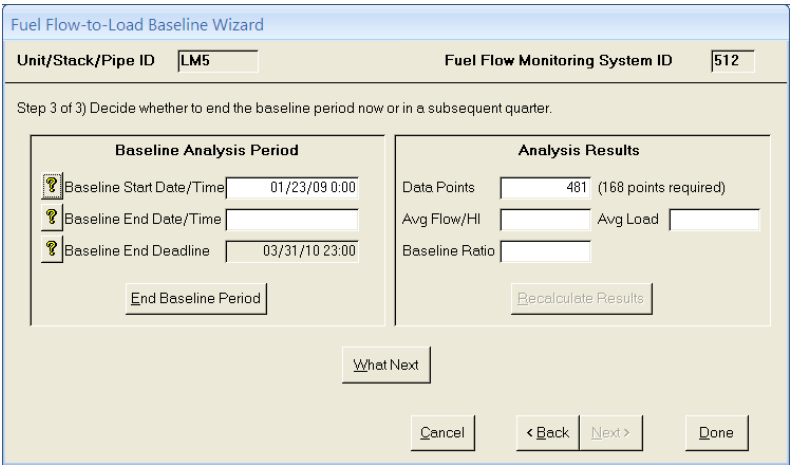


Step 3: If you are not sure what to do next, click the [What Next] button and refer to the 3 possible outcomes listed on the previous page.

You may override the Baseline End Date, but only to make it an earlier date, not a later date. If you change it, click [Recalculate Results] to compute a new baseline ratio.

Click [End Baseline Period] if you are ready to end the baseline test.

Click [Done] to save the results – either as a baseline in progress or a completed baseline test.



The new test will appear at the top of the list:

Fuel Flow-to-Load Test (formerly RTs 629, 630)							
Enabled	Unit, Stack or Pipe ID	System ID	Test Number	Most Recent Accuracy Test	Baseline Start Date/Time	Baseline End Date/Time	Baseline Ratio/GHR
<input checked="" type="checkbox"/>	LM5	512	2	01/11/09 15:00	01/23/09 0:00		
<input checked="" type="checkbox"/>	LM5	512	1	10/13/04 13:00	04/05/05 8:00	12/19/05 12:00	80.07

5.10.2 Baseline and Quarterly Fuel Flow-to-Load Tests

Open this form by double-clicking any of the baseline tests on the Fuel Flow/Load tab. Although not recommended, you may manually edit the fields on this form (if for example, your own calculations disagree with RegPerfect's).

The top portion of the form shows the baseline test. For completed baseline tests, you may optionally exclude non-representative hours using the [Exclude Baseline Hours] button – you would need to do this once and only once before submitting any quarterly checks.

The lower half of the form lists all the quarterly checks that are associated with the baseline test. The buttons at bottom allow you to add new quarterly checks or exclude non-representative hours for existing quarterly tests.

Baseline and Quarterly Fuel Flow-to-Load Tests

Unit/Stack/Pipe ID: LM5
 Enabled:
 Monitoring System ID: 512
 Test Number: 1
 Average Load: 52
 Test Comment:

Accuracy Test No. / Date: 2 / 10/13/04 13:00
 PEI Test No. / Date: 1 / 01/01/05 0:00
 Beginning of Baseline Period: 04/05/05 8:00
 Completion of Baseline Period: 12/19/05 12:00
 Baseline In Progress:

Baseline Fuel Flow-to-Load or GHR Ratio/Results

Avg Fuel Flow, Ratio, Units: 4163.8 / 80.07 / 1
 Avg Heat Input, GHR, Units: / /

Hours Excluded from Baseline Analysis

CoFiring Multiple Fuels: 0
 Load Ramping: 0
 Operating in Lower 25%: 0

Quarterly Fuel Flow-to-load or GHR Test (formerly RT630)

Enabled	Quarter / Year	Test No.	Test Basis	AVG Diff	Result	Hours Used	Test Reason	Co Firing	Load Ramp	Low Load	Test Comment
<input checked="" type="checkbox"/>	4 / 2007	9	Q	7.5	PASSED	303	QA				
<input checked="" type="checkbox"/>	3 / 2007	8	Q	5.3	PASSED	671	QA				
<input checked="" type="checkbox"/>	2 / 2007	6	Q	5.5	PASSED	564	QA				
<input checked="" type="checkbox"/>	1 / 2007	7	Q	11.0	PASSED	376	QA				
<input checked="" type="checkbox"/>	1 / 2007	5	Q	11.0	PASSED	376	QA				
<input checked="" type="checkbox"/>	4 / 2006	4	Q	9.7	PASSED	361	QA				
<input checked="" type="checkbox"/>	3 / 2006	3	Q	5.6	PASSED	411	QA				
<input checked="" type="checkbox"/>	2 / 2006	2	Q		FEW168H	84	QA				
<input checked="" type="checkbox"/>	1 / 2006	1	Q		FEW168H	41	QA				

To delete the baseline and all associated quarterly tests, click the record selector at far left and press the [Del] key.

[Exclude Baseline Hours] Open the *Exclude Hours from Baseline Analysis* form (see section 5.10.3). You cannot use this feature if the baseline is still in progress.

[Exclude Quarterly Hours] Click to select one of the quarterly tests, then click this button to open the *Exclude Hours from Quarterly Analysis* form (see section 5.10.5). You cannot use this for quarterly tests with Result = INPROG or FEW168.

[Add New Quarterly Test] Open the *Fuel Flow-to-Load Quarterly Test Wizard* (see section 5.10.4).

5.10.3 Exclude Hours From Baseline Analysis

This form shows every data point used in the baseline fuel flow-to-load analysis with checkboxes at right. An hour may be excluded from the analysis by checking one of the checkboxes. Use this form after completing the baseline test to exclude non-representative hours where the Ratio is considerably different from other hours at similar load. This should make it easier to pass the quarterly checks.

Note that the column headers over the check boxes are actually buttons:

[Co Firing] Automatically exclude data points for which multiple fuels were combusted.

[Load Ramping] Automatically exclude data points where load ramping occurred. By default, only hours with a % Difference > than the difference limit are excluded.

[Low Load] Automatically exclude data points where load is in the lower 25% of operating range.

[Recalculate Results] After excluding data points, either manually or by using one of the above buttons, click to recalculate the flow-to-load ratio.

[Save Results] Save your excluded hours and recalculated results.

Date/Time	Hourly Fuel Flow Rate or Heat Input	Hourly Load	Ratio	Burning Multiple Fuels	Hours Excluded From Analysis		
					Co Firing	Load Ramping	Low Load
04/05/05 8:00	5180.9	62.6	82.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04/05/05 9:00	5461.9	68.7	79.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04/05/05 11:00	3217.2	38.2	84.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04/05/05 12:00	4676.3	60.8	76.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04/05/05 13:00	4901.1	62.9	77.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04/05/05 14:00	4309.3	57.7	74.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04/05/05 20:00	2978.8	35.5	83.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04/11/05 5:00	4646	57.8	80.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04/11/05 6:00	5004.2	64.4	77.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04/11/05 7:00	4902.4	63.6	77.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04/11/05 8:00	4904.1	64	76.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04/11/05 9:00	4954.8	64.4	76.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04/11/05 10:00	4946.5	64.3	76.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04/11/05 11:00	4964.5	64.3	77.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04/11/05 12:00	4999.6	64.7	77.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
04/11/05 13:00	4987.5	65	76.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Results: Hours Used

When excluding data points, exclude them for at most 1 reason – don't check the "Co Firing" checkbox and the "Low Load" checkbox on the same row – pick one or the other.

5.10.4 Fuel Flow-to-Load Quarterly Test Wizard

After the baseline period has ended, you must add a quarterly fuel flow-to-load check every quarter. Click the [Add New Quarterly Test] button on the Baseline and Quarterly Fuel Flow-to-Load Tests form to open the wizard.

Step 1: select the analysis interval (Quarter/Year), test basis and reason for test.

You must use the same test basis (fuel flow-to-load or gross heat rate) on the quarterly checks that you selected for the baseline analysis.

Click [Next] to continue.

The screenshot shows the 'Fuel Flow-to-Load Quarterly Test Wizard' window. At the top, there are two input fields: 'Unit/Stack/Pipe ID' with the value 'LM5' and 'Fuel Flow Monitoring System ID' with the value '512'. Below this, the text reads 'Step 1 of 3) Supply a value for each field'. There are three rows of dropdown menus: 'Quarter and Year' with '1' and '2008', 'Test Basis Indicator' with 'Q', and 'Reason For Test' with 'QA'. At the bottom right, there are three buttons: 'Cancel', '< Back', and 'Next >'.

Step 2: review the tags. The tag names should be supplied by the wizard. If they are not, select them now. In the example at right, the Multiple Fuels tag is blank which is normal for a source that only combusts only one fuel. The tag lists will not include out of use tags unless the checkbox near the lower left corner of the main window is checked.

Click [Next] to continue.

The screenshot shows the 'Fuel Flow-to-Load Quarterly Test Wizard' window. At the top, there are two input fields: 'Unit/Stack/Pipe ID' with the value 'LM5' and 'Fuel Flow Monitoring System ID' with the value '512'. Below this, the text reads 'Step 2 of 3) Review the tags used for the quarterly test calculations.' A note states: 'Note: it is strongly recommended that you do not change the information automatically supplied by the wizard (unless the wizard was unable to supply a tag name).' Below the note is a section titled 'Tags to Use in Baseline Calculations' with four rows of dropdown menus: 'Hourly Fuel Flow Tag' with 'U5_GasFlow_100scfh_1H', 'Hourly Load Tag' with 'U5_LoadTotal_MW_e_1H', 'Multiple Fuels Combusted Tag' which is blank, and 'Hourly Fuel Usage Time Tag' with 'U5_OperatingTime_Hr_1H'. At the bottom right, there are three buttons: 'Cancel', '< Back', and 'Next >'.

A pop-up message will inform you of your test results before the next page of the wizard. There are 3 possibilities:

1. There are insufficient data points
This is as good as passing the test. Click [Ok] to dismiss the message, then [Done] to save the record.
2. You passed the test
Click [Ok] to dismiss the message, then click [Done] to save the results.
3. You failed the test
Click [Ok] to dismiss the message, then [Done] to save the test. Use the [Exclude Quarterly Hours] button to exclude non-representative hours to see if you can pass the test (see section 4.10.5).

