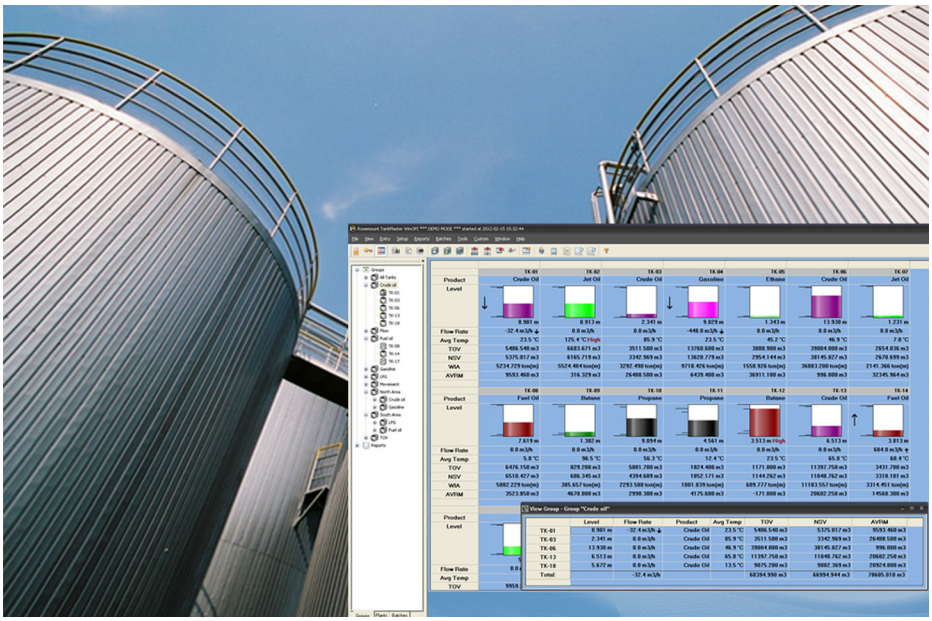
Reference Manual
00809-0300-5110, Rev AC
June 2023

Rosemount™ TankMaster™ WinView

Tank Management Software



ROSEMOUNT™

EMERSON™

TankMaster

NOTICE

Read this manual before working with the product. For personal and system safety, and for optimum product performance, make sure you thoroughly understand the contents before installing, using, or maintaining this product.

For equipment service or support needs, contact your local Emerson representative.

Version

This manual is based on the functionality of TankMaster version 6.G1.

For older TankMaster versions all functionality described in this manual may not be available and the Graphical User Interface (GUI) may look different.

Safety messages

⚠ WARNING

Physical access

Unauthorized personnel may potentially cause significant damage to and/or misconfiguration of end users' equipment. This could be intentional or unintentional and needs to be protected against.

Physical security is an important part of any security program and fundamental in protecting your system. Restrict physical access by unauthorized personnel to protect end users' assets. This is true for all systems used within the facility.

Contents

1 Introduction

Rosemount TankMaster WinView is a software package with basic inventory capabilities.

TankMaster WinView has limited functionality and is an alternative for smaller tank terminals. It is a cost-efficient alternative for operational control at smaller tank terminals, marketing terminals, biofuels, and chemical plants, etc.

This reference manual covers the functionality of the TankMaster WinView software.

1.1 What is Rosemount TankMaster™?

The TankMaster software suite provides you with the tools that you need to configure and operate the Rosemount Tank Gauging system. The Rosemount Tank Gauging product portfolio includes a wide range of components for small and large customized tank gauging systems. The system includes various field devices, such as radar level gauges, temperature transmitters, and pressure transmitters for complete inventory control. For detailed descriptions of how to setup various devices refer to the respective reference manuals.

TankMaster is an Emerson inventory management software package for installation and configuration of level gauging equipment. It is a complete custody transfer and inventory software package that provides operator overview for Rosemount Tank Gauging systems. All calculations are based on current API and ISO standards.

TankMaster provides you with powerful and easy-to-use tools for installation and configuration of level gauging devices such as radar transmitter gauges (RTGs). The settings for protocols, devices and tanks can be changed in real time.

The graphical interface gives you a clear overview of installed devices and tanks. For each tank you can easily see the associated transmitters in the WinSetup application.

1.1.1 Key features

- Monitoring of measured data
- Clear overview of installed tanks and devices (using WinSetup)
- Simple installation using wizards (using WinSetup)
- Open connectivity
- Object-oriented, user-friendly Graphical User Interface (GUI)

TankMaster is designed to be used in a Microsoft® Windows environment, providing easy access to measurement data from any PC in your network. Measurements and data are presented in realtime and you can customize views to suit your needs.

Rosemount TankMaster lets you connect via the Ethernet TCP/IP interface. You may also use TRL2, RS232, or RS485 interfaces if needed. Other communication interfaces, such as Enraf BPM, are also supported. Rosemount TankMaster is based on the open OPC standard, allowing you to import data into other systems such as DCS:s, PLC:s, Scada systems and Microsoft Office programs.

1.1.2 Intended use of product

Rosemount TankMaster serves as a monitoring interface that provides the user with tank data such as level, temperature, pressure, volume etc. It is a custody transfer and inventory

software package that supports calculations based on current API and ISO standards. See **End User License Agreement** for complete terms and conditions for using the Rosemount TankMaster software package

1.2 Manual overview

The Rosemount TankMaster WinView Reference Manual provides descriptions of the TankMaster WinView operator's interface and instructions for operating the Rosemount Tank Gauging system. The manual includes the following sections:

Chapter Introduction provides a short introduction to Rosemount TankMaster.

Chapter The main window provides an introduction to the basic features of the WinView operator’s interface. It describes the workspace, menus, and various toolbars.

Chapter Viewing tank data provides a description of various functions for viewing tank data and inventory data.

Chapter Installing a tank measurement system provides a description of how to setup a tank management system in TankMaster WinView.

Chapter Alarm handling describes how to setup alarm limits, alarm groups, and how to view and accept current alarms.

Chapter Reports provides a description of how to create and distribute reports with inventory information.

Chapter Audit log provides a description of how to enable recording of operations and actions performed by a TankMaster user.

Chapter Customizing the layout describes how to create customized menus, windows, and toolbars in TankMaster.

Chapter Servo commands describes how to send commands to servo gauges.

1.3 Technical documentation

The Rosemount Tank Gauging System includes a wide portfolio of user documentation. For a complete list, see product pages on Emerson.com/Rosemount.

Reference manuals

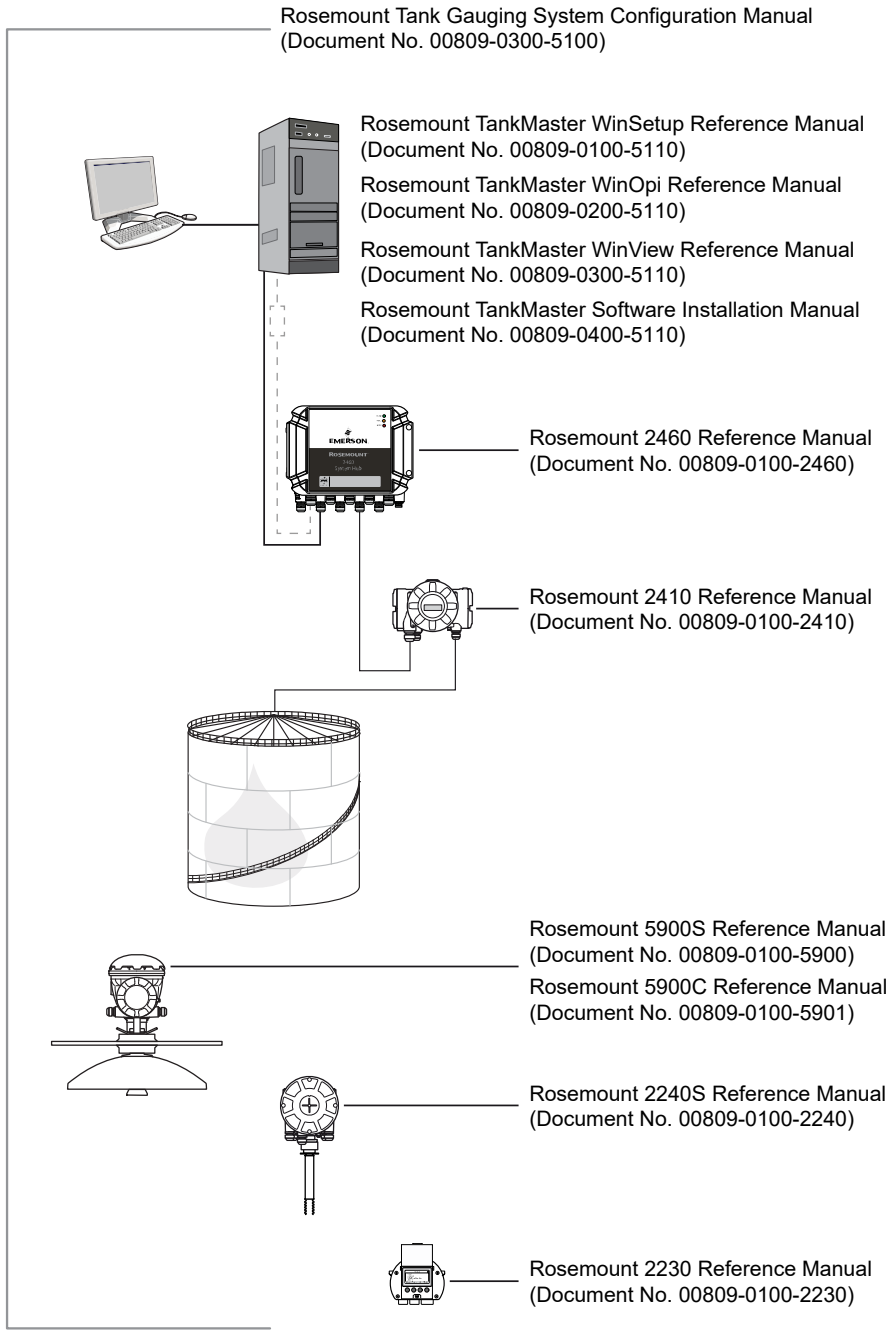
- Rosemount Tank Gauging System Configuration Manual (00809-0300-5100)
- Rosemount 2460 System Hub (00809-0100-2460)
- Rosemount 2410 Tank Hub (00809-0100-2410)
- Rosemount 5900S Radar Level Gauge (00809-0100-5900)
- Rosemount 5900C Radar Level Gauge (00809-0100-5901)
- Rosemount 2240S Multi-Input Temperature Transmitter (00809-0100-2240)
- Rosemount 2230 Graphical Field Display (00809-0100-2230)
- Rosemount 5300 Guided Wave Radar (00809-0100-4530)
- Rosemount 5408 Radar Level Transmitter (00809-0300-4408)
- Rosemount 3308 Series Wireless Guided Wave Radar (00809-0100-4308)
- Rosemount Tank Gauging Wireless System (00809-0100-5200)
- Rosemount TankMaster Software Installation Manual (00809-0400-5110)
- Rosemount TankMaster WinOpi (00809-0200-5110)
- Rosemount TankMaster WinSetup (00809-0100-5110)
- Rosemount TankMaster WinView (00809-0300-5110)
- Rosemount 5900 Proof Test with Reference Reflector (00809-0200-5900)
- Rosemount TankMaster Floating Roof Monitoring (00809-0500-5100)
- Rosemount TankMaster Full containment tanks (00809-0500-5110)
- Rosemount TankMaster Network Configuration (303042EN)
- Rosemount 5900 Radar Level Gauge and Rosemount 2410 Tank Hub Safety Manual Option S (00809-0400-5100)
- Rosemount 5900 Radar Level Gauge and Rosemount 2410 Tank Hub Safety Manual SIL3 (00809-0200-5100)
- Rosemount TankMaster Mobile User Guide (00809-0100-5120)
- Rosemount TankMaster Mobile Installation Manual (00809-0200-5120)

Product data sheets

- Rosemount Tank Gauging System (00813-0100-5100)
- Rosemount TankMaster Inventory Management Software (00813-0100-5110)
- Rosemount TankMaster Mobile Inventory Management Software (00813-0100-5120)
- Rosemount 2460 System Hub (00813-0100-2460)
- Rosemount 2410 Tank Hub (00813-0100-2410)
- Rosemount 5900S Radar Level Gauge (00813-0100-5900)
- Rosemount 5900C Radar Level Gauge (00813-0100-5901)
- Rosemount 2240S Multi-input Temperature Transmitter (00813-0100-2240)
- Rosemount 565/566/765/614 Temperature and Water Level Sensors (00813-0100-5565)
- Rosemount 2230 Graphical Field Display (00813-0100-2230)
- Rosemount 5300 Level Transmitter (00813-0100-4530)
- Rosemount 5408 Level Transmitter (00813-0100-4408)

1.3.1 System and user documentation structure

Figure 1-1: Rosemount Tank Gauging System and User Documentation Structure

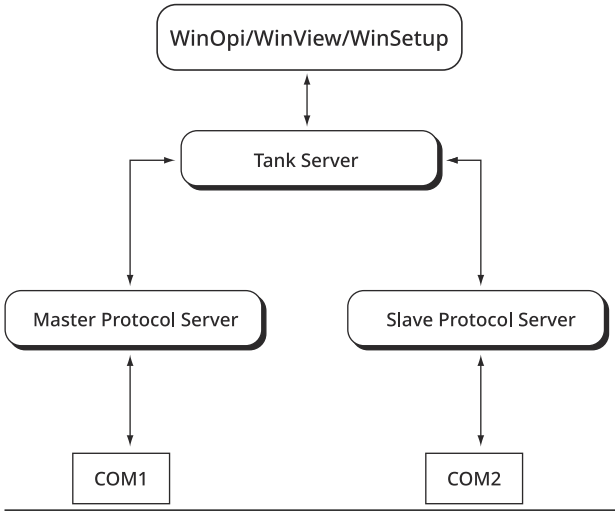


1.4 TankMaster software package

The TankMaster software package comprises the following software modules:

- WinOpi
- WinSetup
- WinView
- Batch server
- Tank server
- Master Protocol server
- Slave Protocol server

Figure 1-2: Software Modules



WinOpi

WinOpi is the operator interface to the tank gauging system. It communicates with the Tank Server and various protocol servers to let the user monitor measured tank data. WinOpi also provides:

- alarm handling
- automatic report distribution
- historical data sampling
- inventory calculations for volume, observed density and other parameters.

WinSetup

The WinSetup program is a graphical user interface (GUI) for installation, configuration and maintenance of level gauging devices.

WinView

WinView is a software package with basic inventory capabilities. It communicates with the Tank Server and the different protocol servers to let the user monitor measured tank data.

Tank server

The Tank Server communicates with devices via the Master Protocol Server and handles configuration data for all installed tanks and devices. Parameters stored by the Tank Server include:

- device names
- configuration data, such as antenna type
- number of connected temperature sensors
- number of connected analog inputs

The Tank Server collects data from connected devices and distributes this information to the WinView and WinSetup user interface.

Master protocol server

The **Master Protocol Server** transfers configuration data and measured data between the Tank Server and connected devices in the tank gauging system. The Master Protocol Server is able to communicate with various types of devices such as FCUs, the Rosemount 2410 Tank Hub, and the Rosemount 5900S Radar Level Gauge to collect measurements for, for example, level, temperature and pressure.

Slave protocol

The **Slave Protocol Server** is used to connect the TankMaster system to a host computer (DCS system). The Slave Protocol Server exchanges tank data between the Tank Server and the host computer.

OPC Server with browser

TankMaster uses **OPC Data Access 2.0** (OLE for Process Control), an open industry standard, which eliminates the need for costly customized software integration.

With the **OPC** server and the browser it is easy to import all custody transfer and inventory data to other OPC clients such as different DCS:s, PLC:s, Scada systems, or Microsoft Office® programs.

See the web site for the OPC Foundation for more information: www.opcfoundation.org.

Customized views

You can customize specific views and windows in TankMaster. Existing objects can be modified or new ones. You could, for example, create a window with an embedded image of your own plant, to give a realistic overview, and configure the window so that when you click on a specific tank in the image you can access the corresponding data for that tank.

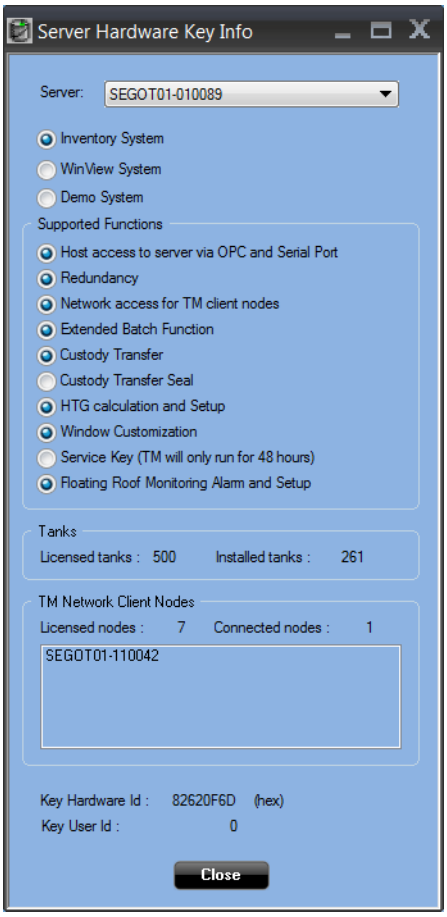
1.5 Server hardware key

The ***Server Hardware Key Info*** window displays the functions enabled by the TankMaster™ hardware key. The information displayed is only valid for the selected server and cannot

be altered. Also shown is the number of tanks that can be installed according to the TankMaster license, and the current number of installed tanks.

Procedure

1. Open menu option **Tools** → **View Server HW Key Info**.



2. Select the desired server to view hardware key information.
3. Click **Close** to close the ***Server Hardware Key Info*** window.

1.5.1 System type

System Type indicates which mode TankMaster™ is running.

Inventory system

TankMaster runs as a complete custody transfer and inventory software package. All calculations are based on current API and ISO standards.

WinView system

WinView basic inventory capabilities suitable for smaller plants and terminals.

Demo system

TankMaster is running with full functionality using simulated values.

1.5.2 Supported functions

The **Supported Functions** pane in the ***Server Hardware Key Info*** window shows available TankMaster™ options. Selected options indicate that the corresponding function is enabled with the current hardware key. The table below gives an overview of the available functions.

Table 1-1: Supported Functions

Function	Explanation
Host Access to server via OPC and serial	Enables OPC and Modbus communications between TankMaster and SCADA/DCS
Redundancy	Enables the use of redundant servers
Network access for TM client nodes	Enables a TankMaster client to connect to the network and read tank and device data.
Extended Batch Function(1)	Creates MS Access files. Stores closed batches for up to 365 days. Delivery tickets can be recalculated. Tank Transfer Calculator enabled.
Custody Transfer System	Setup mode for the Custody Transfer System.
Custody Transfer Seal	Write-protected mode. No possibility to change configuration.
HTG calculation and Setup	Hydrostatic Tank Gauging, Enables level and inventory data from pressure.
Window Customizing	Enables the creation of customized windows.
Service Key	Personal key for service engineers.
Floating Roof Monitoring	Enables TankMaster function for monitoring floating roof tilt and buoyancy.

(1) For more information and instructions on Batch Handling, please refer to the TankMaster Batch Handling User Guide

1.5.3 Tanks

The Tanks pane shows the number of licensed tanks and the number of installed tanks.

If the number of installed tanks exceeds the number of licensed tanks, the inventory calculation option is disabled until a hardware key with a sufficient number of licensed tanks is installed, or until tanks are uninstalled and the number of installed tanks is equal to or less than the number of licensed tanks.

1.5.4 TankMaster Network client nodes

The TankMaster Network Client Nodes pane shows the number of licensed nodes and the number of connected nodes for the selected server. The number of connected nodes cannot exceed the number of licensed nodes.

If the number of connected nodes is the same as the number of licensed nodes, no more nodes will be able to connect unless currently connected nodes are first disconnected, or until a new license key with an increased number of licensed nodes is installed.