The example pop-up message below is the one you see when you pass the test.

The screenshot shows a pop-up window titled 'EDR Generator'. It contains an information icon on the left and the following text: 'Congratulations! You passed the quarterly test. Click the [Done] button to save the results in a quarterly test record, then fill out a record to claim your flowmeter accuracy test exemption for the quarter.' At the bottom center, there is an 'OK' button.

Fuel Flow-to-Load Quarterly Test Wizard

Unit/Stack/Pipe ID Fuel Flow Monitoring System ID

Step 3 of 3) Review test results and click [Done] to create an RT630 record

Test Results

? Data Points (168 points required)

? Average Difference

? Difference Limit (based on Average Load in test period:)

? Test Result

Step 3: If you are not sure what to do next, click the [What Next] button and refer to the 3 possible outcomes listed on the previous page.

Click [Done] to save the results.

The new test will appear at the top of the list in the box at the bottom of the form labeled *Quarterly Fuel Flow-to-load or GHR Test*.

Baseline and Quarterly Fuel Flow-to-Load Tests

Unit/Stack/Pipe ID: LM5
 Enabled:
 Monitoring System ID: 512
 Test Number: 1
 Average Load: 52

Accuracy Test No. / Date: 2 / 10/13/04 13:00
 PEI Test No. / Date: 1 / 01/01/05 0:00
 Beginning of Baseline Period: 04/05/05 8:00
 Completion of Baseline Period: 12/19/05 12:00
 Baseline In Progress:

Test Comment:

Baseline Fuel Flow-to-Load or GHR Ratio/Results

Avg Fuel Flow, Ratio, Units: 4163.8 / 80.07 / 1
 Avg Heat Input, GHR, Units: / /

Hours Excluded from Baseline Analysis

CoFiring Multiple Fuels: 0
 Load Ramping: 0
 Operating in Lower 25%: 0
 Exclude Baseline Hours

Quarterly Fuel Flow-to-load or GHR Test (formerly RT630)										Excluded Hours			Test Comment
Enabled	Quarter / Year	Test No.	Test Basis	AVG Diff	Result	Hours Used	Test Reason	Co Firing	Load Ramp	Low Load			
<input checked="" type="checkbox"/>	1 / 2008	11	Q	6.8	PASSED	460	QA						
<input checked="" type="checkbox"/>	4 / 2007	9	Q	7.5	PASSED	303	QA						
<input checked="" type="checkbox"/>	3 / 2007	8	Q	5.3	PASSED	671	QA						
<input checked="" type="checkbox"/>	2 / 2007	6	Q	5.5	PASSED	564	QA						
<input checked="" type="checkbox"/>	1 / 2007	7	Q	11.0	PASSED	376	QA						
<input checked="" type="checkbox"/>	1 / 2007	5	Q	11.0	PASSED	376	QA						
<input checked="" type="checkbox"/>	4 / 2006	4	Q	9.7	PASSED	361	QA						
<input checked="" type="checkbox"/>	3 / 2006	3	Q	5.6	PASSED	411	QA						
<input checked="" type="checkbox"/>	2 / 2006	2	Q		FEW168H	84	QA						

Exclude Quarterly Hours Add New Quarterly Test

If you failed the test, use the [Exclude Quarterly Hours] button at the bottom of the form.

5.10.5 Exclude Hours From Quarterly Analysis

This form shows every data point used in the quarterly fuel flow-to-load analysis with checkboxes at right. An hour may be excluded from the analysis by checking one of the checkboxes. Use this form when the quarterly test has failed. Suppose, for example, that the quarterly total ratio is more than 15% higher than the baseline ratio – you should exclude only data points where the hourly ratio is higher than the quarterly ratio (so that the quarterly ratio will be lowered).

Note that the column headers over the check boxes are actually buttons:

[Co Firing] Automatically exclude data points for which multiple fuels were combusted.

[Load Ramping] Automatically exclude data points where load ramping occurred. By default, only hours with a % Difference > than the difference limit are excluded.

[Low Load] Automatically exclude data points where load is in the lower 25% of operating range.

[Recalculate Results] After excluding data points, either manually or by using one of the above buttons, click to recalculate the flow-to-load ratio.

[Save Results] Save your excluded hours and recalculated results.

Date/Time	Hourly Fuel Flow Rate or Heat Input	Hourly Load	Burning Multiple Fuels	Ratio	Difference from Baseline Ratio	Hours Excluded From Analysis		
						Co Firing	Load Ramping	Low Load
01/02/08 6:00	2796.3	28.7	<input type="checkbox"/>	97.4	21.64	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
01/02/08 7:00	4269.7	55	<input type="checkbox"/>	77.6	3.08	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
01/02/08 8:00	3826.6	50.2	<input type="checkbox"/>	76.2	4.83	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
01/02/08 9:00	2159.3	21.2	<input type="checkbox"/>	101.9	27.26	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
01/02/08 10:00	4297	56.6	<input type="checkbox"/>	75.9	5.21	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
01/02/08 11:00	3641.1	46.1	<input type="checkbox"/>	79	1.34	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
01/02/08 12:00	4362.4	57.9	<input type="checkbox"/>	75.3	5.96	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
01/02/08 13:00	4336.1	54.7	<input type="checkbox"/>	79.3	0.96	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
01/02/08 14:00	2588.5	29	<input type="checkbox"/>	89.3	11.53	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
01/02/08 17:00	2632.4	27.8	<input type="checkbox"/>	94.7	18.27	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
01/02/08 18:00	4540.6	60.2	<input type="checkbox"/>	75.4	5.83	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
01/02/08 19:00	5107.7	63.5	<input type="checkbox"/>	80.4	0.41	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
01/02/08 20:00	5301.1	67.1	<input type="checkbox"/>	79	1.34	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
01/02/08 21:00	5158.1	65.5	<input type="checkbox"/>	78.7	1.71	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals					6.8	0	0	0

Hours Used: 460 Result: PASSED Passed quarterly evaluation

When excluding data points, exclude them for at most 1 reason – don't check the "Co Firing" checkbox and the "Low Load" checkbox on the same row – pick one or the other.

5.11 Appendix E NOx Correlation Test

The App E tab lists a summary of each NOx correlation test conducted at the unit sorted by latest test time first. Appendix E correlation tests were originally reported both in RT560 and in RTs 650, 651, 652 and 653. The information in RT560 was derivable from the 6xx records and was eliminated during the transition to XML. As a result, the EDR Generator application is now used rather than EDR Setup to view/edit correlation tests and associated Q/A parameters.

Appendix E requires an initial four-load NOx emission rate test to be performed for each type of fuel combusted in the unit (except for emergency fuel for which testing is optional). The emission testing is done at four evenly-spaced load point, ranging from the minimum to the maximum unit operating load, and three test runs are performed at each load level. In addition to NOx and Heat Input, quality assurance (QA) parameters must be monitored during each test run. The parameter(s) used for Q/A depend on the type of unit:

1. Boilers must use O2 as the Q/A parameter
2. Combustion turbines and diesel or dual-fuel reciprocating engines must use 4 or more parameters indicative of the unit's NOx formation characteristics. For example, if the turbine uses water injection to control NOx emissions, the water-to-fuel ratio should be one of the monitored parameters.

Each Q/A parameter must have a corresponding hourly tag in RegPefect. The value(s) of the Q/A tag(s) are checked every hour to validate the extrapolated NOx rate.

Tag names and target values for the Q/A parameters are entered in EDR Generator along with the NOx emission rate, heat input rate and other information from the correlation test that must be reported to EPA.

7-Day Cal	Linearity	Flow/Load	RATA	Qualification	Cycle Time	Offline Cal	Fuel Meter	Transmitter	Fuel Flow/Load	App E	Unit Default	Misc	Extension/Exemption	Q
Appendix E NOx Correlation Test (formerly RT650-653)														
Enabled	Test Type	NOx System ID	Test Number	Test Reason	Begin Date/Time	End Date/Time	HI 1	NOx 1	HI 2	NOx 2	HI 3	NOx 3	HI 4	NOx 4
<input checked="" type="checkbox"/>	APPE	111	111-Q1-2011-1	QA	03/11/11 9:00	03/11/11 9:50	0	0.132						

Protocol Gas
Air Emission Testing
Add
View/Edit

[Add] Add a new NOx correlation test using the *NOx Test Wizard* (see section 5.11.1)

[View/Edit] View or edit the details of a NOx correlation test on the *Appendix E NOx Correlation Curve Test* form (shown section 5.11.2). As an alternative to the button, double-click any field of the desired test.

[Protocol Gas]

Open the *Protocol Gas Data* form from which you may enter/view Protocol Gas Verification Program data for the selected test.

Protocol Gas Data

Report a Protocol Gas Data record for each cylinder of gas used during the test.

Unit/Stack/Pipe ID: B002 Test End Date: 03/11/2011
 System (ID): NOXE (111) Test Number: 111-Q1-2011-1

Test Type	Gas Level	Gas Type	Cylinder ID	Vendor ID	Expiration Date
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

[Air Emission Testing]

Open the *Air Emission Testing Data* form from which you may enter/view Air Emission Testing Body data for the selected test.

Air Emission Testing Data

Report a record for each on-site Qualified Individual from an Air Emission Testing Body who conducted or oversaw the test:

Unit/Stack/Pipe ID: B002 Test Date: 03/11/2011
 System (ID): NOXE (111) Test Number: 111-Q1-2011-1

Test Type	Qualified Inspector Name			Air Emissions Testing Body (AETB)			Provider of Qualification Exam			
<input type="text"/>	First	<input type="text"/>	Name	<input type="text"/>	Name	<input type="text"/>	MI	<input type="text"/>	Email	<input type="text"/>
	Last	<input type="text"/>	Phone	<input type="text"/>	Exam Date	<input type="text"/>				

5.11.1 NOx Test Wizard

To add a new quarterly flow-to-load test, click the [Add] button on the App E tab to open the wizard.

Step 1: select the NOx monitoring system ID and the test reason.

Click [Next] to continue.

Step 2: first select the Type of Fuel, then choose the Oil and/or Gas monitoring system IDs.

If your unit is a boiler, select the O2 tag used to quality assure the computed NOx rate and the target value measured during the test. The tag lists will not include out of use tags unless the checkbox near the lower left corner of the main window is checked.

An O2 value will be extrapolated based on the HI rate each hour. For the NOx rate to be considered valid, this inequality must be true:

$$(\text{extrapolated O2} - \text{tolerance}) \leq \text{O2 Q/A Tag Value} \leq (\text{extrapolated O2} + \text{tolerance})$$

Click [Next] to continue.

Step 3: supply values for all fields on all tabs for the initial run.

If you indicated that the unit combusts gas in Step 2, there will be a Gas Flow tab.

If you indicated that the unit combusts oil in Step 2, there will be an Oil Flow tab.

Click [Next] to continue.

Step 4: review your entries. Use the [Back] button to make corrections if needed.

Click [Done] to create the test, save the first run and open the *Appendix E NOx Correlation Curve Test* form.

NOx Test Wizard

Unit/Stack/Pipe ID NOx System ID

Step 4 of 4) Review your selections and click [Done] to insert this test run into the database:

Start Time of First Run	<input type="text" value="07/06/09 15:44"/>	Oil System ID	<input type="text"/>
Duration (minutes)	<input type="text" value="20"/>	Gas System ID	<input type="text" value="106"/>
Operating Level	<input type="text" value="1"/>	Total HI or Load	<input type="text" value="18.1"/>
Response Time (sec)	<input type="text" value="30"/>	NOx Reference Value	<input type="text" value="0.1"/>
F-Factor (at this level)	<input type="text" value="0.0"/>	Hourly HI Rate	<input type="text" value="54.2"/>

5.11.2 Appendix E NOx Correlation Curve Test Form (View/Edit/Delete Test Results)

This form is opened at the conclusion of the wizard or after double-clicking any of the tests on the App E tab. The example below shows the completed results of a correlation test for a boiler.

Unit/Stack ID B002 **ID** 17

NOx System ID 111 **Test Reason** QA

Enabled **Begin Date/Time** 03/11/11 9:00

Test Number 111-Q1-2011-1 **End Date/Time** 03/11/11 9:50

Test Comment

Test Summary / Curve Points (Dbl-click to edit)							Q/A Parameters for Turbines & Reciprocating Engine: (Dbl-click to edit)			
Lvl	F-Factor	Avg HI Rate	NOx Mean	O2 Q/A Tag (Boilers only)	O2 Target	O2 Tolerance	Lvl	Q/A Tag (Turbines/Engines only)	Lower Limit	Upper Limit
1	0	0.0	0.132			2				

Test Runs (Dbl-click to edit)																		
Lvl	Run	Begin	End	Resp Time	Total HI	HI Rate	RM NOx	Gas SIC	Gas GCV	Gas Vol	Gas HI	Oil SID	Oil Mass	Oil GCV	Oil HI	Oil Vol	Oil DEN	
1	1	03/11/11 09:00	09:20	30 secs	0.0	0.0	0.130					Oil	0	0	0	0	0	
1	2	03/11/11 09:30	09:50	30 secs	0.0	0.0	0.133					Oil	0	0	0	0	0	

[Delete] Delete this correlation test and all associated QA parameters.

[Protocol Gas] Open the *Protocol Gas Data* form from which you may enter/view Protocol Gas Verification Program data for this test.

[Air Emission Testing] Open the *Air Emission Testing Data* form from which you may enter/view Air Emission Testing Body data for this test.

There are 3 list boxes on the form:

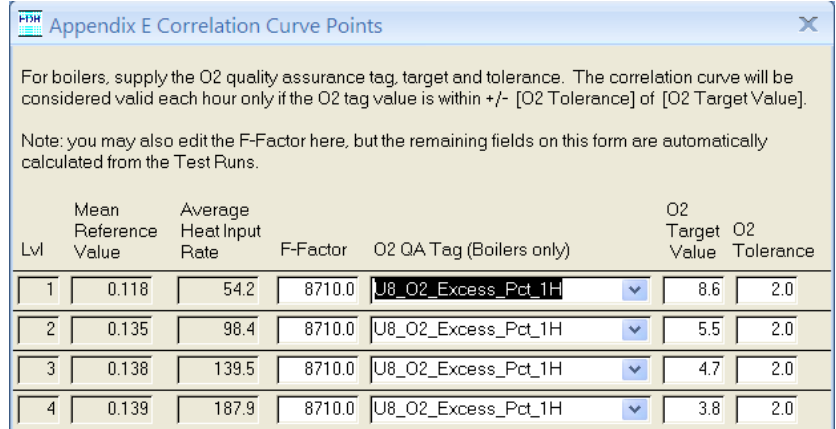
1. Test Summary / Curve Points
2. Q/A Parameters for Turbines and Reciprocating Engines
3. Test Runs

Each of these can be double-clicked to open an editing form.

Test Summary / Curve Points

The NOx mean, HI and F-Factor are calculated automatically for each level as you enter test runs. When you double-click, a form opens showing the summary data for each level. You should only need to edit the O2 Q/A Tag, O2 Target Value and O2 Tolerance *for boilers only*.

The O2 QA tag must be the same for all 4 levels, and the O2 tolerance as of this writing must always be 2.0. The O2 target value should be measured for each level during testing. The tag list will not include out of use tags unless the checkbox near the lower left corner of the main window is checked.



Appendix E Correlation Curve Points

For boilers, supply the O2 quality assurance tag, target and tolerance. The correlation curve will be considered valid each hour only if the O2 tag value is within +/- [O2 Tolerance] of [O2 Target Value].

Note: you may also edit the F-Factor here, but the remaining fields on this form are automatically calculated from the Test Runs.

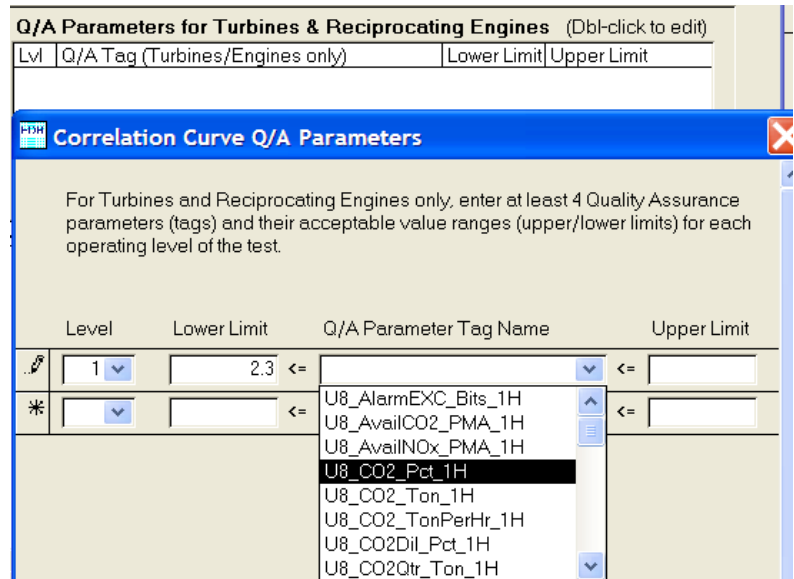
Lvl	Mean Reference Value	Average Heat Input Rate	F-Factor	O2 QA Tag (Boilers only)	O2 Target Value	O2 Tolerance
1	0.118	54.2	8710.0	U8_O2_Excess_Pct_1H	8.6	2.0
2	0.135	98.4	8710.0	U8_O2_Excess_Pct_1H	5.5	2.0
3	0.138	139.5	8710.0	U8_O2_Excess_Pct_1H	4.7	2.0
4	0.139	187.9	8710.0	U8_O2_Excess_Pct_1H	3.8	2.0

Q/A Parameters for Turbines and Reciprocating Engines

From the *Appendix E NOx Correlation Curve Test* form, double-click the *Q/A Parameters for Turbines & Reciprocating Engines* list – even if the list is empty – to open the *Correlation Curve Q/A Parameters* form.

On this form you must enter at least 16 rows: 4 different parameters at each of the 4 test levels. Each Q/A Parameter Tag Name should be entered 4 times (once for each test level). Unlike O2 for boilers, where the limit is always +/- 2 percent, you must specify the acceptable range of values for each level/parameter. The tag lists will not include out of use tags unless the checkbox near the lower left corner of the main window is checked.

For the extrapolated NOx value to be considered valid, the hourly tag values of all Q/A Parameter Tags must be >= the lower limit and <= upper limit at the appropriate level (level 1 when HI rate is between 0 and the first correlation curve point, etc.).



Q/A Parameters for Turbines & Reciprocating Engines (Dbk-click to edit)

Lvl	Q/A Tag (Turbines/Engines only)	Lower Limit	Upper Limit

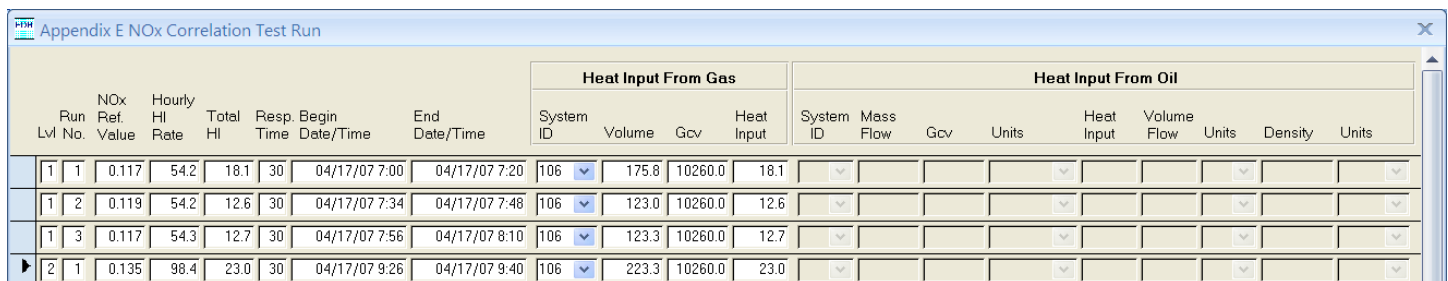
Correlation Curve Q/A Parameters

For Turbines and Reciprocating Engines only, enter at least 4 Quality Assurance parameters (tags) and their acceptable value ranges (upper/lower limits) for each operating level of the test.