1.6 Illegal characters

The following characters should not be used when naming objects in TankMaster™ as this may cause undesirable results:

Table 1-2: Illegal Characters in TankMaster

\ Reverse solidus	% Percent symbol
/ Solidus	< Less-than symbol
? Question mark	> Greater-than symbol
* Asterisk	{ Left curly bracket
[Left square bracket	} Right curly bracket
] Right square bracket	' Apostrophe
| Vertical line	" Quotation mark

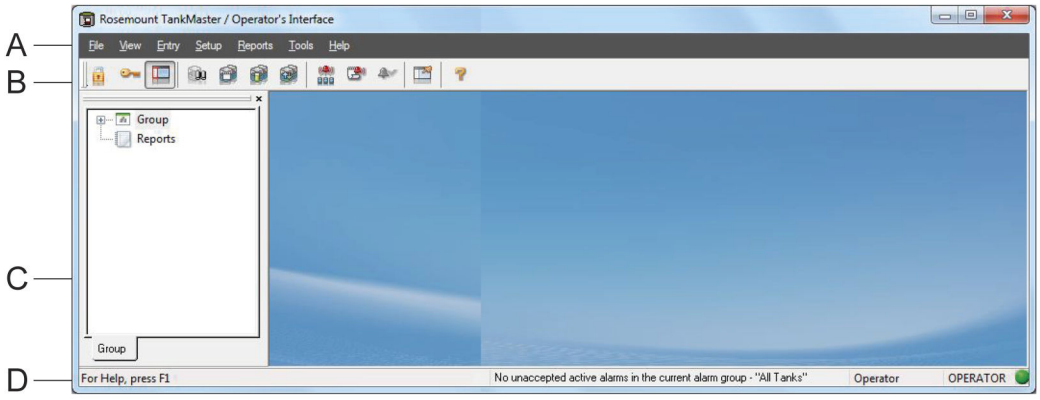
2 The main window

All tools and functionality can be accessed from the main menu bar at the top of the screen. The toolbar directly below the menu contains buttons with shortcuts to the most common operations.

The main window includes a Workspace which displays tanks, devices, alarm groups and reports. Right-clicking on objects in the workspace gives access to associated views, tools and functionality for that object.

A status bar at the bottom of the screen shows alarm and connectivity information.

Figure 2-1: WinView Workspace



A. Menu bar
B. Tool bar
C. Workspace
D. Status bar

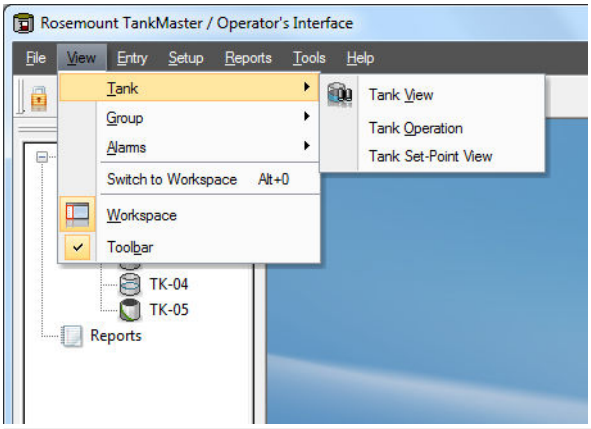
The Workspace area can be docked on any side of the main window, or it can be moved anywhere in the Main window when it is floating.

Docking and floating is toggled by right-clicking in the Workspace area and selecting, or deselecting **Allow Docking**.

2.1 Menus

The menu bar at the top of the main window contains the following menus: **File**, **View**, **Entry**, **Setup**, **Reports**, **Tools**, and **Help**.

Figure 2-2: Menu Bar

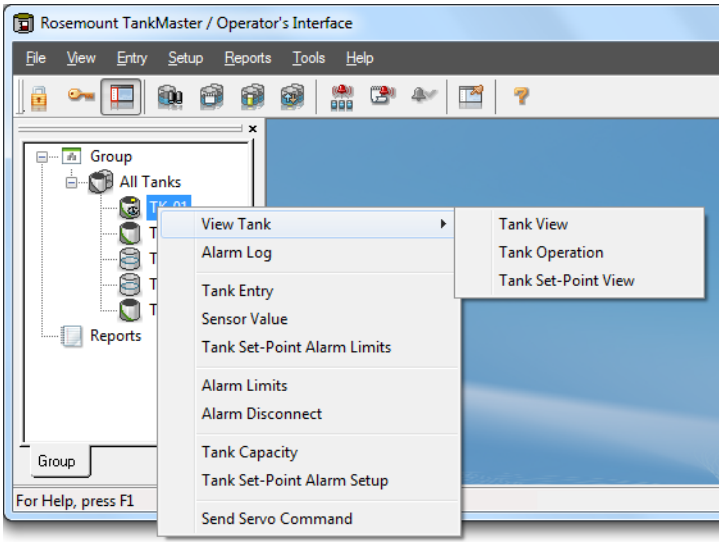


Some menu options are available by right-clicking on an object in the ***Workspace*** window. Available options varies depending on the type of object that is selected.

Example

The **Entry** → **Tank Entry** option in the menu bar can also be found by right-clicking on a tank icon.

Figure 2-3: Tank View

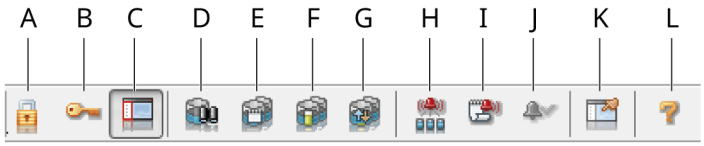


2.2 Toolbar

The toolbar contains buttons which act as shortcuts to various tools and functionality.

The toolbar can be toggled on or off from the **View** menu.

Figure 2-4: Toolbar Options

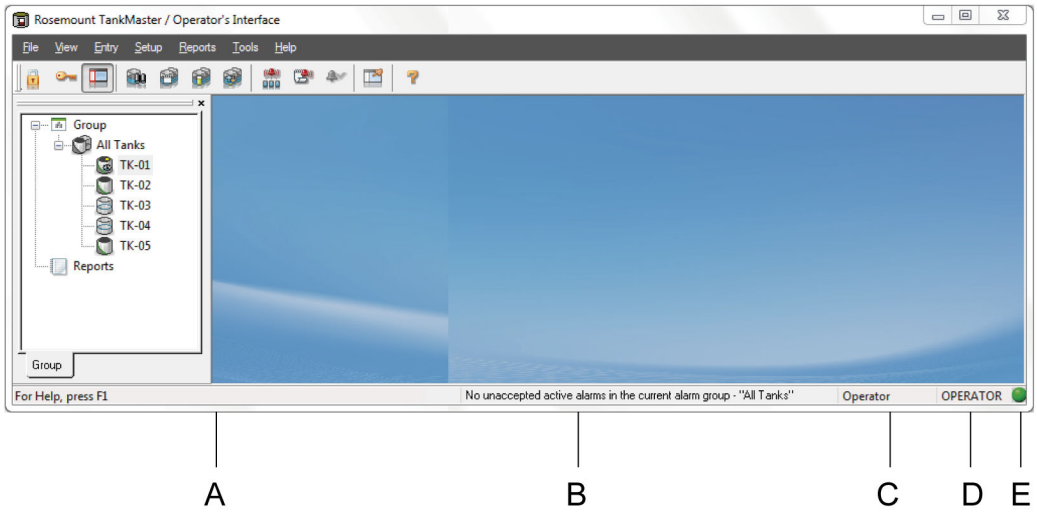


A. Lets you log off to View Only mode.
B. Lets you log on to TankMaster as Operator, Supervisor or Administrator.
C. Lets you turn the Workspace window On or Off.
D. Opens the Tank View window.
E. Opens the View Group window.
F. Opens the Bargraph Group window.
G. Opens the Tank Movement window.
H. Opens the Alarm Summary window.
I. Opens the Alarm Log window.
J. Lets you accept alarms.
K. Opens the Tools/Options window.
L. About WinView

2.3 Status bar

The status bar located at the bottom of the ***TankMaster*** main window displays information about connectivity, current alarms and the current protection level status (**View Only**, **Operator**, **Supervisor**, **Administrator**, and **ChiefAdmin**).

Figure 2-5: Status Bar

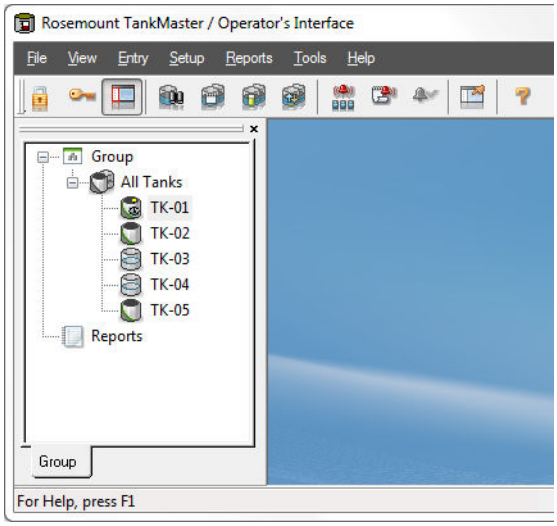


A. Connection status
B. Alarm status
C. Current user
D. Current protection level
E. Operation status (green=normal operation)

2.4 Workspace views

The workspace displays an overview of all devices and tanks.

Figure 2-6: Workspace Views



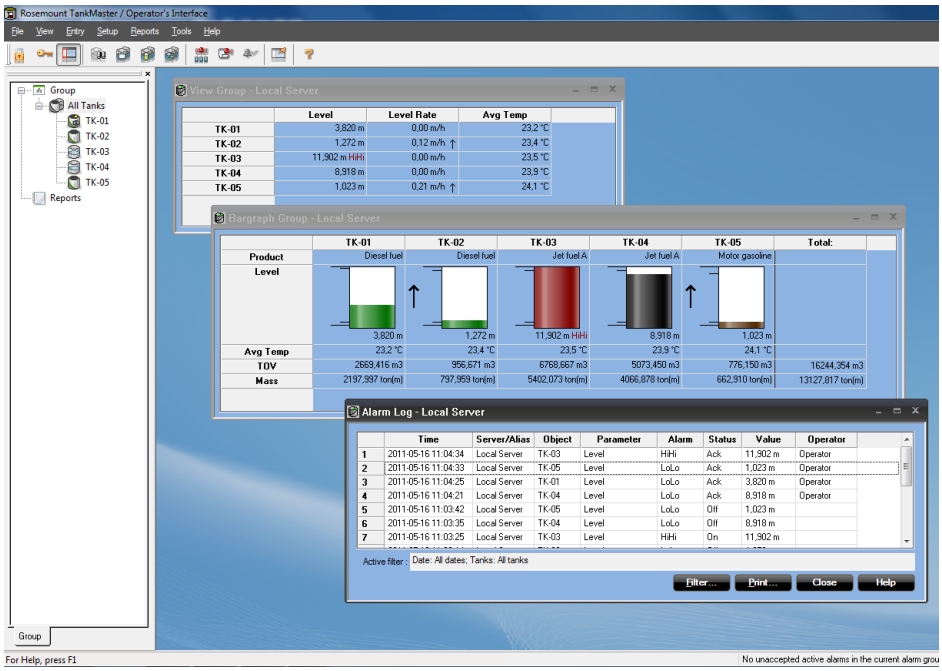
The workspace lets you perform a variety of tasks:

- View tank data.
- View tank operation data.
- View alarm logs and alarm summary.
- Supervise alarms.
- Specify reports.

2.4.1 Viewing tanks

Various tank data can be monitored such as level, temperature as well as alarm logs and summary of current alarms.

Figure 2-7: Viewing Tank Data



2.4.2 Create a tank group

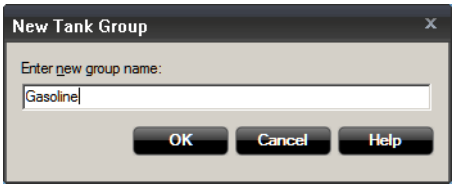
Tank groups can be a convenient way to get a better overview of, for example:

- tanks in a specific geographical area
- tanks containing a certain product
- tanks connected to the same host

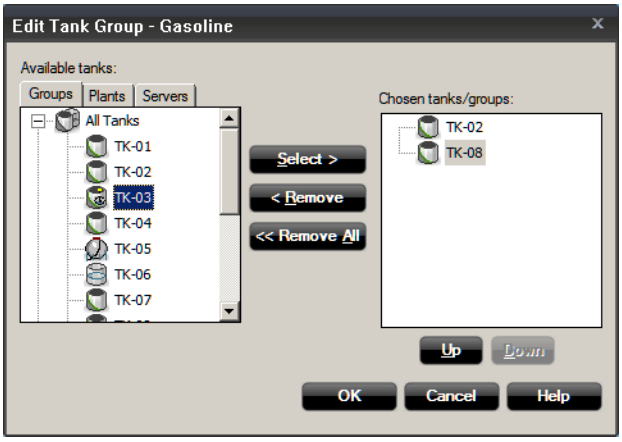
A tank may appear in more than one group and a group may contain other groups. There is no limit on the number of groups that can be created.

Procedure

1. In the ***Groups*** view, select menu option **Entry** → **New Group** .
2. Type a name for the new tank group and click **OK**.



3. In the left-hand pane, select a tank or a group to add to the new group and click the **Select** button.



4. Repeat for all tanks to be added to this group.
5. Click **OK** when you have finished adding objects to the new group. The new tank group will be displayed in the Workspace window.

2.4.3 Icons

In the Workspace windows various items are represented by the following icons:

Table 2-1: Icons

 Cylindrical tank	 Tank group
 Floating roof tank	 Plant node
 Spherical tank	 Server node
 Horizontal tank	 Report

2.5 User management

TankMaster offers a number of protection levels for increased security. These levels are categorized as User Access Levels and User Access Sub Levels. The User Access Levels are:

- Administrator
- Supervisor
- Operator
- View Only
- ChiefAdmin

Each **User Access Level** has five sub levels, giving total of 20 unique access levels. The default user names and passwords for each user type are as follows:

Table 2-2: User Access Levels and Sub Levels

User	Level	Sub Level	Default Password
View	VIEW ONLY	*	view
Operator	OPERATOR	*	oper
Supervisor	SUPERVISOR	*	super
Administrator	ADMINISTRATOR	*	admin
ChiefAdmin	ADMINISTRATOR	*****	chief

User authentication (log on) is required in order to change settings such as:

- Alarm limits
- Tank Setup

Note
Settings cannot be changed by a user in **View** mode.

2.5.1 Log on to TankMaster

Procedure

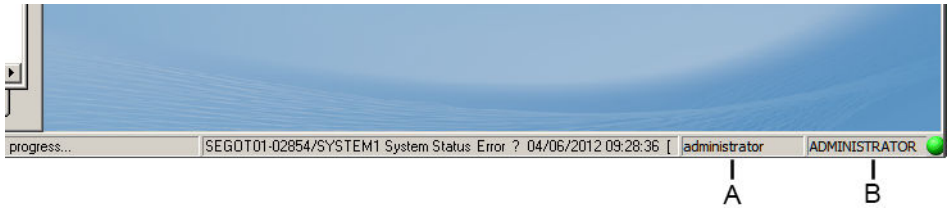
1. Select **File** → **Log On**, or click the **Log On** button in the toolbar.
2. Type your **user name** and **password**. The password is case sensitive but the user name is not.

3. Click **OK**.

Note
If log on is unsuccessful after five consecutive attempts, the user account is disabled. The user account must be enabled by an Administrator.

The user type and the protection level is displayed in the status bar as well as any status messages in case there are any.

Figure 2-8: Status Bar



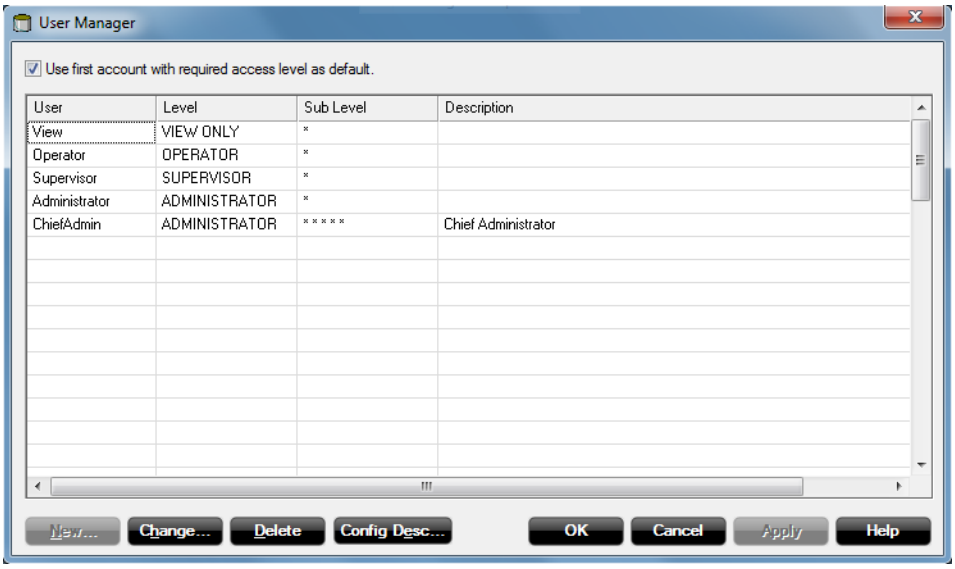
A. User name
B. Protection level

2.5.2 Manage user accounts

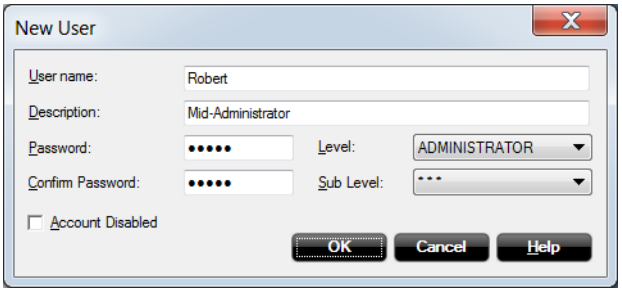
You must be logged on as Administrator in order to add new user accounts, change settings for an existing user, or to configure user levels and sub levels.

Procedure

1. Log on to TankMaster as an Administrator.
2. Open **Tools** → **Administrative Tools** → **User Manager**.



3. In the ***User Manager*** window select a cell in an empty row and click **New**.



4. Enter a **user name**.
5. A **description** of the new user profile is optional.
6. Enter and confirm a **password**.
7. Next, select the desired **Level** and **Sub Level** and click **OK**.
8. Verify that the new user is displayed in the ***User Manager*** window.
9. To make a default user name appear in the **Log On** dialog, check the box **Use first account with required access level as default**. If not selected, the **User Name** field is empty when the **Log On** dialog opens.
10. Click the **OK** button.

Related information

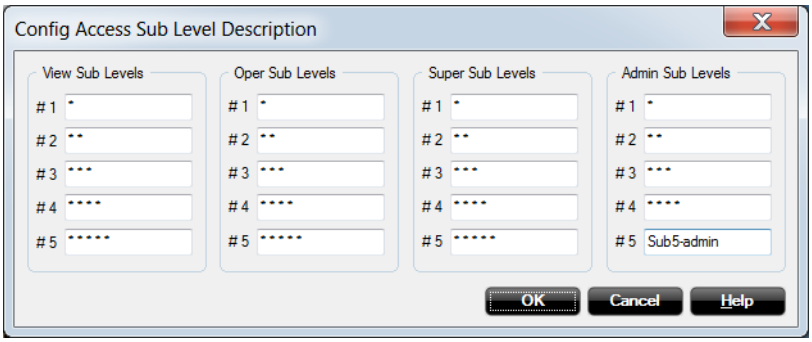
User management

2.5.3 Configure a sub level description

TankMaster allows you to change the names for Sub Levels to something more descriptive than the default settings.

Procedure

1. Open **Tools** → **Administrative Tools** → **User Manager**.
2. In the ***User Manager*** window, click the **Config Desc** button.



3. In the ***Config Access Sub Levels Description*** window enter a new description in the desired field. In the example above, the description of item number 5 of category Admin Sub Levels is changed from "*****" to "Sub5-admin".
4. Click **OK** to close the ***Config Access Sub Level Description*** window.

2.5.4 Set required access levels

TankMaster WinView offers the possibility to set unique required access levels for the following actions:

- Report handling
- Accepting alarms
- Exiting WinView

For example, if you are logged on as an Operator (* * *), you are not allowed to exit WinView if the required exit level for this action is set to Operator (****) or higher.

To modify required access levels:

Procedure

1. Open **Tools** → **Administrative Tools** → **Set Required Access Levels**.

   Note
   You must be logged on as an Administrator (* * * * *) to be able to set the required access levels.

2. Set the required access level for each action and click **OK**.

Related information

Manage user accounts
Add an item to the Tools menu

2.5.5 Change protection levels for specific windows

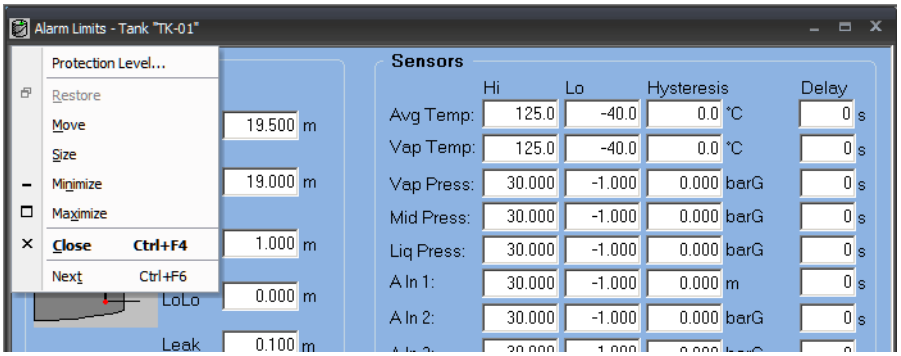
Prerequisites

To be able to change the **Protection Level**, the user must be logged on as an **Administrator (* * * * *)**.