Level	Lower Limit	Q/A Parameter Tag Name	Upper Limit
1	2.3 <=		<=
*	<=	<ul style="list-style-type: none"> U8_AlarmEXC_Bits_1H U8_AvailCO2_PMA_1H U8_AvailNOx_PMA_1H U8_CO2_Pct_1H U8_CO2_Ton_1H U8_CO2_TonPerHr_1H U8_CO2Dil_Pct_1H U8_CO2Qtr_Ton_1H 	<=

Test Runs

From the *Appendix E NOx Correlation Curve Test* form, double-click the *Test Runs* list to open the *Appendix E NOx Correlation Test Run* form.



Appendix E NOx Correlation Test Run

Run Lvl	Ref. No.	NOx Value	Hourly HI Rate	Total HI	Resp. Time	Begin Date/Time	End Date/Time	Heat Input From Gas			Heat Input From Oil									
								System ID	Volume	Gcv	Heat Input	System ID	Mass Flow	Gcv	Units	Heat Input	Volume Flow	Units	Density	Units
1	1	0.117	54.2	18.1	30	04/17/07 7:00	04/17/07 7:20	106	175.8	10260.0	18.1									
1	2	0.119	54.2	12.6	30	04/17/07 7:34	04/17/07 7:48	106	123.0	10260.0	12.6									
1	3	0.117	54.3	12.7	30	04/17/07 7:56	04/17/07 8:10	106	123.3	10260.0	12.7									
2	1	0.135	98.4	23.0	30	04/17/07 9:26	04/17/07 9:40	106	223.3	10260.0	23.0									

To add a run, enter data on the empty row at the bottom. The gas and oil fields are enabled or disabled based on your selection of fuels in the wizard. Each time you close this form, the Test Summary / Curve Points list will update based on your entries.

5.12 Unit Default Test (LME)

The Unit Default tab lists a summary of each unit default test conducted at the unit sorted by latest test time first.

Unit default tests may be performed to establish fuel- and unit-specific default NO_x emission rates for qualifying low mass emissions (LME) units. Testing at four load levels is required (with some exceptions), with three test runs at each load level. The basic procedures described in Part 75, Appendix E, section 2.1 are used for the testing, except that unit heat input is not measured during the test runs. Periodic retesting is required, once every five years.

The NO_x emission rate is entered in EDR Generator along with other information from the unit default test that must be reported to EPA.

7-Day Cal	Linearity	Flow/Load	RATA	Qualification	Cycle Time	Offline Cal	Fuel Meter	Transmitter	Fuel Flow/Load	App E	Unit Default	Misc	Extensic
Low Mass Emissions (LME) Unit Default Test													
Enabled	Test Type	Test Number	Test Reason	Fuel Code	NO _x Default Rate	Operating Condition	Number of Test Levels	Begin Date/Time	End Date/Time				
<input checked="" type="checkbox"/>	UNITDEF	B002-Q1-2011-1	RECERT	NNG	0.133	A	2	03/08/11 8:00	03/08/11 11:28				

[Add] Add a new unit default test using the *Unit Default Test Wizard* (see section 4.12.1)

[View/Edit] View or edit the details of a unit default test on the *Low Mass Emissions Unit Default Test* form (shown section 4.12.2). As an alternative to the button, double-click any field of the desired test.

[Protocol Gas] Open the *Protocol Gas Data* form from which you may enter/view Protocol Gas Verification Program data for the selected test.

Protocol Gas Data x

Report a Protocol Gas Data record for each cylinder of gas used during the test.

Unit/Stack/Pipe ID Test End Date

Test Number

Test Type	Gas Level	Gas Type	Cylinder ID	Vendor ID	Expiration Date
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

[Air Emission Testing] Open the *Air Emission Testing Data* form from which you may enter/view Air Emission Testing Body data for the selected test.

Air Emission Testing Data
x

Report a record for each on-site Qualified Individual from an Air Emission Testing Body who conducted or oversaw the test:

Unit/Stack/Pipe ID Test Date
 Test Number

	Test Type	Qualified Inspector Name	Air Emissions Testing Body (AETB)	Provider of Qualification Exam
▶	<input type="text"/> First <input type="text"/> MI <input type="text"/> Last <input type="text"/>	Name <input type="text"/> EMail <input type="text"/> Phone <input type="text" value="(xxx-xxx-xxxx)"/>	Name <input type="text"/> EMail <input type="text"/> Exam Date <input type="text"/>	

5.12.1 Unit Default Test Wizard

To add a new unit default test, click the [Add] button on the Unit Default tab to open the wizard.

Step 1: select the test reason.

Click [Next] to continue.

Unit Default Test Wizard

Unit/Stack/Pipe ID B002

Step 1 of 4) Select the test reason:

Test Reason QA

Cancel < Back Next >

Step 2: select the fuel code and the operating condition. Leave the operating condition blank if you are not reporting separate base and peak load NOx default rates.

If the test was performed to be applied to a group of identical units, enter the group information.

Click [Next] to continue.

Unit Default Test Wizard

Unit/Stack/Pipe ID B002

Step 2 of 4) Select the fuel and operating condition:

Fuel Code NNG

Operating Condition

Optionally, enter group information if this test was performed to be applied to a group of identical units (you may enter this information later if you prefer):

Group ID

Number of Units in Group

Number of Tests for Group

Cancel < Back Next >

Step 3: supply values for all fields for the initial test run.

Click [Next] to continue.

Unit Default Test Wizard

Unit/Stack/Pipe ID B002

Step 3 of 4) Supply values for the first run:

Run Number	1	Run Start Time	03/09/11 10:24
Operating Level	1	Duration	20 min
Response Time		NOx Reference Value	0.000 lb/mmBtu

sec

Cancel < Back Next >

Step 4: review your entries. Use the [Back] button to make corrections if needed.

Click [Done] to create the test, save the first run and open the *Low Mass Emissions Unit Default Test* form.

Unit Default Test Wizard

Unit/Stack/Pipe ID

Step 4 of 4) Review your selections and click [Done] to insert this test run into the database:

Test Number Start Time of First Run

Operating Level Duration (minutes)

Response Time (sec) NOx Reference Value

5.12.2 Low Mass Emissions Unit Default Test Form (View/Edit/Delete Test Results)

This form is opened at the conclusion of the wizard or after double-clicking any of the tests on the Unit Default tab. The example below shows the results of a unit default test performed at two load levels.

Low Mass Emissions Unit Default Test

Unit/Stack ID ID

Enabled

Test Number Begin Date/Time

Test Reason End Date/Time

Test Comment

Test Summary (Db1-click to edit)

Fuel Code	Avg NOx Rate	Op Condition	Group ID	#Units In Group	#Tests For Group
NNG	0.133	A			

Test Runs (Db1-click to add/edit)

Op Level	Run	Begin	End	Resp Time	NOx Ref Value	Used In Avg
1	1	03/08/11 08:00	08:20	30 secs	0.132	Yes
1	2	03/08/11 08:32	08:52	30 secs	0.127	-
1	3	03/08/11 09:06	09:26	30 secs	0.128	-
2	1	03/08/11 10:00	10:20	30 secs	0.131	Yes
2	2	03/08/11 10:36	10:56	30 secs	0.135	Yes
2	3	03/08/11 11:08	11:28	30 secs	0.130	-

[Delete] Delete this unit default test.

[Protocol Gas] Open the *Protocol Gas Data* form from which you may enter/view Protocol Gas Verification Program data for this test.

[Air Emission Testing] Open the *Air Emission Testing Data* form from which you may enter/view Air Emission Testing Body data for this test.

There are 2 list boxes on the form:

1. Test Summary
2. Test Runs

Each of these can be double-clicked to open an editing form.

Test Summary

There is always only one test summary record for each test. The average NO_x rate is calculated automatically as you enter test runs. When you double-click, a form opens showing the summary data where you may edit fuel, operating condition and group information.

Fuel Code	Average NO _x Rate	Operating Condition	Group ID	Number Of Units In Group	Number Of Tests For Group
NNG	0.133	A			

Test Runs

From the *Low Mass Emissions Unit Default Test* form, double-click the *Test Runs* list to open the *LME Unit Default Test Run* form.

Operating Level	Run Number	Response Time	NO _x Ref. Value	Begin Date/Time	End Date/Time
1	1	30	0.132	03/08/11 8:00	03/08/11 8:20
1	2	30	0.127	03/08/11 8:32	03/08/11 8:52
1	3	30	0.128	03/08/11 9:06	03/08/11 9:26
2	1	30	0.131	03/08/11 10:00	03/08/11 10:20

To add a run, enter data on the empty row at the bottom. Assign run numbers either consecutively for each test (e.g., for a four-load test you may use run numbers one through twelve to represent the three runs at the four load levels) or for each load level within the test (i.e., one through three for the runs at each load level). Each time you close this form, the Test Summary list will update based on your entries.

After completing each test, manually update the corresponding NO_x emission rate in the Defaults record of the monitoring plan for the test result to take effect in the calculations of tag scripts.

5.13 Miscellaneous Test

The *Misc* tab shows all the miscellaneous tests for the unit which include DAHS Verifications, Leak Checks and Primary Element Inspections. The tests are sorted to show the most recent at the top of the list.

Miscellaneous Test Data (formerly RTs 603, 624)													
7-Day Cal	Linearity	Flow/Load	RATA	Qualification	Cycle Time	Offline Cal	Fuel Meter	Transmitter	Fuel Flow/Load	App E	Misc	Extension/Exemption	QA/Cert.Event
Enabled	Unit / Stack ID	Test Type	System ID	Comp. ID	Test Number	Test Reason	Test Result	End Date/Time	Grace Period	Description (for Test Type OTHER)			
<input checked="" type="checkbox"/>	B1	LEAK		014	5	QA	PASSED	03/26/09 12:30	<input type="checkbox"/>				
Comment:													
<input checked="" type="checkbox"/>	B1	LEAK		014	4	QA	PASSED	12/16/08 15:17	<input type="checkbox"/>				
Comment:													
<input checked="" type="checkbox"/>	B1	LEAK		014	3	QA	PASSED	09/24/08 13:00	<input type="checkbox"/>				
Comment:													
<input checked="" type="checkbox"/>	B1	LEAK		014	19	QA	PASSED	09/24/08 13:00	<input type="checkbox"/>				
Comment:													
<input checked="" type="checkbox"/>	B1	LEAK		014	18	QA	PASSED	05/21/08 10:00	<input type="checkbox"/>				
Comment:													
<input checked="" type="checkbox"/>	B1	LEAK		014	2	QA	PASSED	05/21/08 10:00	<input type="checkbox"/>				
Comment:													
<input checked="" type="checkbox"/>	B1	LEAK		014	1	QA	PASSED	02/19/08 11:00	<input type="checkbox"/>				
Comment:													

To enter a new test, scroll to the empty row at the bottom and begin supplying field values. Detailed guidance is available in the ECMPs Reporting Instructions.

To delete a test, select it by clicking its record selector (the box left of the Enabled checkbox), then press the [Del] key. The first test is selected in the example.

Miscellaneous Test Data (formerly RTs 603, 624)											
Enabled	Unit / Stack ID	Test Type	System ID	Comp. ID							
<input checked="" type="checkbox"/>	B1	LEAK		014							
Co											
<input checked="" type="checkbox"/>	B1	LEAK		014							
Co											

5.14 Test Extension/Exemption

The *Extension/Exemption* tab shows all the test extensions and exemptions for the unit. The tests are sorted to show the most recent at the top of the list.

Test Extension/Exemption (formerly RTs 696, 697, 698)													
7-Day Cal	Linearity	Flow/Load	RATA	Qualification	Cycle Time	Offline Cal	Fuel Meter	Transmitter	Fuel Flow/Load	App E	Misc	Extension/Exemption	QA/Cert Event
Enabled	Unit / Stack ID	Year	Quarter	System ID	Comp. ID	Span Scale	Hours Used	Fuel Code	Extension / Exemption Code				
<input checked="" type="checkbox"/>	B1	2009	1	411	011	H	0		RANGENU				
<input checked="" type="checkbox"/>	B1	2008	3	411	011	H	0		LWWSQTR				
<input checked="" type="checkbox"/>	B1												

To enter a new record, scroll to the empty row at the bottom and begin supplying field values. Detailed guidance is available in the ECMP Reporting Instructions.

To delete a test, select it by clicking its record selector (the box left of the Enabled checkbox), then press the [Del] key. The second test is selected in the example.

Test Extension/Exemption			
Enabled	Unit / Stack ID	Year	
<input checked="" type="checkbox"/>	B1	2009	
<input checked="" type="checkbox"/>	B1	2008	

5.15 QA/Certification Event

The *QA/Cert Event* tab shows all the certification events for the unit. The records are sorted to show the most recent at the top of the list.

QA / Certification Event (formerly RT556)									
Enabled	Monitoring System ID	Component ID	Event Code	Event Date	Required Test Code	Conditional Validation Start Date	Test Completion Date		
<input checked="" type="checkbox"/>	<input type="text"/>	011	99	06/15/09 8:00	9	06/16/09 2:00	06/16/09 12:00		
<input checked="" type="checkbox"/>	<input type="text"/>	093	2	04/01/05 0:00	22	04/01/05 0:00	04/01/05 0:00		
<input checked="" type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		

To enter a new record, scroll to the empty row at the bottom and begin supplying field values. Detailed guidance is available in the ECMP Reporting Instructions.

To delete a test, select it by clicking its record selector (the box left of the Enabled checkbox), then press the [Del] key. The first test is selected in the example.

QA / Certification Event (f			
Enabled	Monitoring System ID	Compor ID	
<input checked="" type="checkbox"/>	<input type="text"/>	011	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="text"/>	093	<input type="checkbox"/>

5.16 Probe Leak Check

The Probe Leak Check baseline wizard was designed to allow users to calculate baseline CO2 data sets comparable with EPA's *Control Chart Methodology for Detecting Under-Reported Emissions*. The goal is to determine baseline parameters and control limits which then can be used to identify unlikely shifts in CO2 concentration data during a steady load state.

The *Probe Check* tab lists all baseline CO2 data sets for the unit sorted by most recent tests first.

Unit/Stack/Pipe QA/Certification Tests - EDR Generator

File Tools Help Queue

Unit/Stack/Pipe ID: CS013 Go To Unit/Stack/Pipe View Q/A Reports

EDR Description: CS13

Flow/Load | RATA | Qualification | Cycle Time | Offline Cal | Fuel Meter | Transmitter | Fuel Flow/Load | App E | Unit Default | Misc | Extension/Exemption | QA/Cert Event | **Probe Check**

Probe Check Baseline Wizard - CO2 Control Analysis

To view/edit data set detail, double click the desired data set, or single click to highlight the data set and click [View/Edit]
 To add a new data set, click [Add New]
 To filter the list of data sets, use the optional filters at bottom left

Qtr, Year	Unit/Stack	System	P/B	Start Date	End Date	CO2 Control Tag	Load Bin	Mean	Std Dev	Valid Days
Qtr 2 - 2010	CS13	1RC	P	05/13/2010	06/11/2010	CS13_CO2R_1stNormLoad_Pct_1H	2	5.6	1.077	16
Qtr 2 - 2009	CS13	1RC	P	04/10/2009	05/09/2009	CS13_CO2R_1stNormLoad_Pct_1H	4	2.4	0.461	29
Qtr 2 - 2008	CS13	1RC	P	04/24/2008	05/23/2008	CS13_CO2R_1stNormLoad_Pct_1H	2	4.5	0.677	22
Qtr 2 - 2007	CS13	1RC	P	05/31/2007	06/29/2007	CS13_CO2R_1stNormLoad_Pct_1H	3	6.2	1.234	16
Qtr 2 - 2006	CS13	1RC	P	06/29/2006	07/28/2006	CS13_CO2R_1stNormLoad_Pct_1H	5	8.1	1.134	17
Qtr 2 - 2005	CS13	1RC	P	06/30/2005	07/29/2005	CS13_CO2R_1stNormLoad_Pct_1H	7	8.3	1.282	15

Unit/Stack Filter: Common Stack Report

System Filter: View/Edit

Quarter/Year Filter: Add New

Remove All Filters Delete

Double-click a row in the list to rerun the baseline wizard or modify alarms associated with the current data set (see section 4.16.2).

- [Delete]** Delete the selected baseline data set(s) (see section 4.16.2).
- [Report]** View test parameters and results for the selected baseline data set(s) in a report format (see section 4.16.2).
- [View/Edit]** Rerun the baseline wizard or modify alarms associated with current data set (see section 4.16.1).
- [Add New]** Start the Probe Leak Check Baseline wizard – follow the prompts to create a new baseline data set (see section 4.16.1).

This form shows 1 row for each baseline Probe Leak Check data set. To rerun the baseline wizard for a particular data set, double-click the row of the desired baseline data set.

Hint: Use the [Remove All Filters] button to remove all highlighting of data sets.

5.16.1 Probe Leak Check Baseline Wizard

To add a new baseline data set, click [Add New] on the Probe Check tab to open the wizard. To modify an existing baseline data set, highlight a data set and click [View/Edit] on the Probe Check tab.

1st Step: Select the CO2 concentration monitoring system, baseline start date (from RATA test end dates), and the tag names associated with the Probe Leak Check.

- The *Hourly EDR CO2 Tag* is the hourly CO2 concentration tag used to report a *Monitor Hourly Value* record in the EDR.
- The *Hourly Control CO2 Tag* is the control tag containing the hourly average CO2 concentration within the baseline identified load bin.
- The *Daily Average CO2 Tag* is the daily average CO2 concentration from the *Hourly Control CO2 Tag*.

The wizard displays selection of the baseline start dates from a list of completed CO2 RATA dates for the CO2 concentration monitoring system. When the monitoring system, baseline start date, and hourly control CO2 fields have been chosen, the remaining fields will be automatically populated based on past data set selections, but may be overridden by the user. The tag lists will not include out of use tags unless the checkbox near the lower left corner of the main window is checked.

Click [Next] to continue.

Step 1 of 3) Select the calculation parameters:

CO2 Monitoring System	<input type="text"/>
Is Primary System	<input type="checkbox"/>
Baseline Start Date	<input type="text"/>
Hourly EDR CO2 Tag	<input type="text"/>
Hourly Control CO2 Tag	<input type="text"/>
Daily Average CO2 Tag	<input type="text"/>
Baseline Period	<input type="text" value="30"/> (days)
Valid Hours Required	<input type="text" value="6"/> (per day)
Valid Days Required	<input type="text" value="15"/> (for a valid baseline mean)

You may manually override tag names and baseline parameters in Step 1 of the wizard.

2nd Step: Identify the most used load bin for baseline evaluation. (This load bin will also be used in forming the hourly and daily average CO2 concentration control samples.) Review the load bin and number of valid hours. The list is sorted by the greatest number of valid hours of CO2 concentration for each load bin.

Note: EPA has stated that their system automates it's evaluation to focus on the most used load bin [during the baseline period] and the primary CO2 concentration monitoring system.

Step 2 of 3) Select a load range. You should normally select the load range with the highest number of Valid Hours. If the table is empty, there are no valid hours of data in the selected Baseline period (select Cancel).

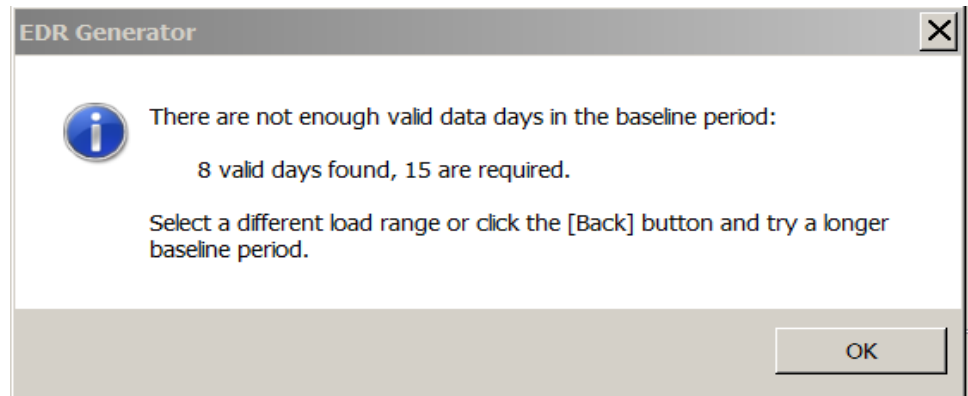
LoadRange	ValidHours
2	249
3	145
4	104
5	96
6	67
11	20
13	14
12	11
7	5
9	4
10	4

Click [Next] to continue.