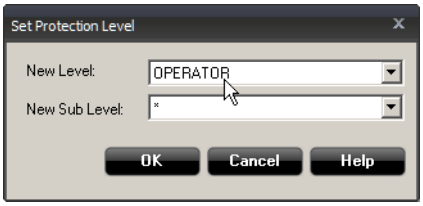
To set a Protection Level for a specific window, for example, Alarm Limits:

Procedure

1. Select menu option **Entry** → **Alarm Entry** → **Alarm Limits** to open the ***Alarm Limits*** window.
2. Click the window icon in the upper left corner of the ***Alarm Limits*** window.



3. Click on **Protection Level** in the menu.



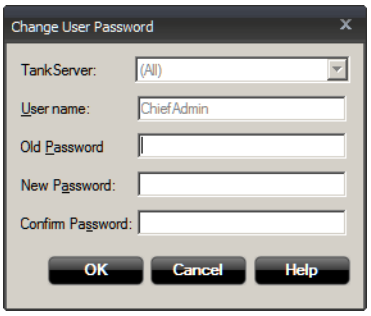
4. Select the desired **Protection Level** and **Sub Level** from the menus.
5. Click **OK**.

   Now the user must be logged in at the specified protection level, or a higher level, in order to make any changes to the ***Alarm Limits*** window.

2.5.6 Change password

Procedure

1. Go to **Tools** → **Administrative Tools** → **Set Password**.



2. Select the Tank Server which is valid for your user account.

   If you are already logged on to TankMaster, the current server is already selected and your user name appears in the **User name** field.

3. If the workspace is in **View Only** mode, enter your **User name**.
4. Enter your old password and the new password.

   Note
   The password is case sensitive.

5. Confirm the new password and click **OK**.

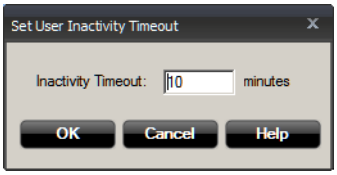
2.5.7 Change inactivity timeout

You can set a timeout after which the current user is automatically logged off after a period of inactivity.

The timeout period is reset each time the user performs an activity that requires an access level check, for example, setting a new alarm limit or logging on. You must be logged on as an **Administrator** in order to change the inactivity timeout.

Procedure

1. Go to **Tools** → **Administrative Tools** → **Set Inactivity Timeout**.



2. Enter the number of minutes to use for the inactivity timeout.
3. Click **OK**.

2.5.8 Program security options

TankMaster offers security options which can be used to restrict user privileges to run certain Windows programs or perform specific actions.

Table 2-3: TankMaster Operator's Interface

Security option	Description
Run application maximized	The program will always run with the application window maximized. The minimize and restore buttons in the upper-right corner of the window are disabled.
Disable possibility to switch to other programs	Ignores keyboard commands such as Alt+Tab, Alt+Esc, Ctrl+Esc, etc.

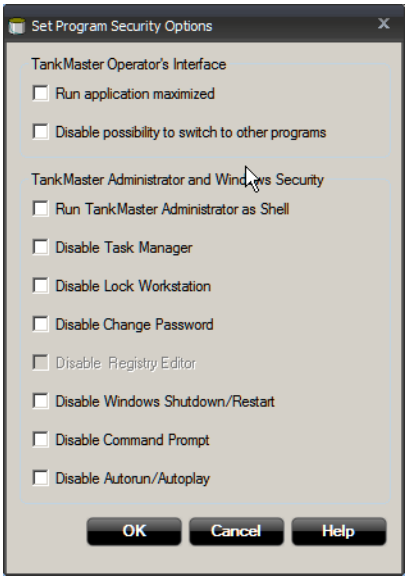
Table 2-4: TankMaster Administrator and Windows Security

Security option	Description
Run TankMaster Administrator as Shell	Allows the TankMaster Administrator program to run as a Windows shell instead of the standard Windows Explorer shell. When this option is selected, all other security options in the TankMaster Administrator and Windows Security group are automatically set. You may need to restart your PC.
Disable Task Manager	Prevents the user from starting Task Manager (Taskmgr.exe).
Disable Lock Workstation	Prevents the user from locking the system (WIN+L). When Windows is locked, the desktop is hidden and the system cannot be used. Only the user who locked the system or the system administrator can unlock it.
Disable Change Password	Disables the Change Password button on the Windows Security dialog box (Ctrl+Alt+Del).
Disable Registry Editor	Disables the Windows registry editors, Regedt32.exe and Regedit.exe. If this option is selected and the user attempts to start a registry editor, a message appears explaining that a system policy prevents the action.
Disable Windows Shutdown/ Restart	Prevents the user from shutting down or restarting Windows. This option removes the Shut Down option from the Start menu and disables the Shut Down button on the Windows Security dialog (Ctrl+Alt+Del). It does not prevent the user from running programs that may shut down Windows.
Disable Command Prompt	Prevents the user from running the interactive command prompt, Cmd.exe. This option also determines whether batch files (.cmd and.bat) can be run on the computer.
Disable Autorun/Autoplay	Disables the Autoplay feature on all drives.

To set program security options

Procedure

1. Open **Tools** → **Administrative Tools** → **Security Options**.



2. Select the desired security options and click **OK** to apply.

3 Viewing tank data

3.1 Measured values

Rosemount TankMaster™ offers a number of options to view measured and calculated inventory data for individual tanks and tank groups. Windows can be created or modified with standard and manual parameters to show customized views.

3.1.1 Viewing single tank data

This is a description of how to view measurement data for a single tank.

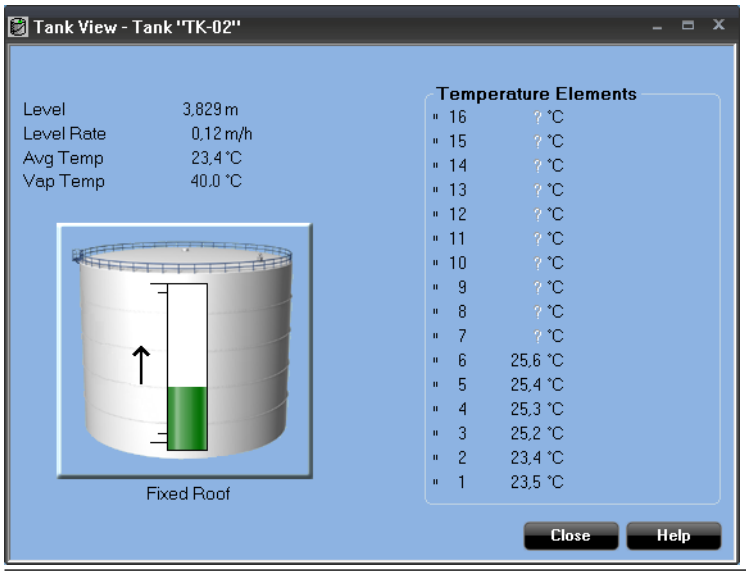
Procedure

1. Select a tank in the ***Workspace*** window.
2. Right-click and select the desired view, for example **View Tank → Tank View** , or from the **View** menu select **Tank → Tank View** .

Example

The ***Tank View*** window shows data from the Rosemount 2410 Tank Hub, the Rosemount 5900S Radar Level Gauge, and the Rosemount 2240S Multi-Input Temperature Transmitter for a single tank. For each item, the value, measurement unit, and status is displayed.

Figure 3-1: Tank View



A **bar graph** shows the product level as well as the amount of free water at the bottom of the tank. Flow rates exceeding a certain threshold are indicated by an arrow on the left side of the bar graph.

Depending on the actual flow rate value one of two arrow types appears. The thresholds which control the arrow indication can be changed.

Temperature sensors immersed in a product are marked with a "*" symbol. The temperature sensors can be connected to a Rosemount 2240S Multi-input Temperature Transmitter or other supported devices.

3.1.2 Viewing tank groups

Data for a group of tanks can be viewed in various windows. The windows can display values for Level, Level Status, Level Rate, Average Temperature and other parameters for all tanks in a group.

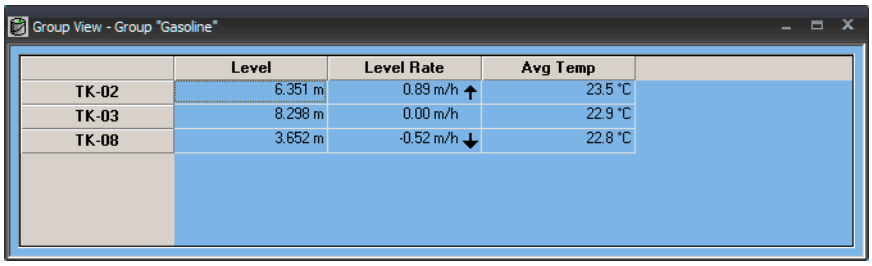
Procedure

1. Select a tank group in the ***Workspace*** window.
2. Do one of the following:
   - Right-click and select **View Group**
   - Open menu option **View** → **Group**
3. Select the desired **View Group** option:
   - **View Group**
   - **Bar graph Group**
   - **Tank Movement**

Example

A tank which is currently being filled or emptied is indicated with arrows as illustrated in Figure 3-2. There are two different arrow sizes. By setting appropriate thresholds, the arrows can be used to indicate level rates within different ranges according to a predefined threshold.

Figure 3-2: Group View



To specify level rate thresholds, open **Tools** → **Options** and select the ***Tank Movement*** tab.

Tank movements can be highlighted with different colors for flow rates and level rates.

Related information

Tank movement
Editing group view templates
Modifying group views

3.1.3 Viewing bar graph groups

Data for a tank group can be presented in bar graph format.

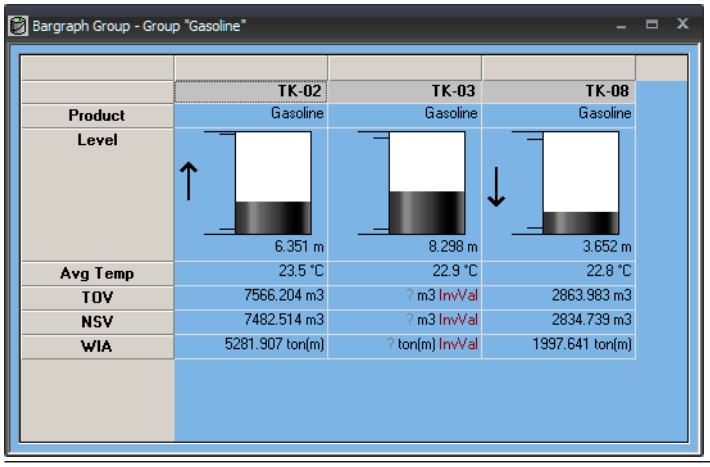
Procedure

1. Select a tank group in the ***Workspace*** window.
2. Do one of the following:
   - Right-click and select **View Group**
   - Open menu option **View** → **Group**
3. Select **Bar Graph Group**.

Example

In the ***Bar Graph Group*** window each tank in a group is represented by a bar graph showing **Product Level** and **Free Water Level** for each tank. It also indicates level changes by showing an arrow next to the bar graph.

Figure 3-3: Bar Graph Group



The ***Bar Graph Group*** window can be modified in the same way as the ***Group View*** window.

Related information

Tank movement
Editing group view templates
Modifying group views

3.1.4 Editing group view templates

To change the appearance and contents of group views, do one of the following:

- open menu option **Tools** → **Options** and select the ***Group Templates*** tab,
- from an open group view window, select **Edit Group Template** from the shortcut menu to access editing options.

Tank comment

A comment can be added to a tank and made visible for group views.

Sorting

Contents in a group view can be sorted by clicking a column title cell.

Related information

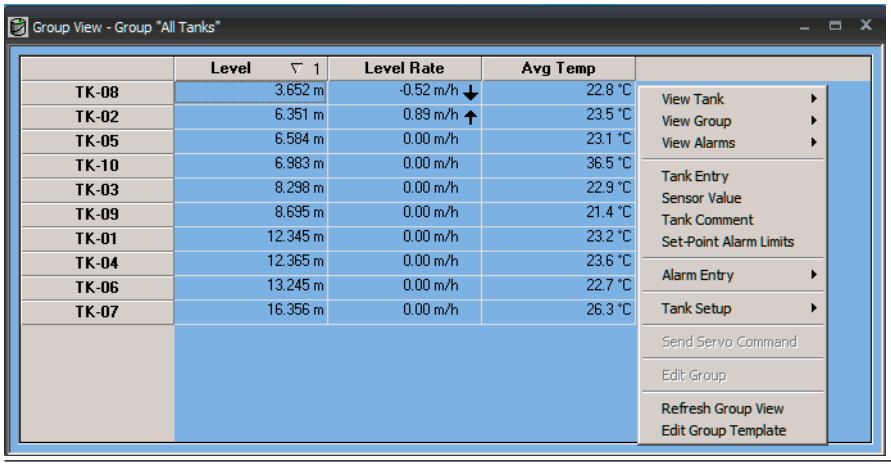
Modifying group views
Shortcut menu
Tank comment
Sorting content in a product table

3.1.5 Shortcut menu

For quick access to other groups and tank views in any group view window, right-click on a tank for a shortcut menu.

The shortcut menu gives you quick access to other windows. For example, the ***Observed Inventory*** window may be opened by selecting **View Group** → **Observed Inventory**.

Figure 3-4: Shortcut Menu in Group View Window



Related information

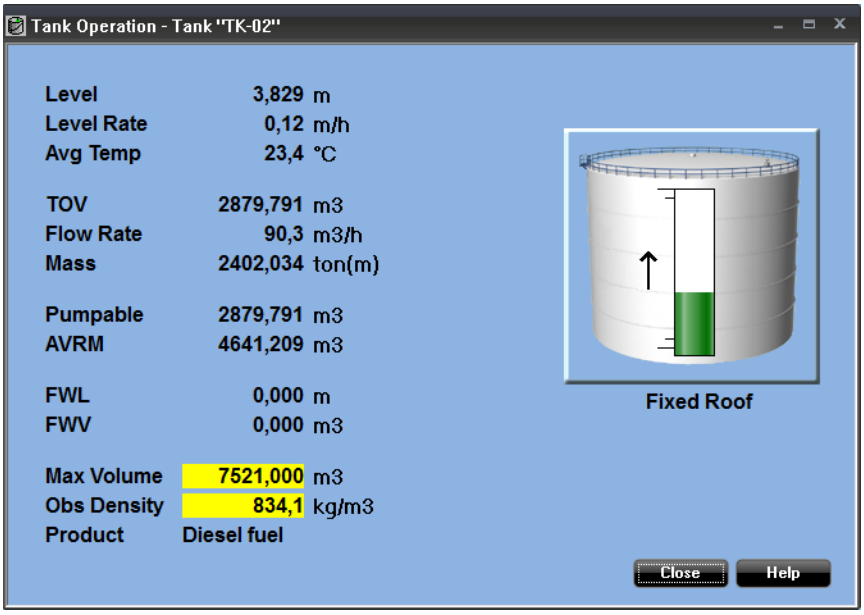
Modifying group views

3.2 Tank operation

To view data for a specific tank do the following:

Procedure

1. Select the desired tank in the ***TankMaster Workspace*** window.
2. Click the right mouse button and select **View Tank → Tank Operation**, or select menu option **View → Tank → Tank Operation**.

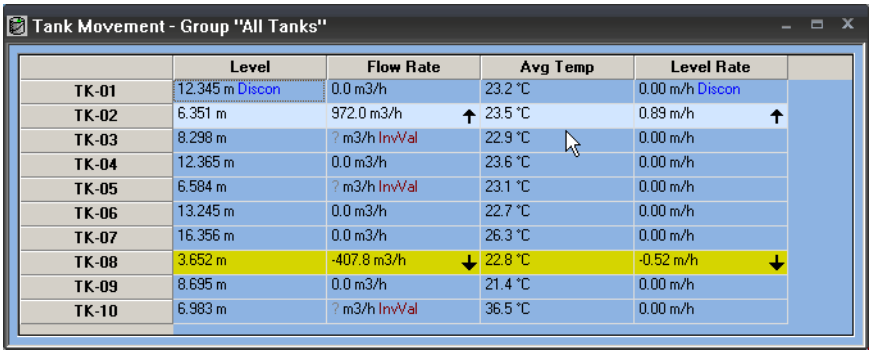


3.3 Tank movement

The ***Tank Movement*** window shows the direction of the current product surface movement, including Level Rate and Flow Rate.

Procedure

1. In the ***Workspace*** window, select the desired tank.
2. Do one of the following:
   - right-click a tank group and select **View Group → Tank Movement**
   - in **View** menu, select **Group → Tank Movement**.



3.3.1 Movement indication

An arrow points in the direction of surface movement. A thick arrow indicates a high flow rate, or level rate. A thin arrow indicates a low flow rate, or level rate. There is no movement indication for level rates below set thresholds.

3.3.2 Limits

A limit can be set in order to exclude tanks with flow rates below a specified value. Tanks are automatically added to and removed from the ***Tank Movement*** window depending on flow rates.

Related information

Flow rate thresholds

3.3.3 Color highlighting

Tank movements can be highlighted using color coding to improve visibility.

Related information

Enable color highlight

3.3.4 Custom appearance

The contents of the ***Tank Movement*** window can be modified to show specific parameters.

Procedure

1. Open the **Tools** menu.
2. Select **Options**.
3. Select the ***Group Template*** tab.

Related information

Modifying group views

3.3.5 Level rate thresholds

There are two thresholds for Level Rate, **Major** and **Minor**.

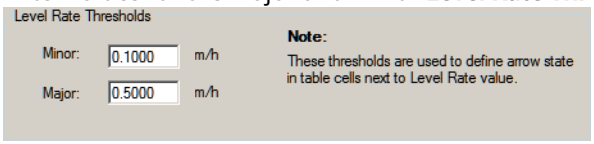
Minor Level rates above this value are indicated with a thin arrow in the ***Tank Movement*** window.

Major Level rates above this value are indicated with a thick arrow in the ***Tank Movement*** window.

Note
The Level Rate threshold settings apply to all windows which indicate product surface movement, such as ***View Group***, and ***Tank View***.

Procedure

1. Go to **Tools** → **Options**.
2. Select the ***Tank Movement*** tab.
3. Enter values for the major and minor **Level Rate Thresholds**.



4. Click **Apply** to activate the new threshold values.
5. Click **OK** to close the ***Options*** window

3.3.6 Flow rate thresholds

Flow Rate Thresholds can be set to indicate the flow rate state.

Minor Flow rates above this value are indicated with a thin arrow in the ***Tank Movement*** window.

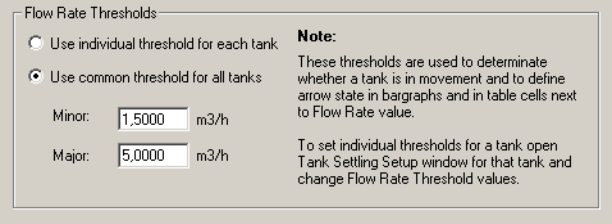
Major Flow rates above this value are indicated with a thick arrow in the ***Tank Movement*** window.

Note
The Flow Rate threshold settings apply to all windows which indicate product surface movement, such as ***View Group***, and ***Tank View***.

Common flow rate thresholds

Procedure

1. Go to **Tools** → **Options**.
2. Select the ***Tank Movement*** tab.
3. Select **Use common threshold for each tank**.



4. Enter the desired threshold values.

Note
Tanks with Flow Rates below the **Minor** threshold value will not appear in the ***Tank Movement*** window.

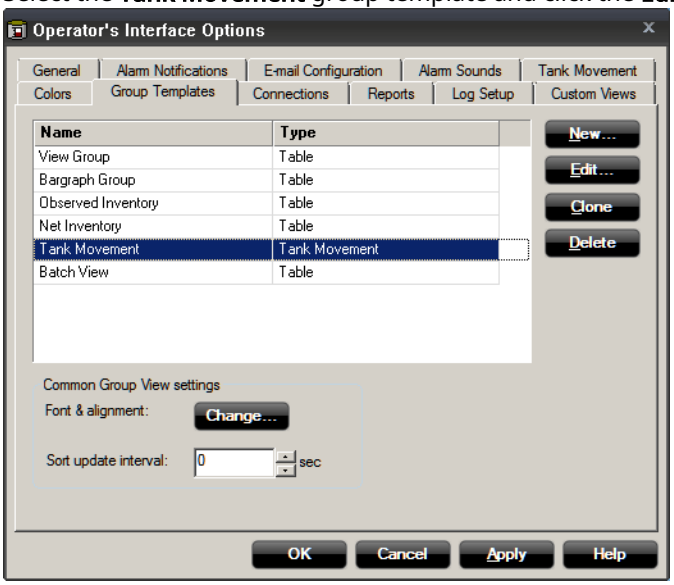
5. Click **Apply**, and **OK** to close the ***Options*** window.