A pop-up message will inform you if there are not enough valid days of data from the selected monitoring system to calculate baseline results before the next page of the wizard. In this case, click [Ok] to dismiss the message, and then click [Back] to modify the baseline parameters or click [Cancel] to exit without saving the baseline data set.

The example pop-up message explains that there is insufficient data for a baseline data set.

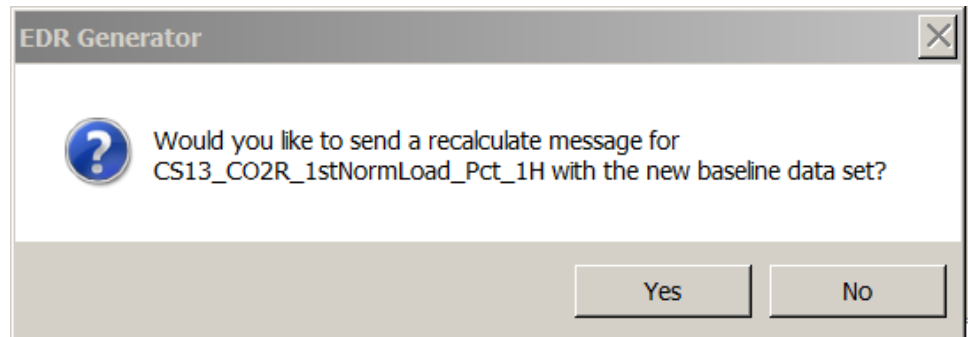
Note: Generally, for a control chart, you would want to increase the baseline period to increase the number of valid days (rather than decrease the number of hours/days required).



When there is sufficient data to form baseline statistics, the baseline data set is stored, including:

- Identified Load Bin
- Baseline Mean
- Standard Deviation
- Number of Valid Days used for the baseline data set

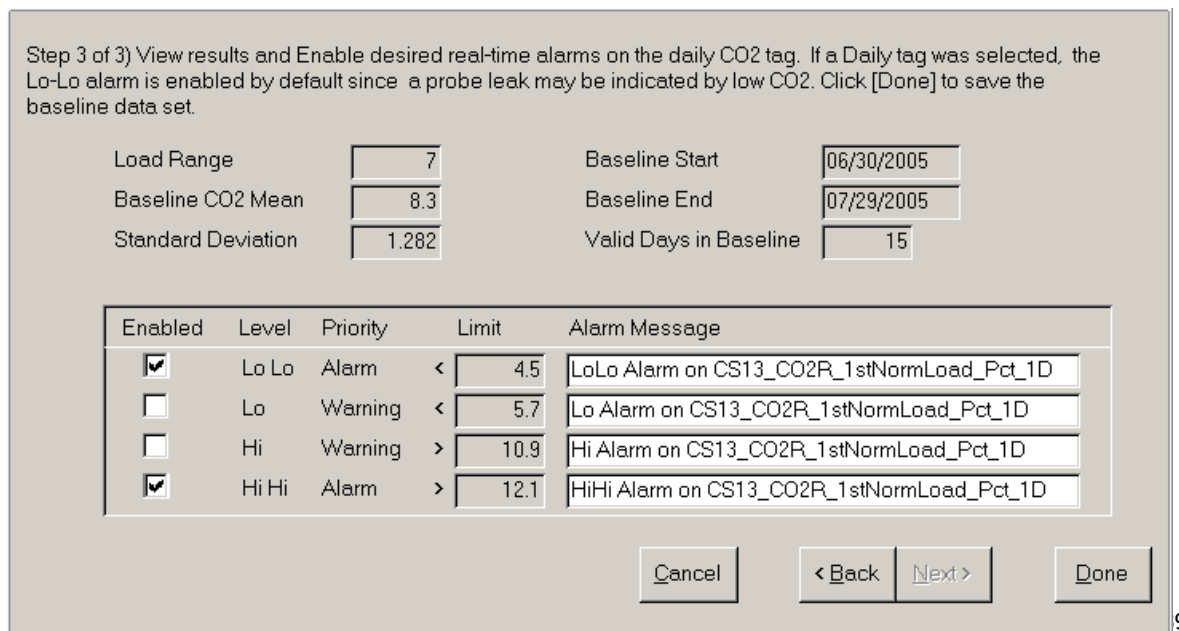
The option to enter a recalculation message will be offered.



3rd Step: If you are working on the most current baseline data set and a *Daily Average CO2 Tag* has been configured, select whether alarms are enabled and modify the alarm message for your site needs.

Note: EPA will use $\pm 3\sigma$ -level (3 times the standard deviation) for audit purposes which correspond to a 99.7% certainty that the data should fall within the range. EPA recommends that sources set a warning control limit at a $\pm 2\sigma$ -level (2 times the standard deviation) and take investigative action whenever the data is outside this warning level.

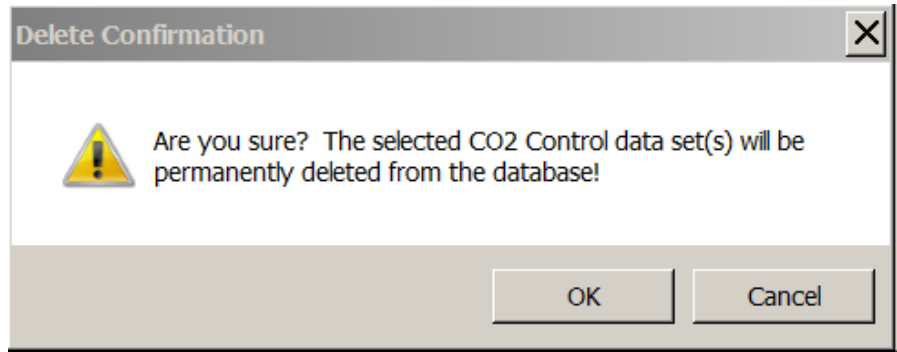
If the data set is the latest baseline data set, you may modify the alarm configuration.



Click [Done] to save the results as a baseline data set and the new data set will appear in the list on the main Probe Check form.

5.16.2 Probe Leak Check Data Sets

To delete one or more baseline data set(s), highlight the data set(s) and click the [Delete] button from the main Probe Check tab. A verification dialog will allow confirmation or cancellation.



To Report one or more baseline data set(s), highlight the data set(s) and click the [Report] button from the main Probe Check tab. A report including baseline parameters and results will be displayed along with an optional dialog to export the report in a specific document format.

Probe Check Test Report

RegPerfect I

Probe Check Baseline Data

05/22/2012
Page 1

Unit ID: CS013

System ID	Control Tag	Load Bin	Mean	Standard Deviation	Valid Days	Minimum Baseline Period	Hours Required Per Day	Days Required
1RC	CS13 CO2R 1stNormLoad Pct 1H							
05/13/10 - 06/11/10		2	5.6	1.077	16	30 days	6	15
04/10/09 - 05/09/09		4	2.4	0.461	29	30 days	6	15
04/24/08 - 05/23/08		2	4.5	0.677	22	30 days	6	15
05/31/07 - 06/30/07		3	6.1	1.236	15	31 days	6	15
06/29/06 - 09/01/06		4	8.7	0.627	15	65 days	6	15
06/30/05 - 08/28/05		20	12.1	0.148	18	60 days	6	15

Use the RegPerfect Reports application to run a *Probe Check* report to evaluate statistical quarterly shifts in CO2 concentration data using the effective baseline data set corresponding to EPA's *Control Chart Methodology for Detecting Under-Reported Emissions* audit.

6. Sample Query

The *Sample Query* tab offers a fill-in-the-blank query that can be used to see the data and status for a tag and time frame of your choosing. Optional filters may be used to restrict the rows returned based on a single status flag and/or the value of a second tag. The tag lists will not include out of use tags unless the checkbox near the lower left corner of the main window is checked.

Example 1: show hourly CO2 Pct on Jan 1, 2009 from 00:00 to 10:00

Run EDR | Review Data | QA/QC Records | **Sample Query**

```
SELECT * FROM A_VwSampleStatus
WHERE TagName = U1_CO2_Pct_1H AND Time BETWEEN 01/01/09 0:00 AND 01/01/09 10:00
AND [ ] = [ ]
AND Time IN (SELECT Time FROM A_VwSampleStatus WHERE TagName = [ ]
AND SampleInvalid = 0 AND Value = [ ])
ORDER BY Time
```

Execute Query

Click [Execute Query] to show the query results:

Tag ID / Name																	
43 U1_CO2_Pct_1H																	
Date/Time	Value	MODC	SI	EV	ES	EC	M	C	OS	FF	OD	OM	QA	<	IT	IF	IQ
01/01/09 0:00	11.3	21				✓											
01/01/09 1:00	11.3	1															
01/01/09 2:00	11.2	1															
01/01/09 3:00	11.3	1															
01/01/09 4:00	11.3	1															
01/01/09 5:00	11.2	1															
01/01/09 6:00	10.8	1															
01/01/09 7:00	11.1	1	✓		✓				✓								
01/01/09 8:00	11.2	1	✓		✓				✓								
01/01/09 9:00	11.3	1	✓		✓				✓								
01/01/09 10:00	11.3	1	✓		✓				✓								

Example 2: add a filter to show only hours where CO2 was out of service

```

SELECT * FROM A_VwSampleStatus
WHERE TagName = U1_CO2_Pct_1H AND Time BETWEEN 01/01/09 0:00 AND 01/01/09 10:00
   AND OutOfService = 1
   AND Time IN (SELECT Time FROM A_VwSampleStatus WHERE TagName = 
AND SampleInvalid = 0 AND Value = 
ORDER BY Time
    
```

Query Results

Tag ID / Name 43 U1_CO2_Pct_1H

Date/Time	Value	MODC	SI	EV	ES	EC	M	C	OS	FF	OD	OM	QA	<	IT	IF	IQ
01/01/09 7:00	11.1	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
01/01/09 8:00	11.2	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
01/01/09 9:00	11.3	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
01/01/09 10:00	11.3	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Example 3: add a filter to show only hours where the unit was operating

```

SELECT * FROM A_VwSampleStatus
WHERE TagName = U1_CO2_Pct_1H AND Time BETWEEN 01/01/09 0:00 AND 01/01/09 10:00
   AND OutOfService = 1
   AND Time IN (SELECT Time FROM A_VwSampleStatus WHERE TagName = U1_UnitOn_TF_1H
AND SampleInvalid = 0 AND Value = 1
ORDER BY Time
    
```

Query Results

Tag ID / Name 43 U1_CO2_Pct_1H

Date/Time	Value	MODC	SI	EV	ES	EC	M	C	OS	FF	OD	OM	QA	<	IT	IF	IQ
01/01/09 9:00	11.3	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
01/01/09 10:00	11.3	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The form's fill-in-the-blank query is deliberately shown in accurate SQL syntax to help along those that wish to dabble with writing their own queries.