3.3.7 Enable color highlight

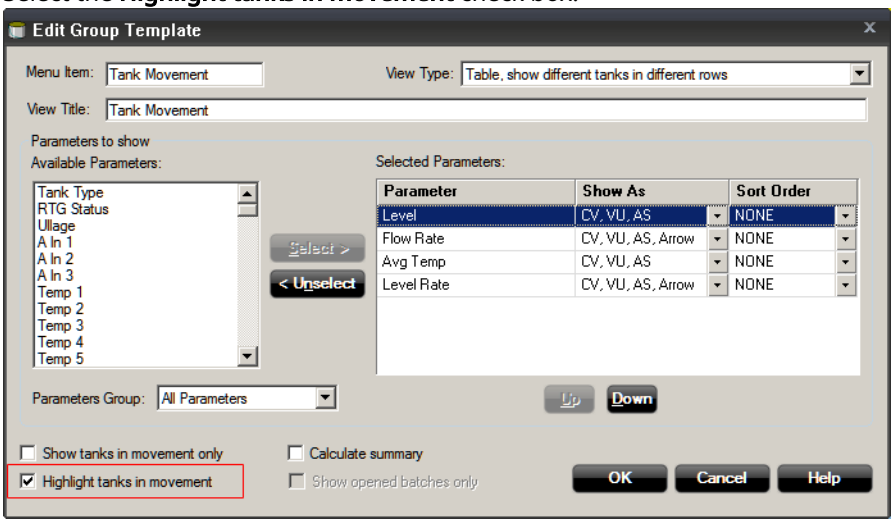
Color coding and highlighting for tank movement can be edited.

Procedure

1. In the **Tools** menu, select **Options**.
2. Select the ***Group Templates*** tab.
3. Select the **Tank Movement** group template and click the **Edit** button.



4. Select the **Highlight tanks in movement** check box.



5. Click **OK**.

Related information

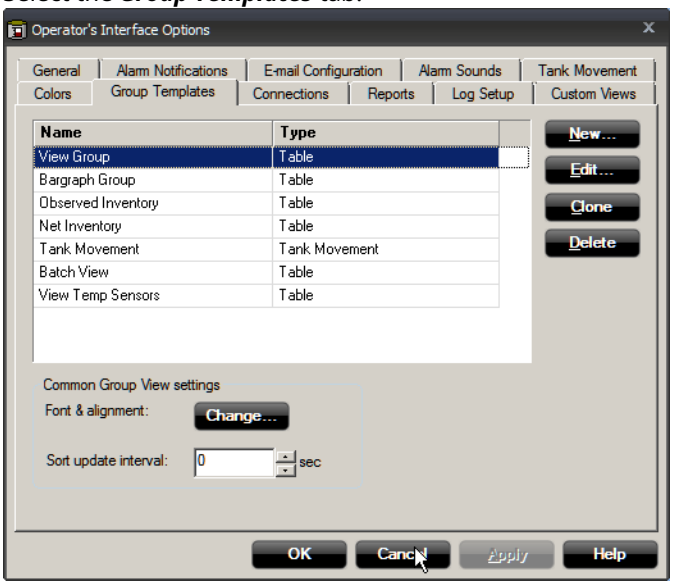
Color settings for tank movement

3.4 Modifying group views

The appearance of a group view can be changed by editing the appropriate template.

Procedure

1. In the **Tools** menu, click **Options**.
2. Select the ***Group Templates*** tab.



3. Select one of the following options:
   - To modify an existing group template, select the view and click **Edit**.
   - To duplicate an existing template, click the **Clone** button. This is a convenient way to create a new template by simply modifying an existing one.
   - To create a new group template, click the **New** button.
   - To remove an existing template, click the **Delete** button.

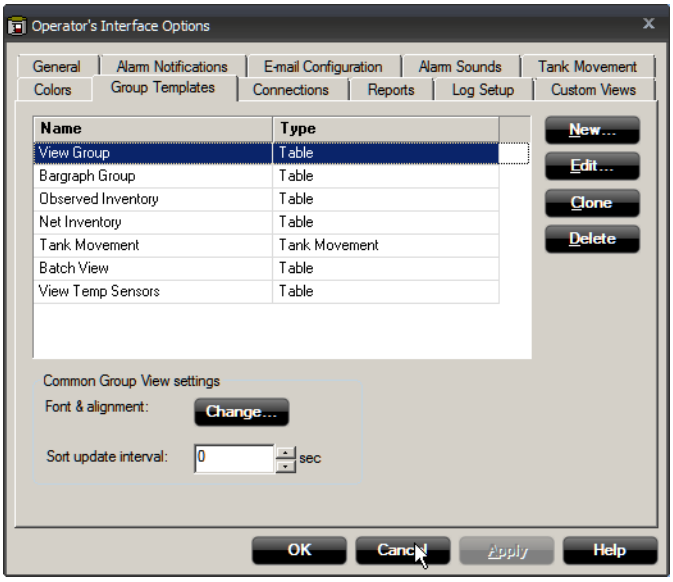
3.4.1 Example of how to create new group views

This example illustrates how to create a new group template.

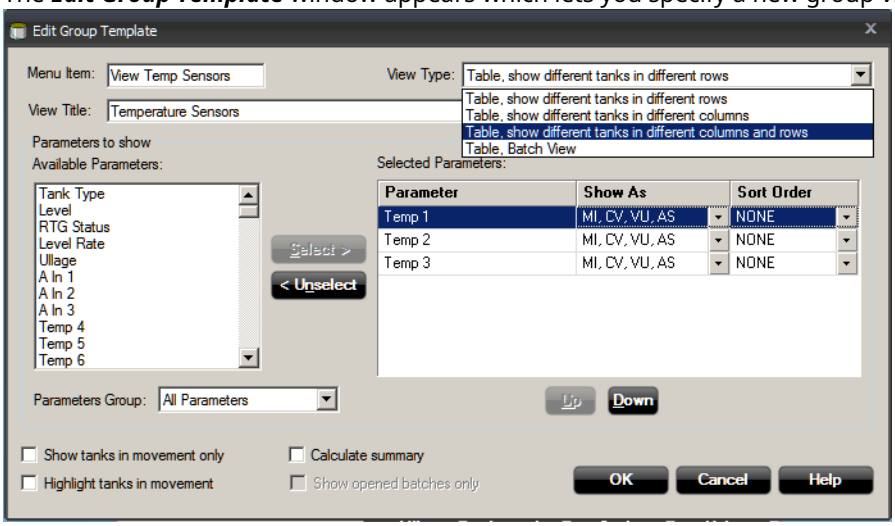
Procedure

1. Select menu option **Tools** → **Options**.

2. Select the ***Group Templates*** tab and click the **New** button.



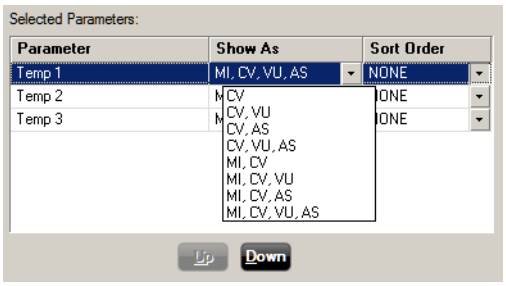
The ***Edit Group Template*** window appears which lets you specify a new group view:



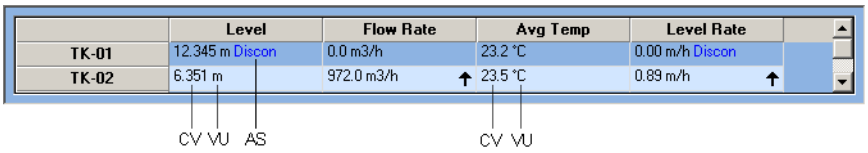
3. In the **Menu Item** field, enter a group name as it will appear in the **View → Group** menu.
4. In the **View Title** field, type the name that will be displayed in the title bar of the new group view.
5. Next, select parameters in ***Available Parameters*** pane and click the **Select** button.
   The parameters are added to the ***Selected Parameters*** pane.

6. In the **Show As** column, for each parameter choose the desired format for data presentation.

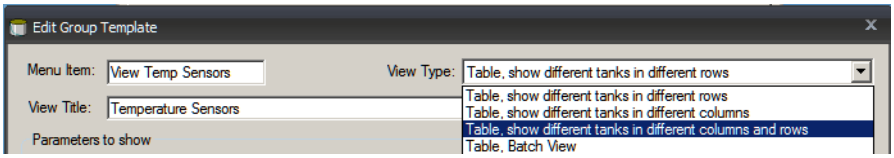
   The **Show As** format determines how the parameter is presented in the view window.



Selected Parameters Show As	Description
MI	Spot temperature in liquid
CV	Current Value
VU	Value Unit
AS	Alarm Status



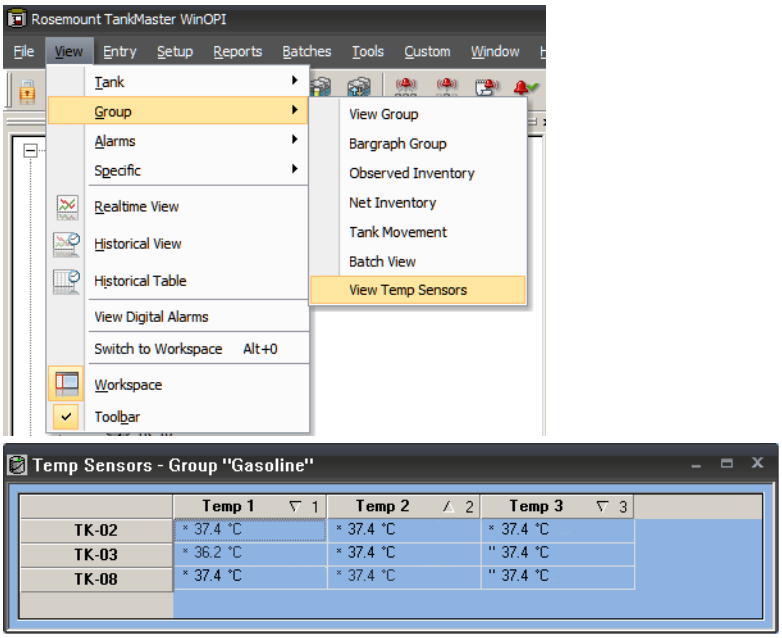
7. The parameters can also be sorted in the table view as ascending or descending from the ***Sort Order*** column.
8. Finally, in the ***View Type*** list, select if tanks will be presented row by row, column by column, or in both rows and columns.



9. Click the **OK** button.

10. To open the new group view, do one of the following:
    - Right-click a tank group and select **View Group** → **[Menu Item]**
    - Select a tank group and in the main menu, go to **View** → **Group** → **[Menu Item]**

    In this example, **[Menu Item]** is **View Temp Sensors**.



Note
The **Highlight tanks in movement** option is not enabled in this example.

Related information

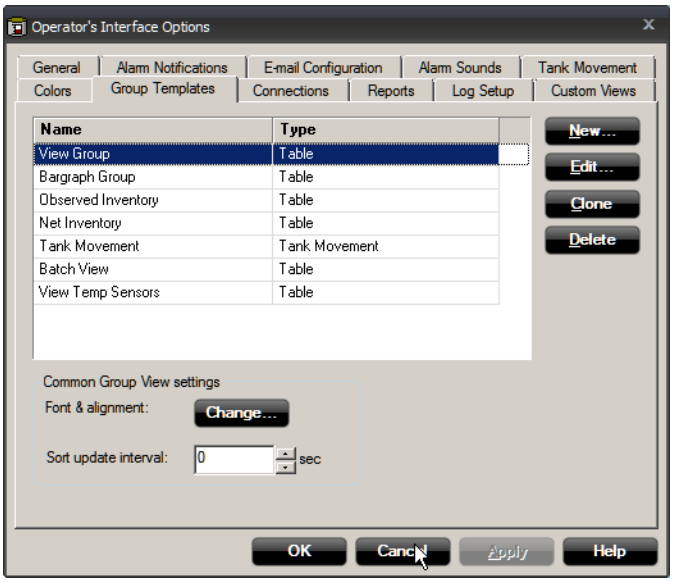
Enable color highlight

3.4.2 Changing group view appearance

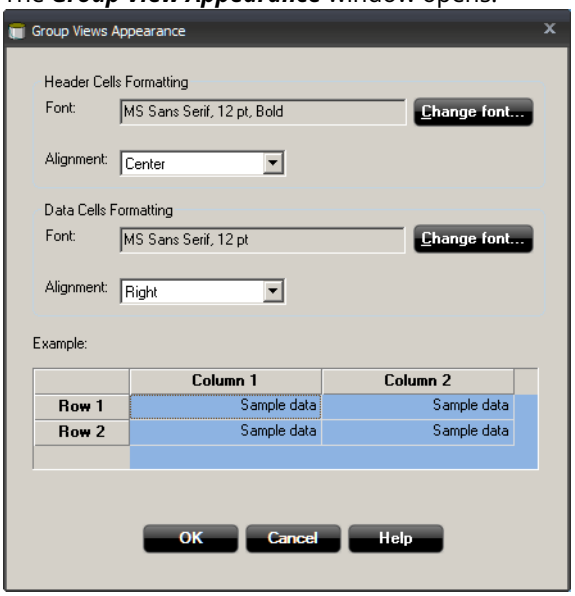
Font and text alignment can be modified for cells and headers in windows where data is presented in tables.

Procedure

1. Select menu option **Tools** → **Options** and select the ***Group Templates*** tab.



2. Under **Common Group View Settings**, click the **Change** button.
   The ***Group View Appearance*** window opens:



3. Select the appropriate **Change font** button to select desired fonts for table headers and cells.
4. Select desired alignment.
   A preview of the formatting changes is shown in the ***Example*** box.

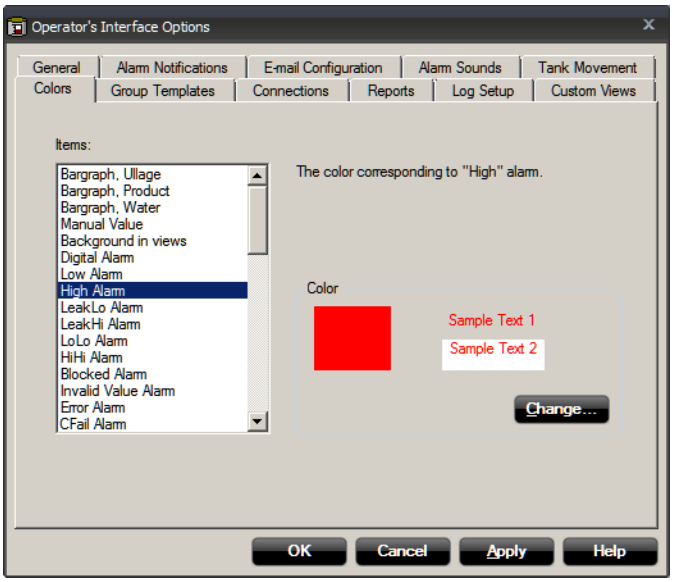
5. Click **OK** to close the ***Group Views Appearance*** window

3.5 Color settings

Using colors can be a useful way highlight and distinguish information. Colors can be specified for many areas, including bar graphs, backgrounds in input fields, manually entered values, alarms, and products in the Product Table.

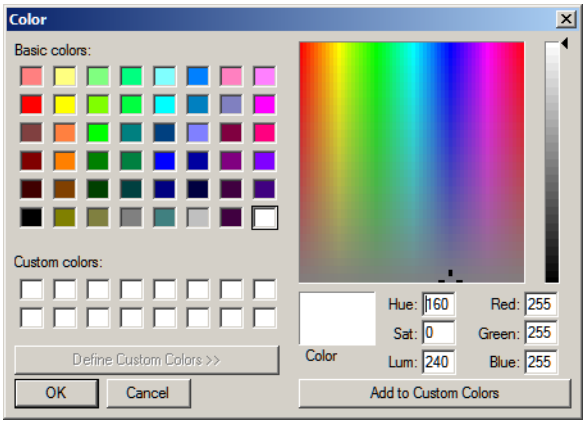
Procedure

1. Open the **Tools** menu.
2. Select **Options**.
3. Select the ***Colors*** tab.



4. Select an item from the list.
5. Click the **Change** button to open the ***Color*** palette:

6. Choose a color from the palette, or click the **Define Custom Colors** button to expand the ***Color*** window. This allows you to add a custom color:



7. Click **OK** when the color selection is done.

Related information

Product color
Create a product table
Product color settings

3.5.1 Product color settings

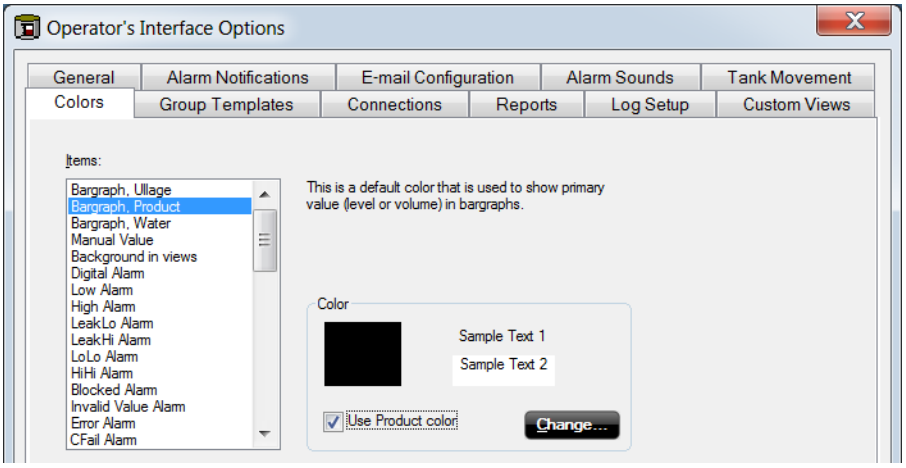
In the **Product Table**, colors can be used to represent specific products. These colors are then used in bar graphs to show the current product level.

There are two different options for product colors in bar graphs:

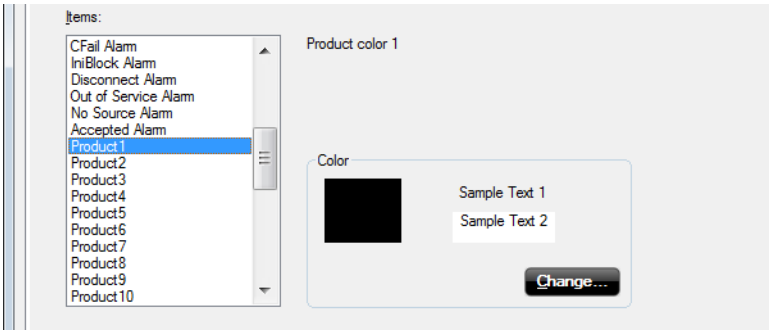
- Option 1: the same color is used for all products.
- Option 2: Each product is associated with a color according to the Product Table setup.

Procedure

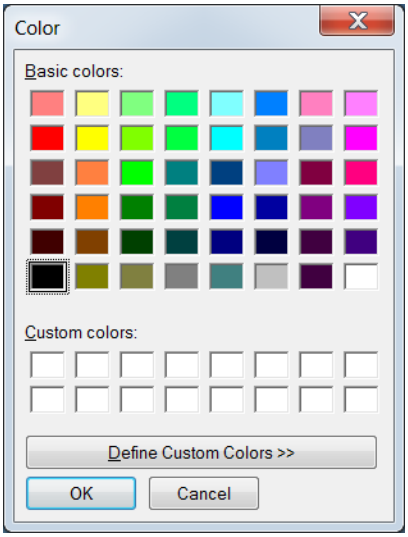
1. In the **Tools** menu, select **Options**.
2. Select the ***Colors*** tab.
3. Under **Items**, select **Bar Graph Product**, and select the **Use Product Color** check box.



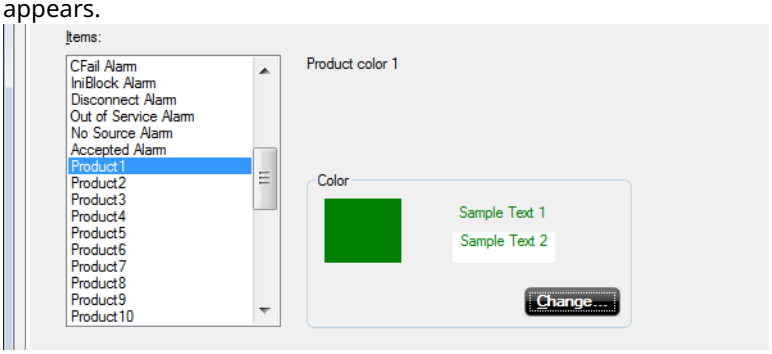
4. Scroll down the **Items** list and select a product to edit (Product1 in this example).



5. Click the **Change** button to define a product color.



6. Select the desired color and click the **OK** button. Now the new product color appears.



7. Repeat this procedure for the desired products.
8. In the ***Tools Options Colors*** window, click the **OK** button when you are finished.

Related information

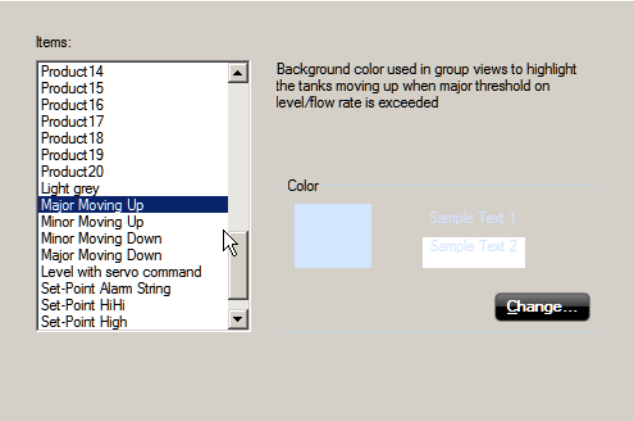
Color settings

3.5.2 Color settings for tank movement

Items Major Moving Up, Major Moving Down, Minor Moving Up, and Minor Moving Down can be modified to change the colors for highlighting tank movement.

Procedure

1. Open menu option **Tools** → **Options** and select the ***Color*** tab.
2. Select one of the following items:
   - Major Moving Up
   - Major Moving Down
   - Minor Moving Up
   - Minor Moving Down



3. Click **Change** to edit the color settings for the selected item.
4. Click **Apply** and then **OK** to close the ***Options*** window.

Postrequisites

Ensure that color highlighting for tank movement is enabled.

Related information

Enable color highlight

4 Installing a tank measurement system

4.1 Installation procedure

Setting up a tank measurement system for level measurement and inventory calculation includes a few basic steps.

Procedure

1. **System setup**.

   Specify measurement units and other system parameters.

2. **Set up a Tank Capacity Table**.

   Specify the geometry of the tank for volume calculation by setting up a tank capacity table. This is commonly referred to as a strapping table.

3. **Create a product table**.

   Specify the products to be used in the tank.

4. **Configure tank inventory parameters**.

   Specify parameters for inventory calculation.

5. **Configure alarm limits**.

   Specify alarm limits for level, volume, and data from external sensors.

Related information

System setup
Setting up a tank capacity table
Create a product table
Inventory parameters
Alarm handling

4.2 Setting up a tank capacity table

The geometry of a tank is defined in a strapping table called a Tank Capacity Table (TCT). It is used to convert a product level to the corresponding volume. The values can be entered either as absolute levels, as relative levels, or as pairs of level and volume.

There are three different types of tank capacity tables:

- Raw
- Northern (relative levels; mostly used in Sweden and Finland)
- International (absolute levels)

You can specify a default TCT type that will automatically be used for new tanks in **Setup** → **System**.

You can change the TCT type for a tank from the default setting in **Setup** → **Tank Setup** → **Tank Capacity**.

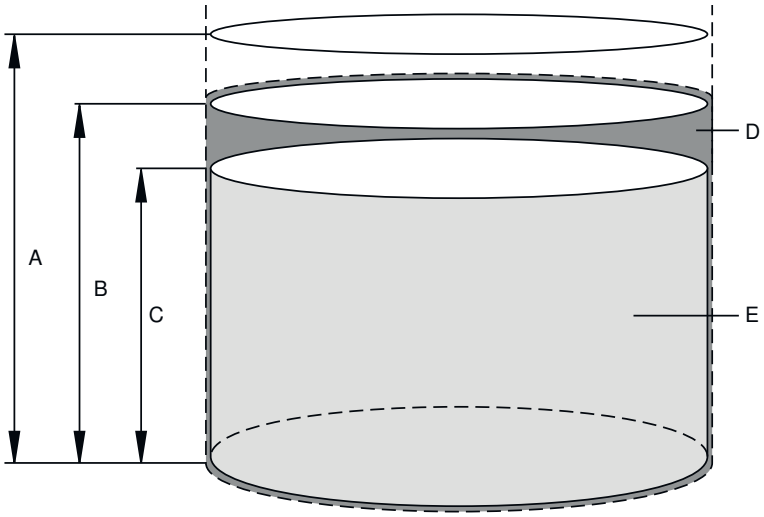
Note
When specifying a TCT using either the Northern or International method, it is extremely important that the resulting level-volume curve is continuous. The calculated volume at the top of one interval must correspond exactly to the volume at the bottom of the next interval.

Both the relative and the absolute method of entering TCT data require four parameters at each strapping point. The Northern and the International methods do not use the same Base Volume and Tank Area Coefficient.

Table 4-1: Strapping Table Parameters

Parameter	Description
From	product level at the beginning of the interval
To	product level at the end of the interval
Volume	Base Volume
Area	Tank Area Coefficient

Figure 4-1: Volume Calculations Based on Strapping Table



A. Level at end of interval
B. Measured level
C. Level at beginning of interval
D. Calculated volume
E. Base volume

4.2.1 Using the Raw method

When using the Raw method, data is entered in pairs of Level and Volume values. For each level value the corresponding standard volume must be entered.

The following table shows an example of pairs of Level and Volume values as input for TankMaster when using TCT type Raw.

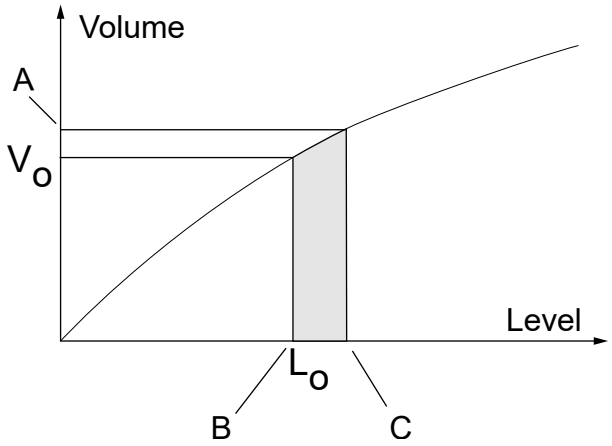
Table 4-2: Example of TCT Type Raw Table

Level	Volume
1.53	10 105
2.72	22 309
3.18	29 934
4.78	41 249

4.2.2 Using the International method

When using the **International** method, the **Base Volume** is the volume at the beginning of the interval. The **Tank Area Coefficient** describes how the volume varies with the level within the interval.

Figure 4-2: International Method



A. Volume at end of interval
B. Level at beginning of interval (From)
C. Level at end of interval (To)

With the International Method, the desired volume is calculated as:

Desired Volume = V_o + **Area** × (**Level** - L_o)

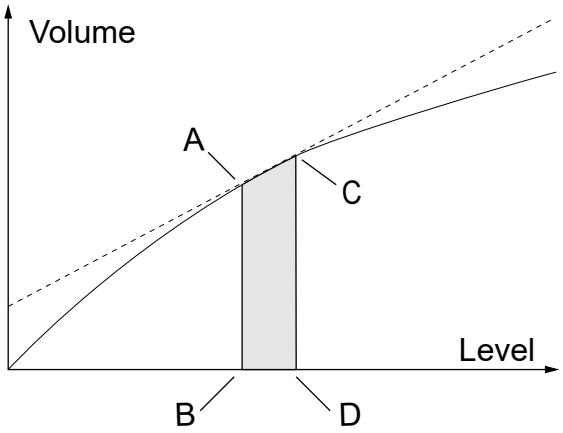
Table 4-3: International Method Parameters

Parameter	Description
Desired Volume	Volume at the measured level
Level	Measured level
L_o	Level at the beginning of the interval
V_o	Base volume
Area	Tank Area Coefficient. This is not the surface area of the product, although the measurement unit of this parameter is the same as for a surface area (volume/length).

4.2.3 Using the Northern method

The **Northern** method is based on the fact that within an interval, there is an approximately linear relationship between level and volume, as illustrated below.

Figure 4-3: Northern Method



A. Volume at beginning of interval
B. Level at beginning of interval (From)
C. Volume at end of interval
D. Level at end of interval (To)

The **Base Volume** corresponds to the volume at Level = 0, given by extrapolation of the linear level - volume relationship.

The **Tank Area Coefficient** describes how the volume varies with the level within the interval based on this **Base Volume**. The volume is calculated as:

Desired Volume = $\mathbf{V_o}$ + **Area** × **Level**

Table 4-4: Northern Method Parameters

Parameter	Description
Desired Volume	Volume at the measured level
Level	Measured level
$\mathbf{V_o}$	Base volume
Area	Tank Area Coefficient. This is not the surface area of the product, although the measurement unit of this parameter is the same as for a surface area (volume/length).

4.2.4 Create a tank capacity table

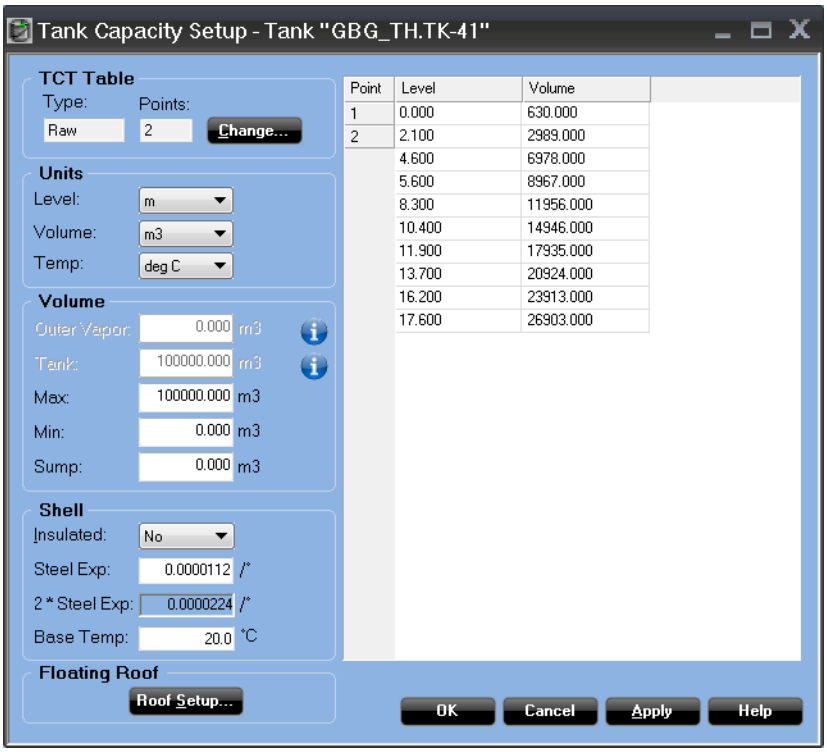
TankMaster allows you to specify a strapping table to be used for volume calculations.

- The geometry of the tank is defined in the TCT
- The TCT is used to convert a product level to the corresponding volume
- The values can be entered either as pairs of level and volume, either as absolute, or relative levels depending on the type of TCT that is used

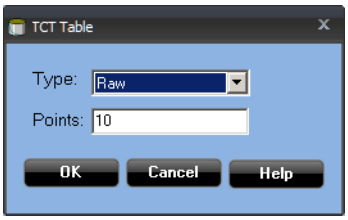
- The TCT is stored as pairs of level and volume irrespective of the way the values are entered into the system

Procedure

1. In the TankMaster workspace, right-click on the desired tank and select **Tank Setup → Tank Capacity**, or open menu option **Setup → Tank Setup → Tank Capacity**.



2. To change the TCT type for the current tank, or to specify the number of strapping points, click the **Change** button.



3. Click **OK** to close the ***TCT Table*** window and apply any changes.

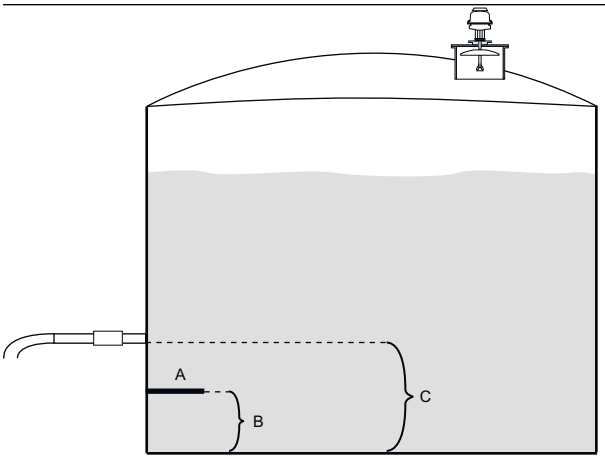
Note
Changing the TCT or number of points in the ***TCT Table*** window only affects the current tank. The default TCT type is specified in the ***System Setup*** window (**Setup → System**) and is automatically chosen when strapping tables are created for new tanks.

4. In the **Units** pane, select measurement units for Level, Volume and Temperature. These units are also specified in the ***System Setup*** window as default for all tanks, but can be changed here for the current tank.
5. In the **Volume** section, enter a **Maximum Volume** and a **Minimum Volume** for the current tank. The **Minimum Volume** is equal to the volume between the outlet and

the bottom of the tank. Tank Volume refers to the total volume of the tank. This parameter is used for LPG tanks in order to calculate Equivalent Liquid Volume and Vapor Mass.

6. The **Sump Volume** is what is left when the tank is emptied to the Zero Level. This value may be included in the strapping table instead of the Sump Volume field. In this case, the **Base Volume** at the Zero Level is equal to the **Sump Volume**.

Note
Ensure that the **Sump Volume** is not specified in both the Sump Volume parameter and the strapping table.



A. Zero Level
B. Sump
C. Minimum volume

7. In the **Shell** pane, specify if the tank is insulated or not, enter the **Base Temperature** and a **Steel Expansion Coefficient**:
   - The **Base Temperature** is the temperature at which the strapping table is specified
   - Temperatures other than the Base Temperature are taken into account and compensated for when performing volume calculations.
   - If a tank is insulated the ambient temperature does not have any influence on the inventory calculations.
   - The **Steel Expansion Coefficient** is used in the calculations of Gross Observed Volume (GOV) in order to correct for the thermal expansion of the tank wall. The default value, 0.0000112/°C, is used for mild carbon steel.
8. Enter numerical values for the strapping table points.
9. Click **OK** to store the values and close the window.

Related information

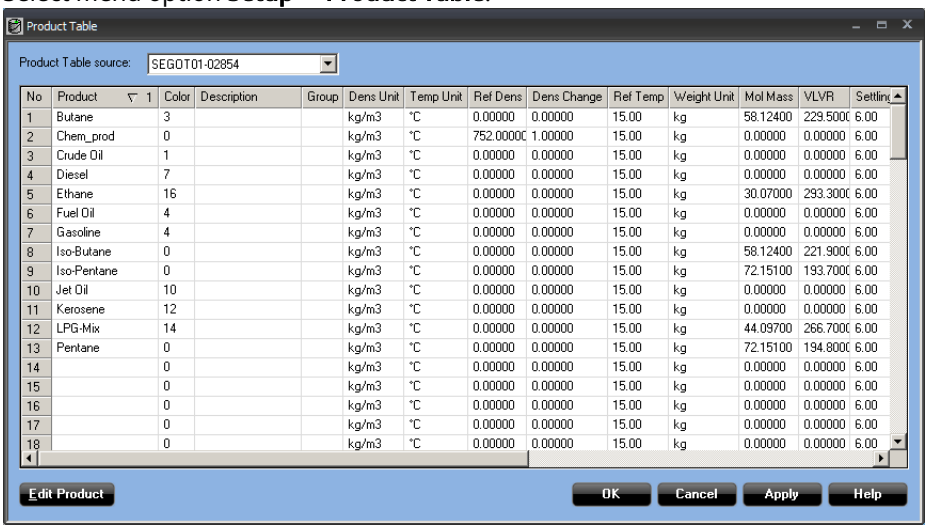
Inventory parameters

4.3 Create a product table

Product specific information is stored in a **Product Table**. It is possible to edit the default selection of products and also add new products to the table.

Procedure

1. Select menu option **Setup** → **Product Table**.



No	Product	Color	Description	Group	Dens Unit	Temp Unit	Ref Dens	Dens Change	Ref Temp	Weight Unit	Mol Mass	VLVR	Settling
1	Butane	3			kg/m3	°C	0.00000	0.00000	15.00	kg	58.12400	229.500(	6.00
2	Chem_prod	0			kg/m3	°C	752.0000(	1.00000	15.00	kg	0.00000	0.00000	6.00
3	Crude Oil	1			kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.00000	6.00
4	Diesel	7			kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.00000	6.00
5	Ethane	16			kg/m3	°C	0.00000	0.00000	15.00	kg	30.07000	293.300(	6.00
6	Fuel Oil	4			kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.00000	6.00
7	Gasoline	4			kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.00000	6.00
8	Iso-Butane	0			kg/m3	°C	0.00000	0.00000	15.00	kg	58.12400	221.900(	6.00
9	Iso-Pentane	0			kg/m3	°C	0.00000	0.00000	15.00	kg	72.15100	193.700(	6.00
10	Jet Oil	10			kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.00000	6.00
11	Kerosene	12			kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.00000	6.00
12	LPG-Mix	14			kg/m3	°C	0.00000	0.00000	15.00	kg	44.09700	266.700(	6.00
13	Pentane	0			kg/m3	°C	0.00000	0.00000	15.00	kg	72.15100	194.800(	6.00
14		0			kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.00000	6.00
15		0			kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.00000	6.00
16		0			kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.00000	6.00
17		0			kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.00000	6.00
18		0			kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.00000	6.00

2. Select a **Product Table source**, i.e. a server where the product table is stored.
3. The content in the product table can be sorted.
4. To edit an item In the **Product Table**, double-click a cell, or select a cell and click the **Edit Product** button. The ***Edit Product No <x>*** window appears.

5. Enter the appropriate product data in the ***Edit Product*** window.
6. Repeat the appropriate steps to add new, or edit existing products in the **Product Table**.
7. Click **OK** when finished.

Related information

Color settings

Sorting content in a product table
System setup

4.3.1 Product color

Enter a number that corresponds to a product color. This requires that a set of product colors has already been defined.

Related information

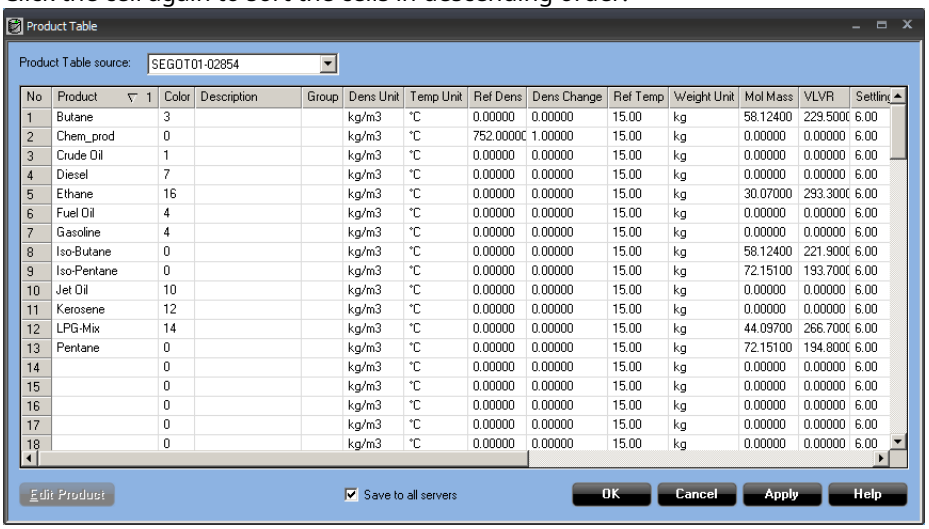
Color settings

4.3.2 Sorting content in a product table

The Product Table can be sorted for a clear overview.

Procedure

1. To sort the table rows in ascending order for a field, click the title cell for that column.
2. Click the cell again to sort the cells in descending order.