Appendix A



SQL Server Information

Help Documentation

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Relational Database Background

Relational database theory has been the subject of many research projects and long textbooks. Most technical training vendors offer at least 2 different week long courses to teach the particulars of Microsoft SQL Server, which is just one of many commercially available relational database management systems (RDBMS). Nevertheless, it is very helpful to have a rudimentary understanding of basic relational terms and concepts, simple SQL query syntax, and Microsoft SQL Server.

A database has two major components: the files holding the physical database, and the database management system software that applications and users use to read, write and delete and manage the data. In the case of SQL Server, the database management software consists of several different applications including:

- SQL Server Engine – manages the reading and writing of data to and from the database
- SQL Server Agent – an application which allows jobs (like database backups) to be scheduled and run automatically
- SQL Enterprise Manager – a user interface for creating/designing databases, setting up security, backing up databases, restoring databases and other administrative functions
- Query Analyzer – a graphical user interface for designing and testing T-SQL (database language supported by SQL Server) statements, batches, and scripts interactively.

There are several ways to organize databases, but a relational database is one of the most effective and popular (relational database systems are an application of mathematical set theory to the problem of effectively organizing data). A relational database is, in simplest terms, a set of tables. Each table represents an entity about which you want to store information in the database – like a gas analyzer or a PLC. Every table contains a number of columns that specify precisely what information about the entity will be stored in the table – like the analyzer installation date, its serial number, etc. The tables and their columns are referred to as the database design or schema – it's like a blueprint for the data that you want to store in your database.

Example: The RegPerfectDb database needs to store information like CO2 emissions, SO2 emissions and whether the unit is online or offline – this data must be recorded every hour in perpetuity. The following two tables are similar to RegPerfect's database design for storing this information.

Table Name: Tag (a tag is a parameter for which we wish to store time-stamped measurements – like 1-minute CO2 or 3-hour NOx #/mmBtu)

Column Name	Data Type and Length
TagName	Varchar(30)
TagID	Int
MonitoringSiteName	Varchar(20)
Parameter	Varchar(8)
Units	Varchar(12)
DecimalPrecision	Smallint
SampleIntervalCount	Smallint
SampleIntervalPeriodType	Varchar(12)
TagOrigin	Varchar(12)
SampleDataType	Varchar(12)

Table Name: Sample (a sample is one time-stamped measurement for a tag/parameter)

Column Name	Data Type and Length
Time	Datetime
TagID	Int
Value	Float
FlagValues1	Int
FlagValues2	Int
MODC	Smallint

The above tables are part of the RegPerfect database schema – a receptacle into which data can be deposited. Data is inserted into the Tag table by Teledyne Monitor Labs Production group during system setup. Data is inserted into the Sample table in real-time after the system has been installed at a customer facility. With relational databases, each record inserted into a table is referred to as a row.

Example: the table below shows six example rows in the RegPerfect Sample table. This particular example might be 1-hour, bias adjusted SO2 ppm samples.

Time	TagID	Value	FlagValues1	FlagValues2	MODC
1/1/99 00:00	1	254.6	0	0	1
1/1/99 01:00	1	259.2	0	0	1
1/1/99 02:00	1	265.0	0	0	1
1/1/99 03:00	1	270.0	0	0	6
1/1/99 04:00	1	270.0	0	0	6
1/1/99 05:00	1	275.0	0	0	1

The database is the perhaps the most critical part of the product – it is not an exaggeration to say that the sole purpose of most RegPerfect software is to insert rows into database tables and/or to read them and format them for displays and reports.

Unlike some other types of database systems, a relational database has a simple, standard query language called T-SQL (transact structured query language). SQL Server’s Query Analyzer application can be used by anyone who knows T-SQL to query the database. There are many, many books available on SQL, but simple queries are easy. The SELECT-FROM-WHERE statement is all that is needed in most cases. The syntax is:

```
SELECT ColumnName(s)
FROM TableName
WHERE Boolean Expression
ORDER BY ColumnName(s)
```

Note that instead of column names, SELECT * can be used to return all columns. Note that use of the “where” and “order by” clauses are optional.

Examples (based on the example Sample table rows above):

```
SELECT *
FROM Sample
```

Results:

Time	TagID	Value	FlagValues1	FlagValues2	MODC
1/1/99 00:00	1	254.6	0	0	1
1/1/99 01:00	1	259.2	0	0	1
1/1/99 02:00	1	265.0	0	0	1
1/1/99 03:00	1	270.0	0	0	6

1/1/99 04:00	1	270.0	0	0	6
1/1/99 05:00	1	275.0	0	0	1

```
SELECT Time, TagID, Value
FROM Sample
```

Results:

Time	TagID	Value
1/1/99 00:00	1	254.6
1/1/99 01:00	1	259.2
1/1/99 02:00	1	265.0
1/1/99 03:00	1	270.0
1/1/99 04:00	1	270.0
1/1/99 05:00	1	275.0

```
SELECT Time, TagID, Value
FROM Sample
WHERE Time < '1/1/99 03:00'
```

Results:

Time	TagID	Value
1/1/99 00:00	1	254.6
1/1/99 01:00	1	259.2
1/1/99 02:00	1	265.0

```
SELECT Time, TagID, Value
FROM Sample
WHERE Time BETWEEN '1/1/99 01:00' AND '1/1/99 03:00'
ORDER BY Value DESC
```

Results:

Time	TagID	Value
1/1/99 03:00	1	270.0
1/1/99 02:00	1	265.0
1/1/99 01:00	1	259.2

Finally, a view is a “virtual” table whose contents are defined by a query (SELECT-FROM-WHERE as described above). A view looks like a real table with a set of named columns and rows of data. However, a view does not exist as a stored set of data values in a database. Instead, the rows and columns of data in a view come from base tables and are produced by the query that defines the view. A variety of views have been created for RegPerfect applications/users – often to make data from one or multiple tables easier to query.

A view name may be used in place of a table name in a SELECT query. Perhaps the most important view in RegPerfect for queries by users is A_VwSampleStatus. This view combines the contents of the Sample table with the Tag table’s TagName column, and it decodes the Sample table columns FlagValues1 and FlagValues2 into separate columns (one for each status flag). Still using the example Sample table contents above, the following query shows the reason one might query views rather than base tables:

```
SELECT Time, TagName, Value, SampleInvalid
FROM A_VwSampleStatus
WHERE TagName = 'U1_SO2BA_Ppm_1H'
```


Results:

Time	TagName	Value	SampleInvalid
1/1/99 00:00	U1_SO2BA_Ppm_1H	254.6	0
1/1/99 01:00	U1_SO2BA_Ppm_1H	259.2	0
1/1/99 02:00	U1_SO2BA_Ppm_1H	265.0	0

RegPerfect Database

The RegPerfect database consists of many tables, views, stored procedures, jobs, triggers, and functions. As such, understanding the entire database is a gradual process that takes place over time with experience. This section, rather than attempt to describe the database in its entirety, provides an overview of a few key design considerations.

Types of Tables

There are three types of tables in the RegPerfect database. Though these “types” are purely design abstractions, they help classify the general purpose and usage of each table.

Configuration tables contain information that is used to customize RegPerfect for the specific needs of each facility at which it is installed. Because of the large number of options that can be changed by modifying values in database tables, RegPerfect has achieved an extremely high degree of customization (without the need to rewrite, recompile and redistribute applications). Teledyne Monitor Labs will typically perform initial setup, the process of entering data into the configuration tables for a specific facility. Later, if changes/additions become necessary, they can be made by end users or by Teledyne Monitor Labs personnel using the RegPerfect Configuration application.

Real-time tables contain time-stamped data. Examples include the Sample table (emissions and process measurements), the Calibration and RangeTest tables (quality assurance test results), the Alarm table and the ReasonAction table. The data in these tables are usually collected or calculated by RegPerfect software applications.

System tables contain information useful only to RegPerfect applications. End users rarely need to inspect or modify the data in these tables – they are either maintained by the applications that use them, or they already contain the needed information when RegPerfect is installed at a customer facility. System tables serve a variety of purposes transparently to users.

As with any generalization, there are some gray areas with the table types. A few RegPerfect tables can be thought of as either a Configuration table or a System table.

Table Partitioning

The RegPerfect database was designed with the goal of separating, to whatever extent possible, configuration information specific to a particular regulation from information common to all emissions monitoring sites. This was accomplished by dividing the database into two logical partitions. These partitions are another pure design abstraction (all the tables actually reside in a single database).

The Core partition consists of about 60 tables containing the information that is needed to monitor emissions at any facility. The data in these tables are not specific to the Acid Rain Program, the NOx Budget Program or a State Implementation Program. Core tables include all of the Real-time tables, most of the System tables, and those Configuration tables that contain data about monitoring sites, instrumentation and other entities that are not specific to one regulation.

The Regulatory partition consists of about 75 tables used by RegPerfect to produce Acid Rain or NOx Budget Electronic Data Reports (EDRs). These are Configuration tables that define, for example, which RegPerfect tags contain the values used for RT 200 hourly SO₂ averages and RT 220 bias adjusted stack flow.

As with the table types, discussed in the previous section, there are gray areas where the core and regulatory partitions overlap. There are also a handful of core and regulatory tables that “connect” to each other (via foreign keys) to tie all the information together for those sites that do submit EDRs. For the most part, however, core tables and regulatory tables are completely isolated from each other and even have separate user interfaces.

Database Administration

Teledyne Monitor Labs has attempted to make database administration as simple as possible with RegPerfect. SQL Server jobs are installed prior to delivery, which automate backups and the removal of old data. The only responsibility of end users is to regularly swap tapes and remove tapes from the plant (in case of catastrophic failures). Refer to the Database Alerts section of the Manual to learn more about the reasons for failure of jobs and what needs to be done.

Three SQL Server jobs are involved in backups:

1. Backup of master and msdb

This job is run once per day at 9:15pm to make a backup of the SQL Server master and msdb databases. These databases contain information about the schema of the RegPerfect database and may need to be restored after certain types of catastrophic failures. Only the most recent backup of each of these databases is retained - each new backup overwrites the previous day's backup. These backups are made to your server's E:\Backup folder which is a compressed directory.

2. RegPerfectDb backup

This job is run several times each day to make a backup of the RegPerfect database (the transaction log is also truncated during this backup). The RegPerfect database contains your emissions and configuration data and may need to be restored after certain types of catastrophic failures. Each backup file contains the date/time of the backup as part of the file name (so that old backup files are not overwritten by newer ones), and two days of backups are kept at all times (based on how the system has been setup; the number of backups to retain is now configurable). These backups are made to your server's E:\Backup folder which is a compressed directory. This job runs every hour – 5 minutes past the top of the hour to see if it supposed to do the scheduled backup. The job checks the value in “Number of backups per day” column in the DAHS table and then calculates the right time when a backup must be created in the following way: if the value in “Number of backups per day” column is 4, divide 24 by this number the remainder (24/4) will be 6. Divide the current hour by 6 (for e.g. 12:00 (pm) /6), this will create 4 backups. This is the right number of backups. The job will run every hour to check if $(\text{CurrentHour}\%6) = 0$, it will be true for these hours: 00:00, 06:00, 12:00, and 18:00.

3. NT Backup

This job is run daily at 10:05pm to copy the backups from your server's hard disk to the tape. All the database backups are copied from E:\Backup, and the RegPerfect software and reports are also copied to the tape at this time.

Note that the previous contents of the tape are erased each time this job is run, so it is absolutely crucial that users swap tapes on a regular basis.

All the backup jobs can now back up the files to the network. Refer to the Required Settings for Network Backup section of the manual for details.

Teledyne Monitor Labs strongly recommends that you change the backup tape daily - cycling through a set of tapes and keeping at least one tape off site which contains a backup no more than a day old. While most recovery procedures can be completed using the backups on the E drive, a failure of the E drive requires that we recover from tape backups. In this case, tape backups are the ONLY AVAILABLE METHOD OF RECOVERY.

Database Security

RegPerfectDb database security is provided using standard Windows Integrated Security. The Windows operating system in conjunction with SQL Server identify a Windows user and determine if the user has access to the portion of the database requested. Aside from the standard Windows users and groups, four RegPerfect user groups are added to RegPerfect servers and workstations to accommodate varying levels of permissions. In order of descending permissions, the Windows groups and associated standard SQL Server groups are:

Windows Group	SQL Server Roles	RegPerfectDb Database Roles	Gives
RP_ADMINS	sysadmin	db_accessadmin	All administrator rights to all objects
RP_MANAGERS	diskadmin processadmin securityadmin	db_datawriter db_datareader	Read and write access for all objects
RP_TECHNICIANS	diskadmin		Allowed to modify Alarms, Reason and Action Definitions, most Constant values and report parameters.
RP_OPERATORS	diskadmin		Allowed to assign reason and action codes and modify report parameters.

Database Schema

Main Tables

The main structure of the RegPerfectDb database consists of the definitions for a facility and its CEMS monitoring sites and instruments. A tag in the RegPerfectDb database is used to uniquely identify each input method and stored value (sample) associated with a process or emission point. A tag is defined by either its association with a PLC (or other input device) register or by a script procedure which runs a predefined calculation.

Facility	Tag	Instrument	PLC_Register
<ul style="list-style-type: none"> FacilityName OwnerOperator Description Location TimeZone Latitude LatitudeDirection Longitude LongitudeDirection IsMill StartHour Duration 	<ul style="list-style-type: none"> TagName TagID MonitoringSiteName Parameter Qualifier Description Units ScanRateCount ScanRatePeriodType DecimalPrecision InUse SampleIntervalCount SampleIntervalPeriodType TagOrigin SampleDataType StorageEnabled MaxValue ControllerID ControllerName DataSourceCodeType UnitOperatingTagID RecalcMethod RecalcIntervalCount RecalcIntervalPeriodType RecalcBaseDate PercentRequired ExcludeOffline DaysOfRawDataToRetainOv... 	<ul style="list-style-type: none"> InstrumentName EquipmentType InstallationDate RemovalDate MonitoringSiteName Manufacturer Model SerialNumber Description InUse Usage InstrumentType Units HighRangeEnable Qualifier HighRangeFullScaleConstant HighRangeSpanConstant LowRangeEnable LowRangeFullScaleConstant LowRangeSpanConstant OverScaleSubstitutionEnabled DefaultHighRangeEnabled MinEUScale 	<ul style="list-style-type: none"> PLC_RegisterID Address ControllerName DiscreteBitNumber RegisterType InputOrOutput InstrumentName InstrumentRange ScalingConstant IsBlockRead PlcTagName ActualAddress
MonitoringSite <ul style="list-style-type: none"> MonitoringSiteName FacilityName Mnemonic MonitoringSiteType Description SubjectToState_Part60 SubjectToPart75_BudgetProg... MaximumUnitLoad LoadUnits 			
	ConstantValue <ul style="list-style-type: none"> ConstantName EffectiveFrom EffectiveThrough FloatingPointValue BooleanValue TimeStampValue TimeValue DurationCount DurationPeriodType BottleCertificationDate BottleSerialNumber 	ScriptProcedures <ul style="list-style-type: none"> ProcedureID Environment TagID AlarmDefinitionID ProcedureBody ProcedureName 	Sample <ul style="list-style-type: none"> Time TagID Value FlagValues1 FlagValues2 MODC

Alarm Tables

Alarms are defined in the alarm definition table and stored in the RegPerfectDb database table called Alarm. The alarm definition is inherently linked to a tag in the RegPerfectDb database.

Tag	
	TagName
🔑	TagID
	MonitoringSiteName
	Parameter
	Qualifier
	Description
	Units
	ScanRateCount
	ScanRatePeriodType
	DecimalPrecision
	InUse
	SampleIntervalCount
	SampleIntervalPeriodType
	TagOrigin
	SampleDataType
	StorageEnabled
	MaxValue
	ControllerID
	ControllerName
	DataSourceCodeType
	UnitOperatingTagID
	RecalcMethod
	RecalcIntervalCount
	RecalcIntervalPeriodType
	RecalcBaseDate
	PercentRequired
	ExcludeOffline
	DaysOfRawDataToRetainOv...


AlarmDefinition	
🔑	AlarmDefinitionID
	TagID
	TagName
	AlarmType
	AlarmCategory
	AlarmPriority
	Message
	DefaultReasonActionCategory
	Enabled
	AlarmTrigger
	EMailEnabled
	EMailDestination
	Latching
	DisableWhenUnitDown


Sample	
🔑	Time
🔑	TagID
	Value
	FlagValues1
	FlagValues2
	MODC



Alarm	
🔑	AlarmID
	AlarmDefinitionID
	SampleTagID
	SampleTime
	StartTime
	EndTime
	TimeAcknowledged
	AcknowledgedBy


Calibration Tables




Calibrations are defined in the CalibrationDefinition and RangeTestDefinition tables and stored in the RegPerfectDb database tables called Calibration and RangeTest. The calibration definition is linked to an instrument in the RegPerfectDb database. For each calibration level, the actual and reference values for the test level are stored in the RangeTest table.




Instrument	
	InstrumentName
	EquipmentType
	InstallationDate
	RemovalDate
	MonitoringSiteName
	Manufacturer
	Model
	SerialNumber
	Description
	InUse
	Usage
	InstrumentType
	Units
	HighRangeEnable
	Qualifier
	HighRangeFullScaleConstant
	HighRangeSpanConstant
	LowRangeEnable
	LowRangeFullScaleConstant
	LowRangeSpanConstant
	OverScaleSubstitutionEnabled
	DefaultHighRangeEnabled
	MinEUScale

CalibrationDefinition	
	CalibrationDefinitionID
	InstrumentName
	InstrumentRange
	CalibrationType
	P75_SubjectTo
	P75_DeviationCalculation
	P75_UseOfflineCals
	P75_ReferenceValuePrecision
	P75_ActualValuePrecision
	P60_SubjectTo
	P60_DeviationCalculation
	P60_UseOfflineCals
	P60_ReferenceValuePrecision
	P60_ActualValuePrecision
	P60_SingleFailureDriftLimit
	P60_MultiDayFailure_DriftLimit
	P60_MultiDayFailure_NumDays
	DriftLimit

Calibration	
	CalibrationDefinitionID
	EndTime
	NumRangeTests
	HasBeenProcessed
	UseForQualityAssurance

RangeTestDefinition	
	CalibrationDefinitionID
	RangeTestDefinitionID
	TestLevel
	P75_TestLevel
	P75_PerformanceSpec
	P75_PerformanceSpecUnits
	P60_TestLevel
	P60_PerformanceSpec
	ReferenceValueConstant
	P60_PerformanceSpecUnits
	EffectiveFrom
	EffectiveThrough

RangeTest	
	CalibrationDefinitionID
	EndTime
	RangeTestDefinitionID
	RangeTestEndTime
	ActualValue

ValidatedTag	
	TagName
	QualityAssuranceRule
	CalibrationDefinitionID