No	Product	Color	Description	Group	Dens Unit	Temp Unit	Ref Dens	Dens Change	Ref Temp	Weight Unit	Mol Mass	VLVR	Settling
1	Butane	3			kg/m3	°C	0.00000	0.00000	15.00	kg	58.12400	229.500(	6.00
2	Chem_prod	0			kg/m3	°C	752.00000	1.00000	15.00	kg	0.00000	0.00000	6.00
3	Crude Oil	1			kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.00000	6.00
4	Diesel	7			kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.00000	6.00
5	Ethane	16			kg/m3	°C	0.00000	0.00000	15.00	kg	30.07000	293.300(	6.00
6	Fuel Oil	4			kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.00000	6.00
7	Gasoline	4			kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.00000	6.00
8	Iso-Butane	0			kg/m3	°C	0.00000	0.00000	15.00	kg	58.12400	221.900(	6.00
9	Iso-Pentane	0			kg/m3	°C	0.00000	0.00000	15.00	kg	72.15100	193.700(	6.00
10	Jet Oil	10			kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.00000	6.00
11	Kerosene	12			kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.00000	6.00
12	LPG-Mix	14			kg/m3	°C	0.00000	0.00000	15.00	kg	44.09700	266.700(	6.00
13	Pentane	0			kg/m3	°C	0.00000	0.00000	15.00	kg	72.15100	194.800(	6.00
14		0			kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.00000	6.00
15		0			kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.00000	6.00
16		0			kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.00000	6.00
17		0			kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.00000	6.00
18		0			kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.00000	6.00

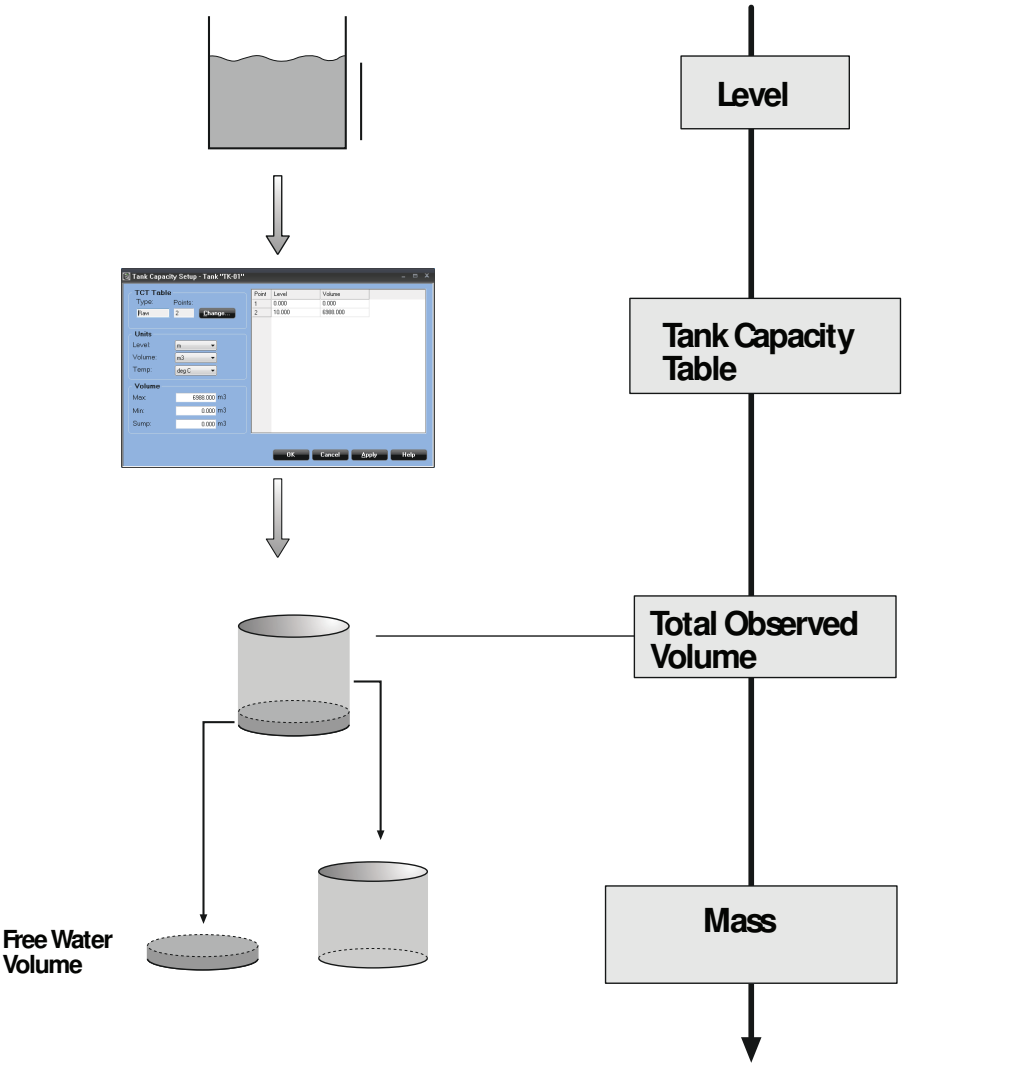
3. Right click on the selected column title to reset sorting.
4. Repeat this procedure until the table is sorted appropriately for your needs.

4.4 Inventory parameters

Rosemount TankMaster ™calculates inventory parameters based on input data available for the current tank.

The following figure illustrates how TankMaster converts a measured product level with given tank parameters to a standardized volume:

Figure 4-4: Standard Volumes



The following figure outlines the relationship between tank parameters and physical quantities. The main parameters are shown on the left-hand side, and input parameters on the right-hand side of the flow chart:

Figure 4-5: Tank Parameters Flow Chart

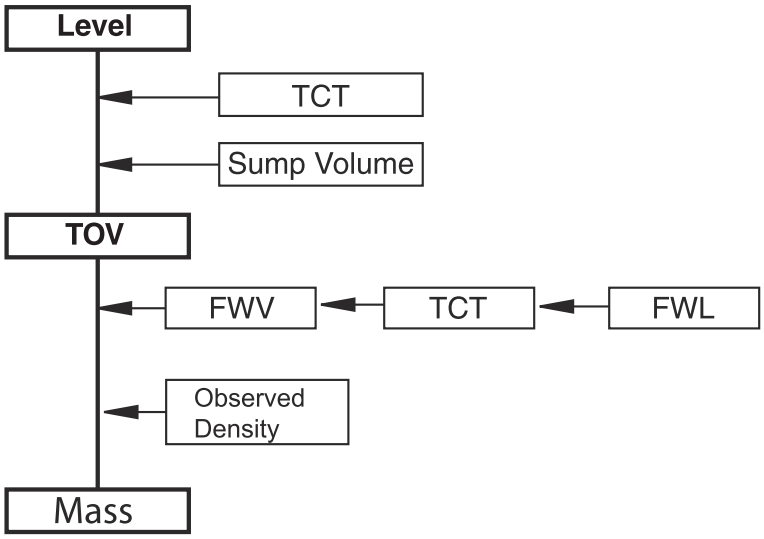


Table 4-5: Inventory Parameters

Parameter	Description
Total Observed Volume, TOV	Calculated from strapping tables. It is the total volume at the observed temperature of the product.
Mass	is the TOV multiplied by the Obs Density
Maximum Volume	The volume that corresponds to the maximum product level.
Available Room, AVRM	Calculated by substracting the TOV from the Maximum Volume of the tank.
Sump volume	The volume that is left in a tank when emptied down to the Zero level.
Minimum Volume	Volume between the outlet and the bottom of the tank.
Pumpable Volume	TOV minus the Minimum Volume.
Flow Rate	The Flow Rate is calculated using the level rate and the strapping tables.
Free Water Level, (FWL)	Manually entered or measured by a water interface sensor.
Free Water Volume, (FWV)	Calculated on the basis of the FWL and the TCT.

Related information

Create a tank capacity table

5 Alarm handling

Rosemount TankMaster lets you manage various types of alarms. You can set alarm levels as well as hysteresis and delay times for various parameters, such as Level, temperatures, and analog input signals.

An alarm status can be one of the following:

- HiHi
- High
- LoLo
- Low
- Leak Hi
- Leak Lo
- CFail (communication failure)
- Normal
- Error

The data that TankMaster receives from field devices are continuously checked against the alarm limits. Alarm limits, delay times, hysteresis and leak alarms are defined by the operator in the password protected ***Alarm Limits*** window.

If a value exceeds an alarm limit, the corresponding alarm will be activated after a certain delay as given by the **Delay Time** setting. The alarm status will flash bright red in, for example, the ***Alarm Summary*** window, or the ***Tank Inventory*** window until the operator accepts the alarm.

Even if conditions have returned to normal, the alarm status is not reset until the operator has accepted the alarm. In order to accept and disable an alarm, the parameter that caused the alarm must pass below the alarm limit and satisfy the **Alarm Hysteresis** value. When these conditions are satisfied, the alarm reset is delayed an amount of time given by the **Delay Time**.

When an alarm is accepted, the alarm status turns dark red by default. **Alarm colors** can be changed.

Related information

Alarm colors
Alarm status
Color settings

5.1 Leak alarms

The level leak alarm monitors product level changes.

When the Leak Limit is set the current tank level will be stored. The WinView program monitors the difference between the actual level and the stored level, and activates the Leak Alarm when the difference becomes greater than the **Leak Limit** programmed by the operator.

5.2 Sensor failure

In the event of a sensor failure, for example if a temperature sensor malfunctions, then the sensor status ***Error*** is displayed.

5.3 Communication failure

If a Rosemount 2460 System Hub, or a Rosemount 2410 Tank Hub does not respond after three queries, the alarm status of the tank parameters are set to **Communication Failure** (**CFail**) and the following error message displayed in the status bar: <Tank Name> **CFail**.

All parameters associated with a unit that do not respond inherit the **CFail** status in this case. Even though the status of the alarm can be shown for a number of parameters, it is only regarded as one alarm, and therefore only needs to be accepted once for each unit.

5.4 Alarm status priority

Each parameter status has a certain priority, as shown below. If, for example a CFail alarm is activated for a specific tank, the alarm status Error will not be shown for that tank as long as the CFail status is valid.

If the parameter is disconnected then **Discon** will replace **CFail** as the parameter status.

Alarms are given the following order of priority:

1. Disconnect (Discon)
2. Communication Failure (CFail)
3. Error
4. Blocked
5. HiHi, LoLo
6. Leak Alarm Hi, Leak Alarm Lo
7. High, Low

Note
Priorities 1 to 4 are only valid for automatically measured values, not for manual values.

Related information

Disconnecting alarms

5.5 Setting alarm limits

An Operator can set up alarm limits for various parameters in the ***Alarm Limits*** window, including:

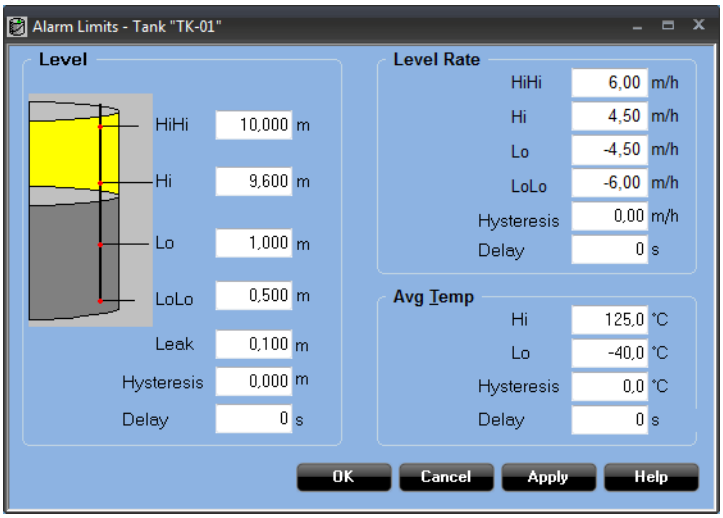
- Level and level rate
- Average temperature and vapor temperature
- Analog inputs
- Vapor pressure and liquid pressure

5.5.1 Alarm limits

The ***Alarm Limits*** window lets you specify limits for a large number of parameters.

Procedure

1. In the TankMaster workspace right-click on a tank and choose **Alarm Entry** → **Alarm Limits**, or select the same option in the **Entry** menu.



2. Specify the desired alarm limits.

Leak	Once a Leak alarm is activated, the alarm will trigger in case the level value drops the amount specified in the **Leak** entry field. **Leak** alarm for **Volume** can be set in the ***Volume Alarm Limits*** window. A volume leak alarm monitors changes of the Net Standard Volume (NSV). Leak alarms can be enabled and disabled for **single tanks** as well as for entire **tank groups**.
Hi, HiHi, Lo, and LoLo	These alarms can be set for Level, Level Rate, and various sensors.
Hysteresis	Prevents alarms from activating due to turbulent surface level conditions. For example, the **Level Hi** limit is set to 10 m and the hysteresis to 0.1 m. The alarm is activated when the level exceeds 10 m and remains active until the level drops below 9.9 m. In this case, small waves on the liquid surface do not influence the Hi alarm.

For example: the **Level Rate Hi** limit is set to 4,5 m/h and the hysteresis to 0.1 m/h. The alarm is activated when the level exceeds 4,5 m/h. It remains active until the level rate drops below 4,4 m/h. In this case fluctuations in the flow do not influence the Hi alarm.

Delay A delay time can be used to prevent temporary changes of the measurement value from activating the alarm. This value specifies the delay in seconds.

3. When finished, click **OK** to activate the current settings and close the ***Alarm Limits*** window.

Related information

Volume alarm limits
Disconnecting alarms
Enable and disable leak alarms

5.6 Alarm summary

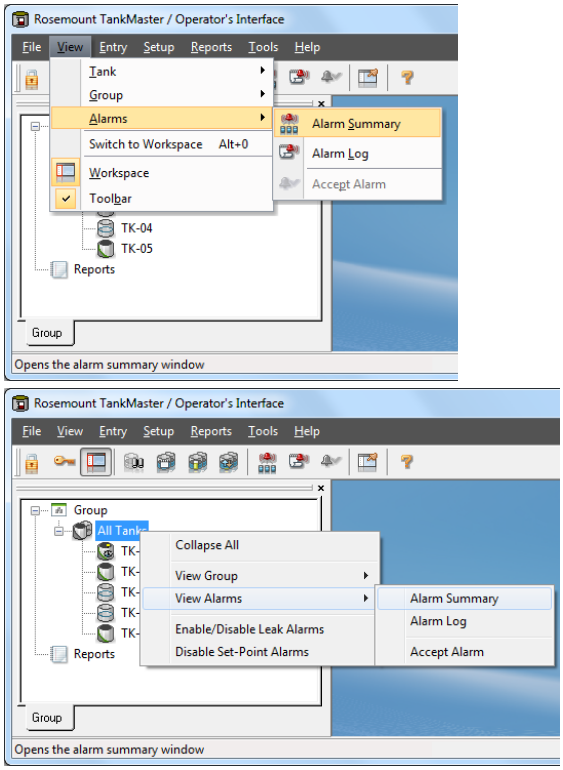
TankMaster makes it easy to view a summary of alarm details for a particular group of tanks, or for all tanks in the system.

Procedure

To view a summary of current alarms for a group, do one of the following:

- in the Workspace, select a tank group and select menu option **View Alarms** → **Alarm Summary**
- right-click on a group and select **View Alarms** → **Alarm Summary**
- click the **Alarms Summary** button in the toolbar

Figure 5-1: Alarm Summary

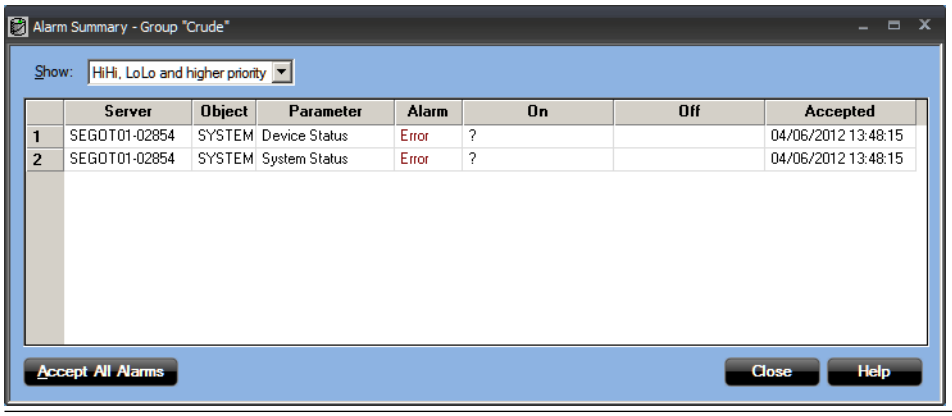


5.6.1 View alarm summary

The ***Alarm Summary*** window shows details for active alarms including related tanks and parameters. The time when an alarm was activated is shown in the **On** column, and the time it was accepted is shown in the **Accepted** column.

An alarm is displayed until it is accepted and the cause of the alarm is resolved.

Figure 5-2: Alarm Summary



Note
A Leak Lo/Hi alarm is not removed until it has been disconnected in the ***Alarm Disconnect*** window.

Related information

Disconnecting alarms

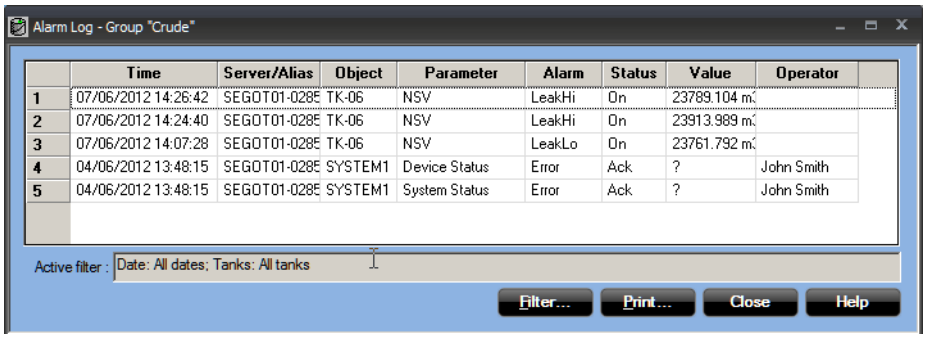
5.7 Alarm log

TankMaster has an alarm log which allows you to view the alarm history for a a tank or a group of tanks. The ***Alarm Log*** window shows a list of logged alarms as well as other important information such as tank name, time and date, and the operator who accepted the alarm.

Procedure

To view the ***Alarm Log*** for a selected group, do one of the following:

- Right-click on a tank group in the TankMaster workspace and select **View Alarms** → **Alarm Log**.
- From the **View** menu, choose **View Alarms** → **Alarm Log**
- Click the **Alarm Log** button in the toolbar



Similar to the ***Alarm Summary***, the ***Alarm Log*** window displays the following information for each alarm:

- Alarm type (High, Low etc.).

- Tank name.
- Parameter that activated the alarm.
- Parameter value when the alarm was activated.
- Alarm status.
- Time and date when the alarm was activated and accepted.
- Operator who accepted the alarm.

5.7.1 Alarm status

The following values can be applied to the **Status** column:

- When an alarm is activated, the status column displays **On**
- When the alarm is accepted, the status changes to **Acc**

If an alarm is unaccepted, the status will continue be displayed as **On**, even if the value that activated the alarm returns to normal.

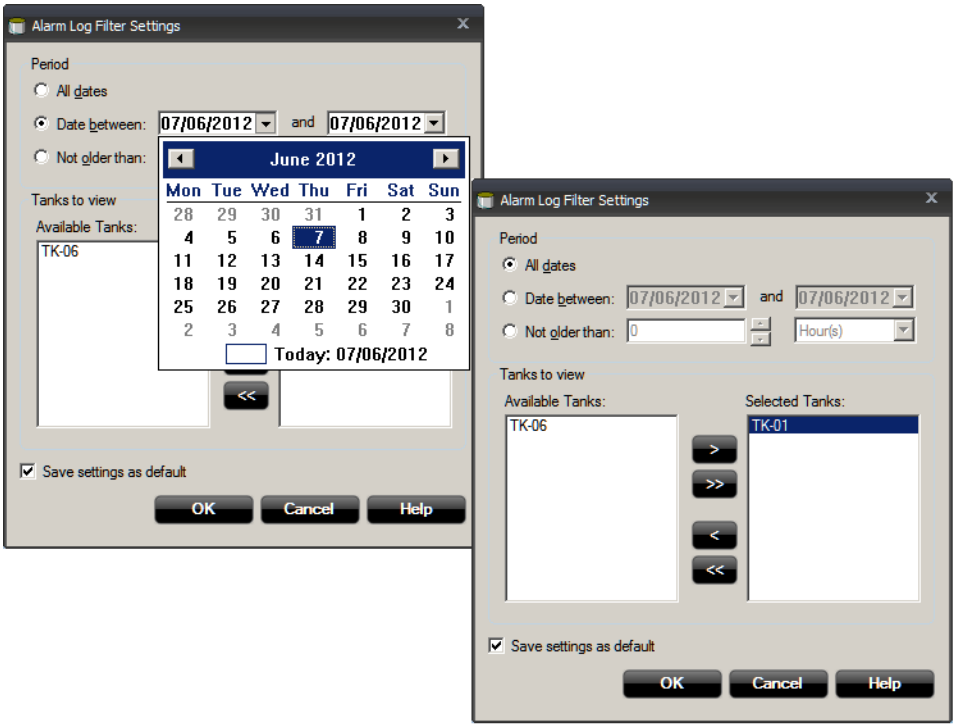
The alarm status is changed to **Off** when the corresponding alarm has been accepted and the value that activated the alarm returns to within the accepted range.

5.7.2 Filter settings

The ***Alarm Log*** can be filtered by tanks and time period.

Procedure

1. In the ***Alarm Log*** window, click the **Filter** button:



Note
In case a single tank is shown in the ***Alarm Log*** window, only that particular tank will appear in the ***Selected Tanks*** pane when the **Filter** button is pressed. All tanks will appear in the ***Selected Tanks*** pane if **All Tanks** optoins is selected in the ***Alarm Log*** window.

2. In the ***Alarm Log Filter Settings*** window, specify the desired time period:
   a) Choose **All dates** to view every alarm that has been logged for the selected tanks.
   b) Select **Date between** to view alarms within a specific period.
   c) Click **Not older than** to view all alarms from a certain point until the present time.
3. To filter tanks that the alarm log will apply to, select a tank in the ***Available Tanks*** pane and click the **Add** button. Tanks can be removed from the ***Selected Tanks*** pane by clicking the **Remove** button.
4. Optional: Select the **Save settings as default** check box in case you would like to use the selected settings as default for the ***Alarm Log***.
5. Click **OK** .

Related information

Viewing the alarm history log

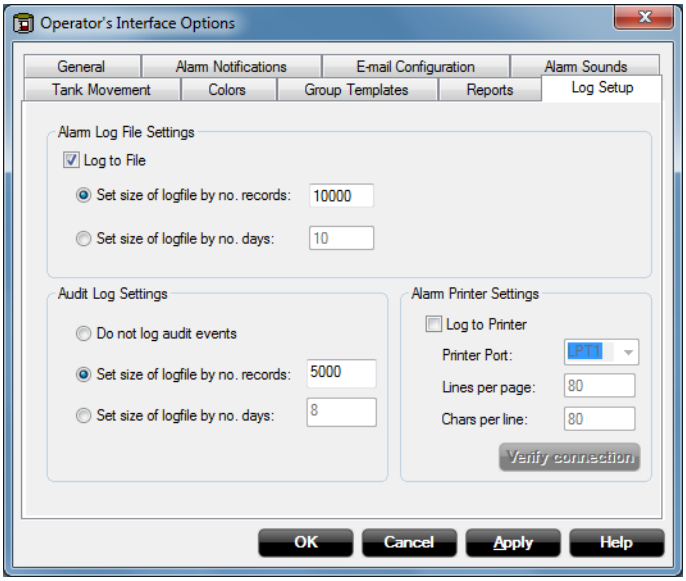
5.7.3 Saving the alarm log to file

The ***Alarm Log*** can be saved to file and the log file can be viewed in the ***Alarm History*** window.

Note
The **Filter** option in the ***Alarm History*** window can be used to reduce the displayed number of days. This will not affect the actual number of days stored in the log file.

Procedure

1. From the **Tools** menu, choose **Options**.
2. Select the ***Log Setup*** tab:



3. Select the **Log to File** option.
4. Set the maximum log file size by specifying the **number of records** or the **number of days** to be logged:
   - 10 days will save all alarm events from the previous 10 days up until the current time.
   - 1000 records will save 1000 alarm events to the alarm log.
5. Click **Apply** to save the alarm log file settings.
6. Click **OK** to close the program options.

Related information

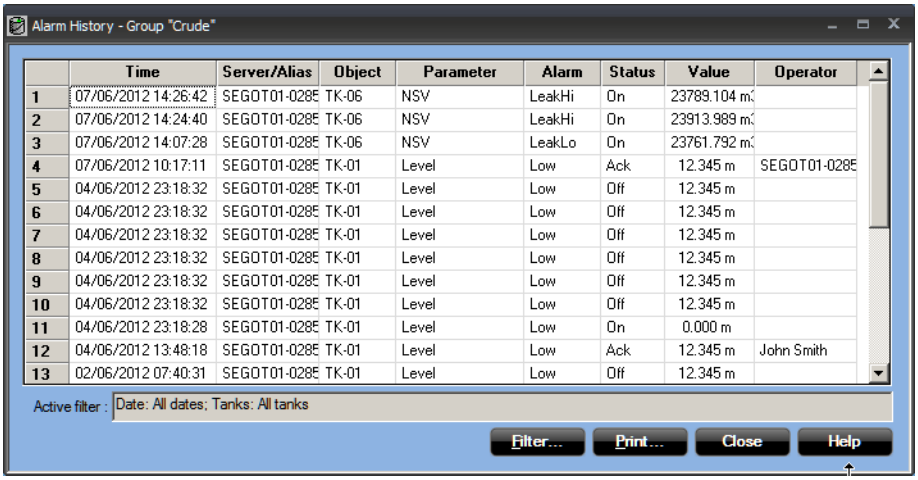
Viewing the alarm history log

5.7.4 Viewing the alarm history log

If the ***Alarm Log*** is saved to file, it can be viewed in the ***Alarm History*** window.

Procedure

1. To view the alarm log history for a tank group, do one of the following:
   - Right-click on a tank group in the TankMaster workspace and select **View Alarms → Alarm History Log**.
   - From the **View** menu, select **Alarms → Alarm History Log**



2. Click the **Filter** button to specify which tanks to show in the ***History Log*** or to change time periods.
3. Click **Print** to print the alarm history log.
4. Click the **Close** button to close the ***Alarm History*** window.

Related information

Saving the alarm log to file
Filter settings
Alarm printer settings

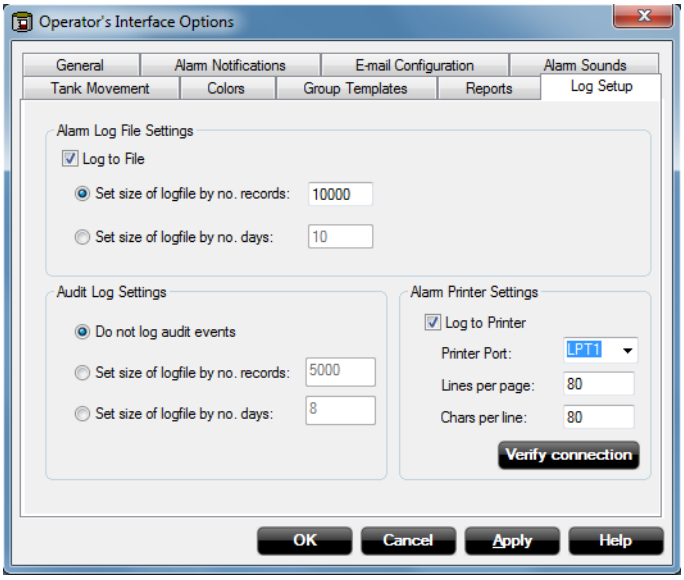
5.7.5 Alarm printer settings

Alarms can be printed directly to a printer. A print out of an alarm is executed when the alarm is activated.

Procedure

1. From the **Tools** menu choose **Options**.

2. Select the ***Log Setup*** tab:



3. Select the **Log to Printer** check box.
4. Select the appropriate **Printer Port** option for the designated printer.
5. Enter a value for the maximum number of lines to be per printed page.
6. Enter a value for the maximum number of characters per line.
7. Click the **Verify connection** button to print a test page.
8. Click **Apply** to save the settings.
9. Click **OK** to close the program options.

Related information

Viewing the alarm history log

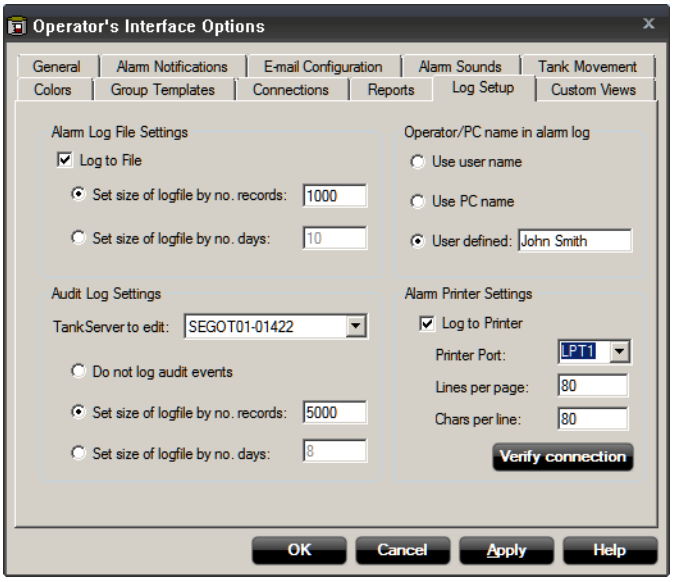
5.7.6 Changing the operator name

The Operator name can be displayed in three different ways when it is associated with accepted alarms in the ***Alarm Log*** window.

Procedure

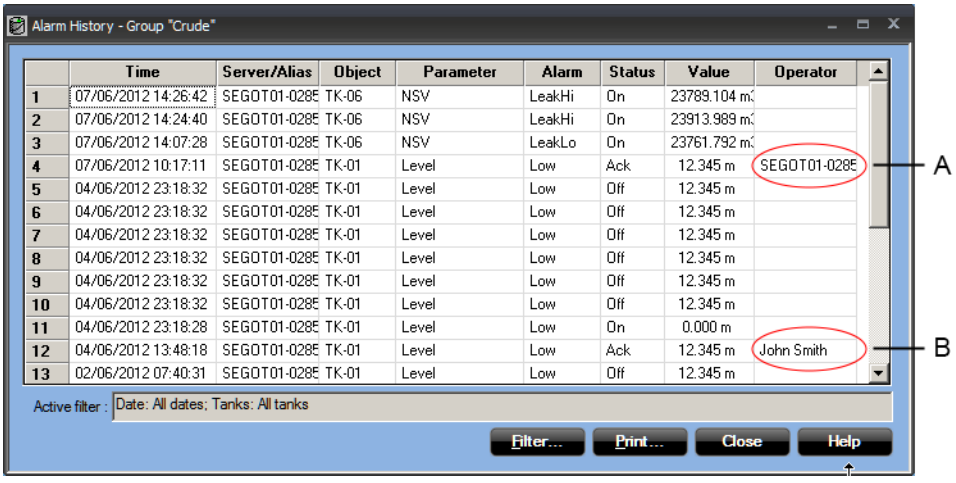
1. From the **Tools** menu choose **Options**.

2. Select the ***Log Setup*** tab:



3. Choose one of the following:
   - User name - User Id for logging in to the workstation.
   - PC name - node name of the current workstation in the network.
   - User defined - a custom name to be displayed in the Operator field.
4. Click **Apply** to save any changes.
5. Click the **OK** button to close the program options.
   The ***Alarm Log*** shows which alarms have been accepted by an Operator.

Figure 5-3: Alarm History



A. PC name
B. User defined name

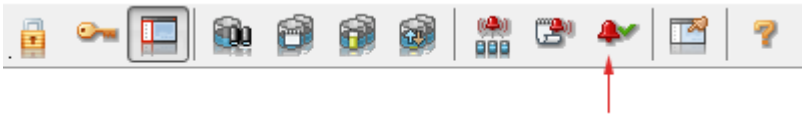
5.8 Accepting alarms

Alarms can be accepted by the operator if the current program protection level is equal to or higher than the required access level.

Alarms can only be accepted for tanks included in an **active** alarm group.

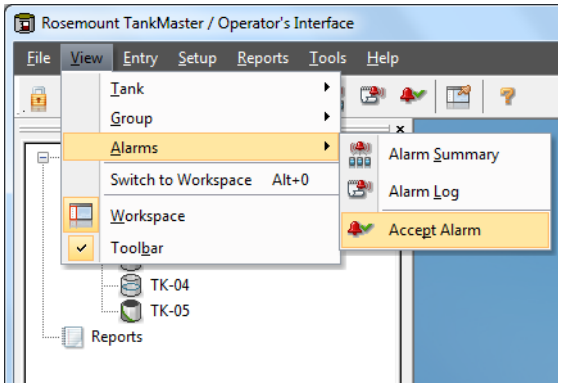
To accept an alarm do one of the following:

- Press <SHIFT + F9>.
- Click the **Accept** button on the toolbar.



- Open menu option **View** → **Alarms** → **Accept Alarm**.

Figure 5-4: Accept Alarm Options

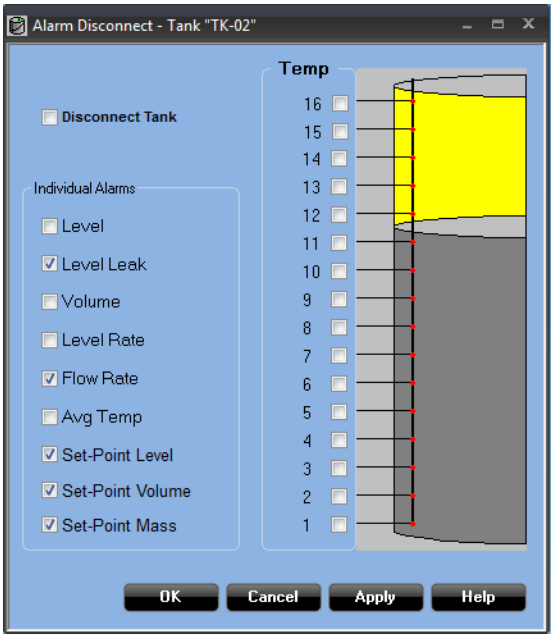


5.9 Disconnecting alarms

Disconnecting alarms can be useful during maintenance work. Specific alarms can be disconnected individually, or all alarms can be disconnected at once. The ***Alarm Disconnect*** window provides an overview of which alarms are active or disconnected, and allows you to specify which alarms should enabled or disabled.

Procedure

1. In the TankMaster workspace, do one of the following:
   - Right-click a tank in the Workspace window and select **Alarm Entry → Alarm Disconnect**
   - select menu option **Entry → Alarm Entry → Alarm Disconnect**



2. To disconnect an **individual alarm**, click the corresponding check box.
3. Optional: To disconnect **all alarms**, select the **Disconnect Tank** check box.
4. Click **Apply** to implement changes, and **OK** to close the ***Alarm Disconnect*** window.

Alarm status	The status of a disconnected alarm is displayed as **Discon** in tank and group view windows.
Calculations	WinView continues to monitor and update measurement values for a parameter when the corresponding alarm is disconnected. A disconnected temperature sensor is not included in the average temperature calculation.

Note
There are no error alarms for disconnected sensors. Sensor failures are not indicated for sensors with disconnected alarms.

Related information

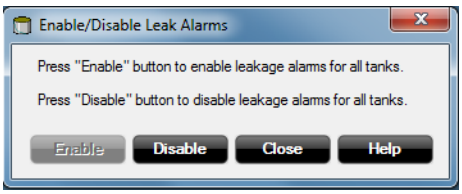
Enable and disable leak alarms
Enable and disable leak alarms

5.9.1 Enable and disable leak alarms

The **Enable/Disable Leak Alarms** function is used to enable or disable level leak alarms for all tanks.To enable/disable alarms for individual tanks use the **Alarm Disconnect** function.

Procedure

1. In the TankMaster workspace, do one of the following:
   - Right-click a tank group in the Workspace window and select **Enable/Disable Leak Alarms**
   - select menu option **Entry** → **Enable/Disable Leak Alarms**



2. Select the **Enable** button to activate the selected leak alarms for all tanks. The **Enable** button is active if the leak alarm is disabled for one or more tanks.
3. Select the **Disable** button to disable the selected leak alarms for all tanks in the selected tank group. The **Disable** button is active if the leak alarm is enabled for one or more tanks.

Related information

Disconnecting alarms

5.10 Alarm setup

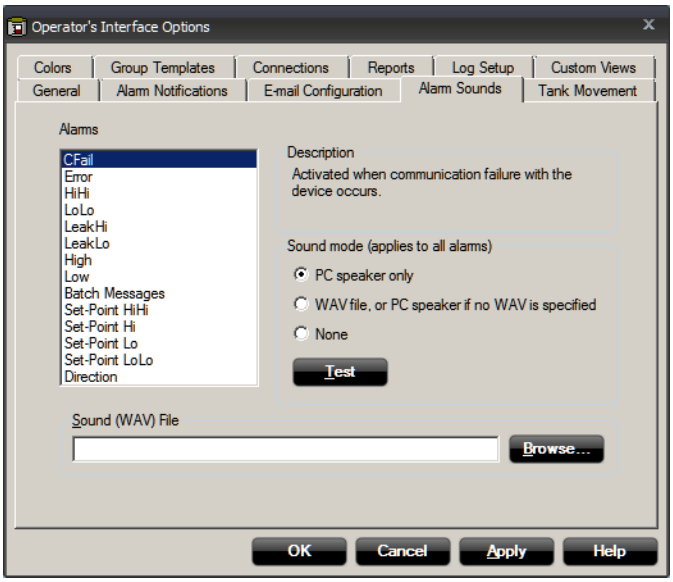
Alarms can be configured to provide unique notifications for specific alarms. Alarm settings can be customized for sounds, colors, notifications, users, and shifts.

5.10.1 Alarm sound notification

Sounds can be used to clearly distinguish between different alarm signals.

Procedure

1. In the TankMaster workspace, select menu option **Tools** → **Options**, and then select the ***Alarm Sounds*** tab.



2. Select an alarm from the **Alarms** list.
3. Choose a **Sound mode** from the following options:
   - PC speaker only - this option uses Microsoft Windows sounds
   - WAV file
   - None - this option disables alarm signaling
4. Repeat Step 2 to Step 3 for as many alarms as required.
5. Click **Apply**, and **OK** to close the program options.

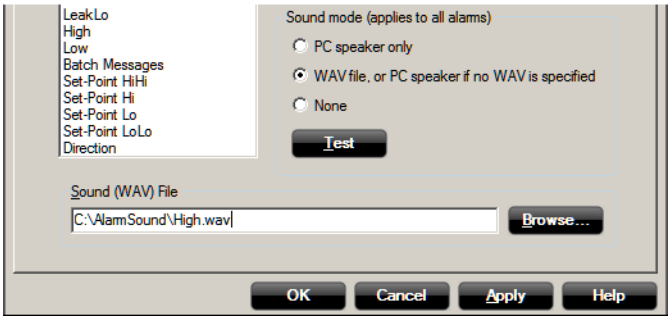
Using a WAV sound

You may use a WAV sound file as alarm signal.

Procedure

1. In the ***Alarm Sounds*** tab, click the **Browse** button.

2. Locate a *.WAV file. Default alarm sounds are available in the following location: `. . .\Rosemount\Tankmaster\Opi\Data`.



5.10.2 Alarm colors

You can configure alarms to be displayed in unique colors.

Related information

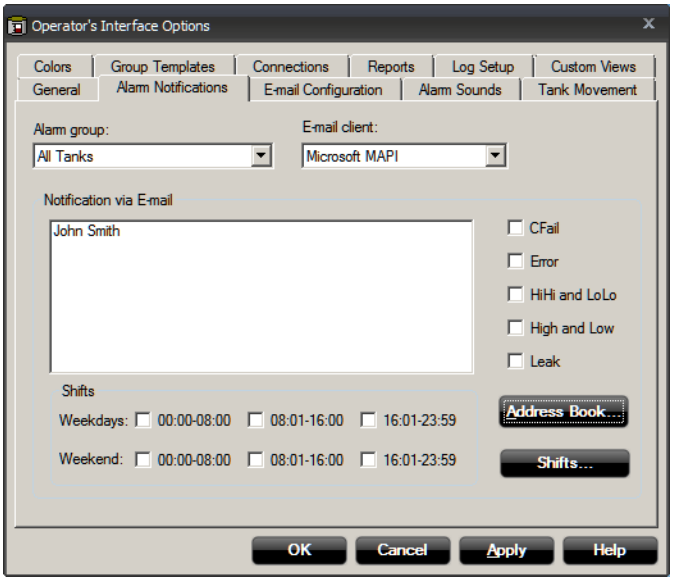
Color settings

5.10.3 Alarm notification via e-mail

WinView can be configured to send notifications via e-mail when an alarm is activated.

Procedure

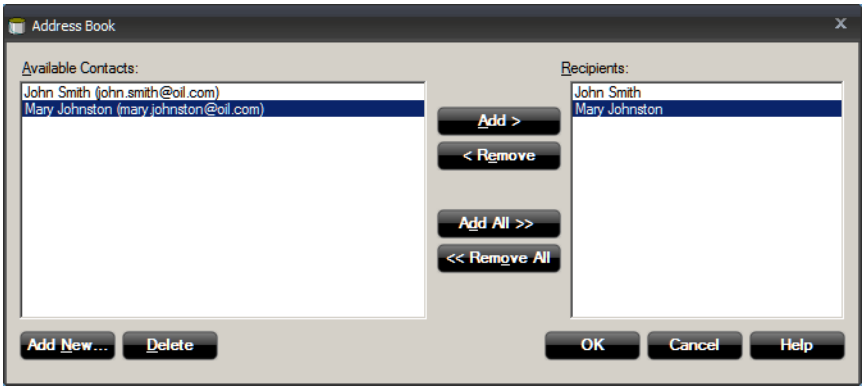
1. In the TankMaster workspace, select menu option **Tools** → **Options**, and then select the ***Alarm Notifications*** tab.



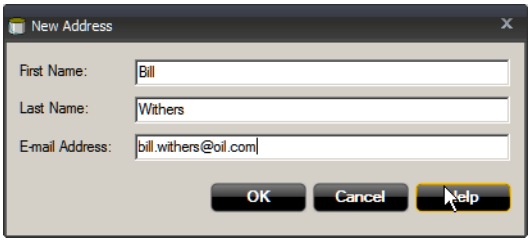
2. From the **Alarm group** drop-down list, select the desired alarm group to configure for notifications.
3. Select an E-mail client for e-mail notifications. The Microsoft MAPI does not require further configuration. To configure the Built-in e-mail client, see E-mail client configuration.

Note
On some systems the MAPI mail client generates a security warning dialog from the server when trying to send an alarm notification. On these systems, the distribution of alarm notifications requires user interaction and no alarm notifications will be sent if the security warning dialog is left unattended.

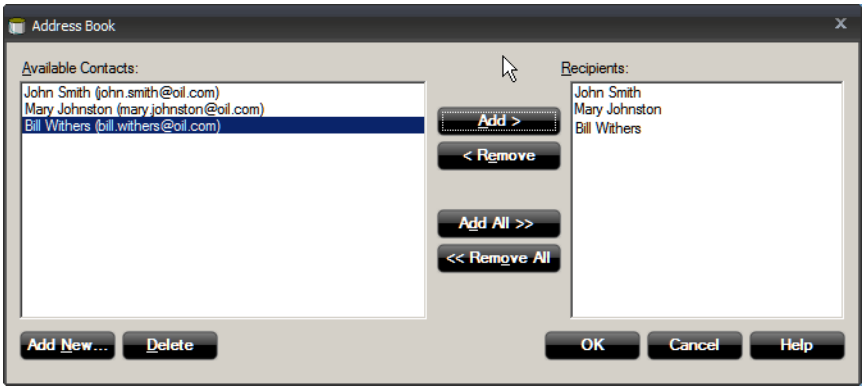
4. Click the **Address Book** button in case you need to add recipients for notification via e-mail.
5. In the ***Available Contacts*** pane, select a name to be included in the list of **Recipients** and click the **Add >** button.



6. Click the **Add New** button if you need to add a new contact to the Address Book.
7. Enter name and e-mail address for the new recipient and click **OK**.



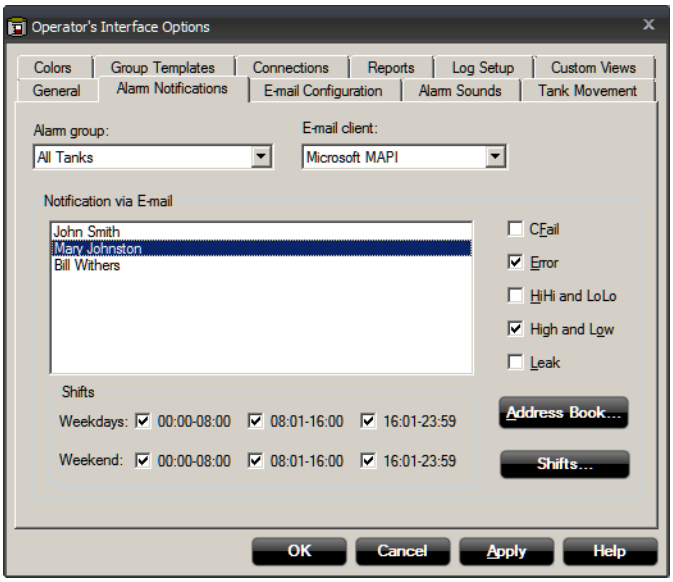
8. Repeat Step 5 to Step 7 for all recipients to be included in the e-mail notification.



Note
To remove a recipient from the **Recipients** list, select a name and click the **Remove** button.

9. Click **OK** to save the configuration and close the ***Address Book*** window.

10. For each e-mail recipient, configure:
    - desired alarms to be included in the e-mail notification (CFail, Error, HiHi and LoLo, High and Low, Leak)
    - one or more weekday and weekend shifts for which the e-mail notification function will be activated



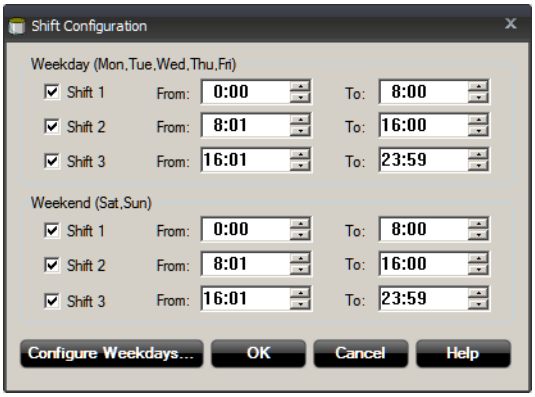
11. Select **OK** to save the current setup.

Configure shifts

This is a description on how to setup weekday and weekend shifts for e-mail alarm notifications.

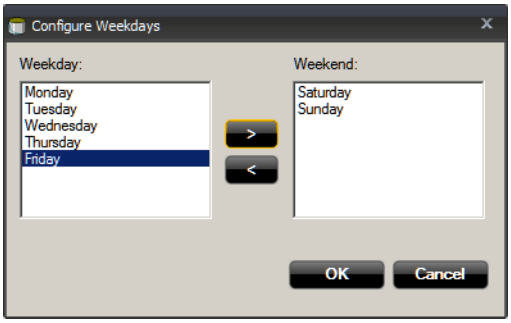
Procedure

1. In the ***Alarm Notifications*** tab, click the **Shifts** button.



2. Select desired shifts for which notifications will be sent.
3. Configure start and stop times for shifts using the **From** and **To** fields.

4. Click **Configure Weekdays** to specify days for **Weekday** and **Weekend**.



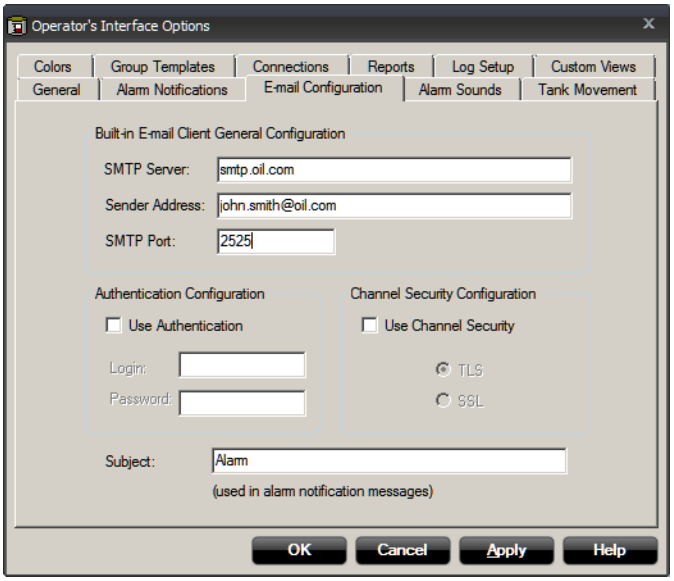
5. Click **OK**.

5.10.4 E-mail client configuration

Rosemount TankMaster™ has a built-in e-mail client which allows alarm notifications, reports and other e-mails without using a third-party e-mail client.

Procedure

1. In the TankMaster workspace, select menu option **Tools** → **Options**, and then select the ***E-mail Configuration*** tab.



2. Configure the following options:

SMTP Server	Specify an SMTP server for outgoing messages. Contact your LAN administrator or Internet Service Provider (ISP) for details.
Sender Address	The e-mail account which will send e-mails from the current workstation must be located on the specified SMTP server.
SMTP Port	Optional. Contact your LAN administrator or ISP for details.
Authentication Configuration	Select this option and enter a **Login** name and **Password** if authentication is required on the mail server. Contact your LAN administrator or ISP for details.
Channel Security Configuration	Select this option if the e-mail client requires the use of channel security. Contact your LAN administrator or ISP for details.
Subject	Enter a title for an e-mail alarm notification. The subject is only used for alarm notification and is optional. This subject will not be used for other e-mails sent from the built-in e-mail client.

3. Click **OK**.

6 Reports

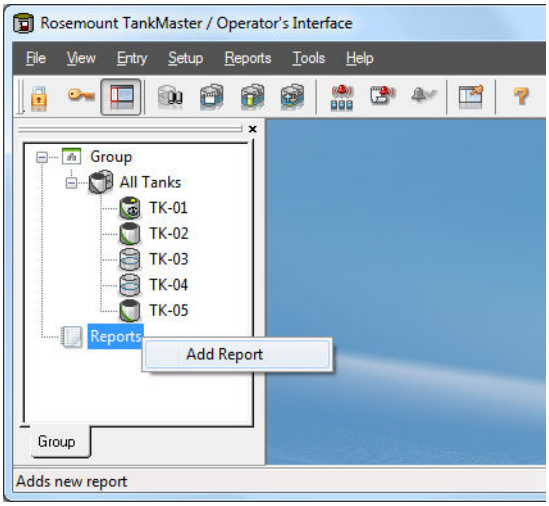
Rosemount TankMaster™ allows you to create reports to be scheduled for automatic distribution. The reports provide inventory information on tanks and their contents.

6.1 Automatic reports

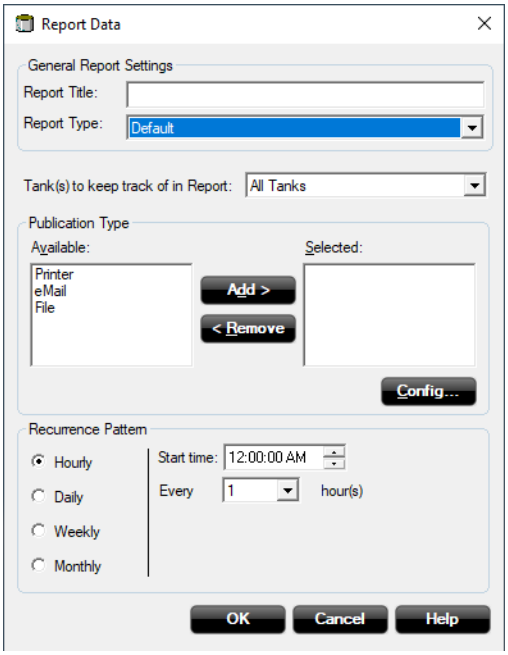
TankMaster WinView lets you specify reports to be distributed at a predefined schedule.

Procedure

1. In the WinView workspace select the **Reports** icon.
2. To set up a scheduled automatic report, do either of the following: Click the right mouse button and select **Add Report**.
   - In the TankMaster workspace Groups view, right-click the **Reports** icon and select **Add Report**
   - Select the **Reports** icon in the ***Groups*** view and open menu option **Reports** → **Add Report**
   - Open menu option **Tools** → **Options**, select the ***Reports*** tab, and click **Add**



3. The ***Report Data*** window lets you specify the following:
   - report title
   - tanks to send reports to
   - how the report will be distributed (publication type): via email, printer, or stored in text file format.
   - recurrence pattern, i.e. how often the report will be sent



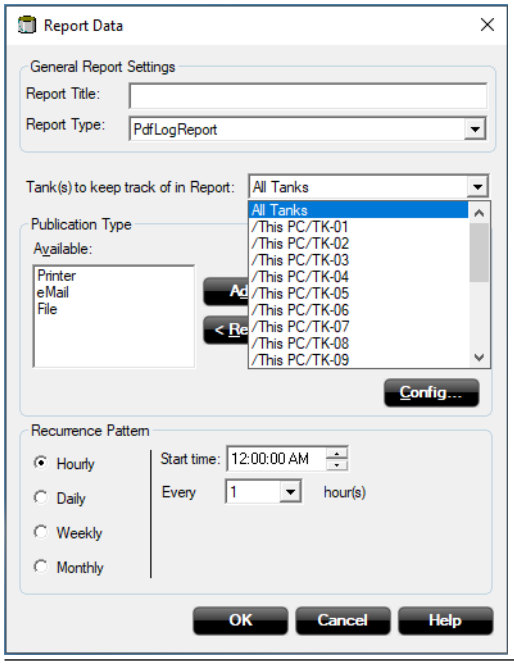
6.1.1 Tanks in report

To define for which Tank/Tanks the report should be published, select the desired option in the ***Tank(s) to keep track of in Report*** pane.

Select for which tank the report should be published.

Select All Tanks to include all tanks in the report, or select a specific tank.

Figure 6-1: Adding tanks to a report



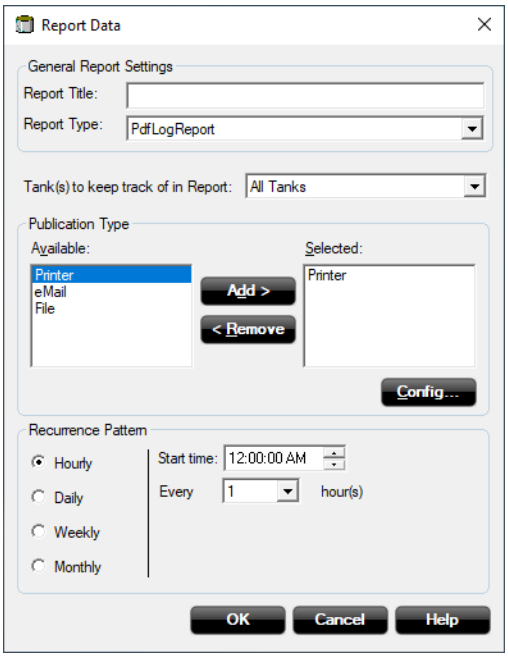
6.1.2 Configure publication type

Reports can be printed, sent by e-mail as well as saved in text file format to be opened by any program which can handle text files.

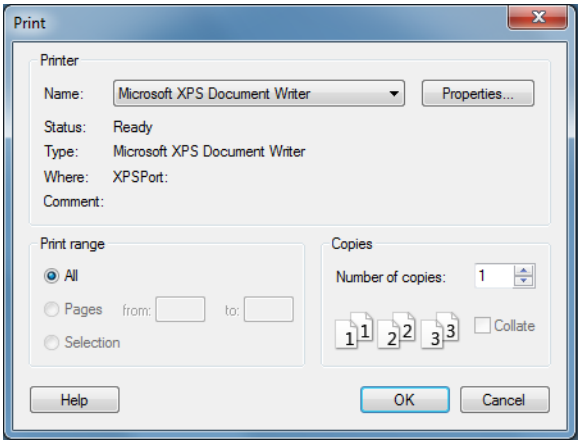
Configure printed report

Procedure

1. In the **Publication Type/Available** pane, double click **Printer**, or select **Printer** and click the **Add** button.
2. In the **Selected** pane on the right-hand side, select **Printer** and select the **Config** button.



3. Select the desired printer for publishing.

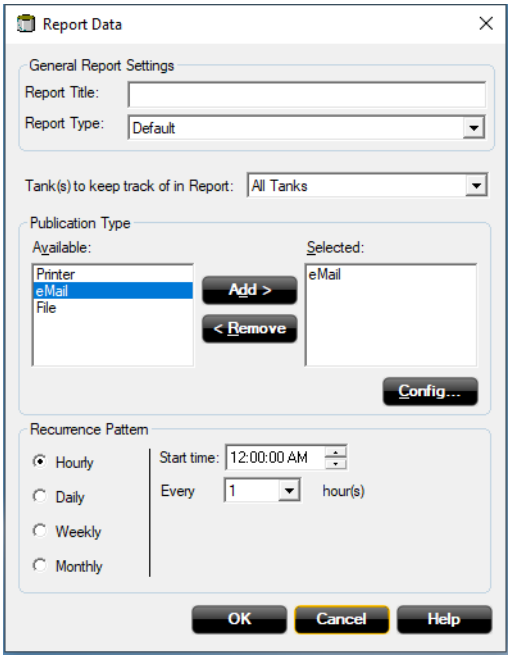


4. Click **OK**.

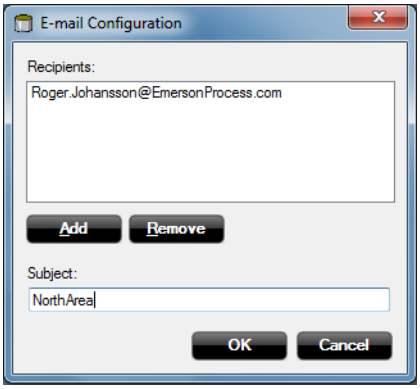
Configure email reports

Procedure

1. In the **Available** pane, double click **eMail**, or select **eMail** and click the **Add** button.



2. In the **Selected** pane on the right, select **eMail** and click the **Config** to add recipients and e-mail subject.



3. Click **Add** to add a **recipient** for the e-mail report. Repeat this for each recipient.
4. Add an e-mail **subject**.
5. Click **OK**.

   To create more e-mail distribution lists, repeat this procedure. The selected report will be sent to all e-mail distribution lists in the **Selected** pane on the right-hand side of the ***Report Data*** window.

Related information

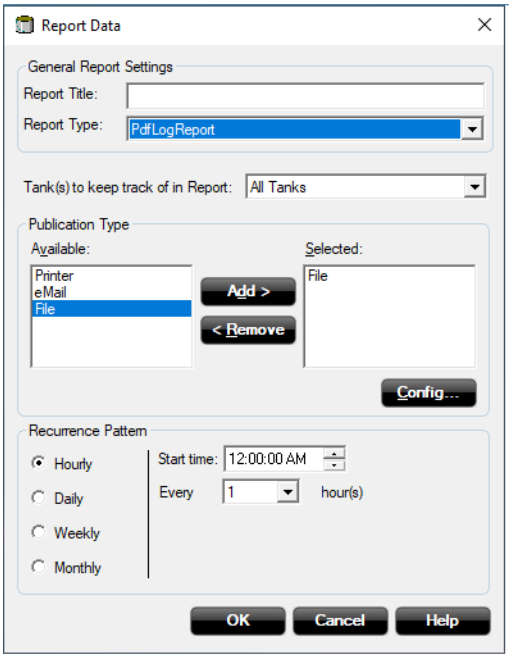
E-mail client configuration

Configure file reports

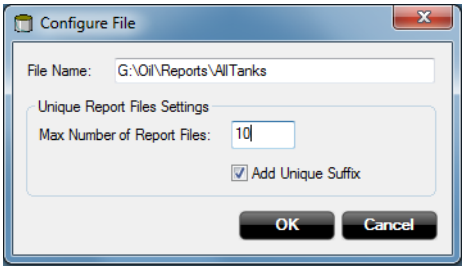
Reports can be saved as text file or pdf report.

Procedure

1. In the **Available** pane, double click **File**, or select **File** and click the **Add** button.
2. In the **Selected** pane on the right, select **File** and click **Config**.



3. Enter a path to the folder where the report will be saved and a file name.



4. To add a unique suffix to the report files, check the **Add Unique Suffix** check box. In this example, the first report file will be called ***AllTanks_1.txt***, the second report file ***AllTanks_2.txt***, and so on. When the **Max Number of Report Files** is reached, the oldest report file will be overwritten.
5. Enter a maximum number of report files to be saved. In this example, when ***AllTanks_10.txt*** has been created, the next file will be ***AllTanks_1.txt***, and the previous file with that name will be overwritten.
6. Click **OK**.

Note
If only a file name is specified with no directory, report files are saved in the **default folder**: **...\Rosemount\TankMaster\Opi\Shared**.

6.1.3 Recurrence pattern

To define how often a report will be automatically distributed:

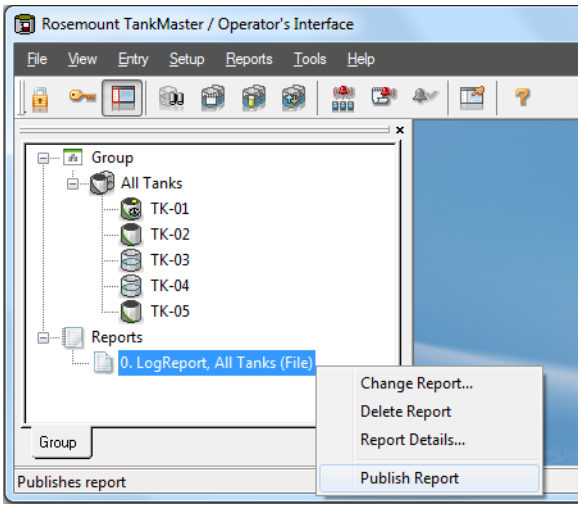
- select either hourly, daily, weekly, or monthly
- specify a start time and frequency

6.2 Publishing a report

The ***Report Data*** window lets you set up reports for **automatic** publishing according to configured settings. In addition to automatic scheduling, a report can also be **manually published** at any time you like using the configured settings for publication and distribution.

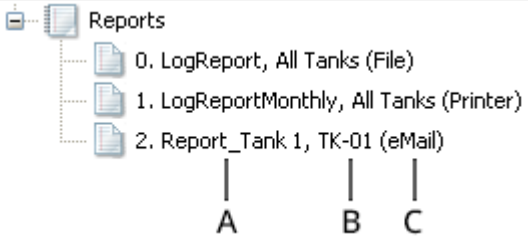
Procedure

1. In the WinView workspace, select the desired report.
2. Do one of the following:
   - Click the right mouse button and select **Publish Report**
   - select menu option **Reports** → **Publish Report**



The selected report will be published according to the configured **Report Type** and **Publication Type** settings for that report.

In addition to the **Publish Report** option, the **Reports** menu lets you change, delete, and review reports.



A. Report title
B. Tank
C. Publication type

7 Audit log

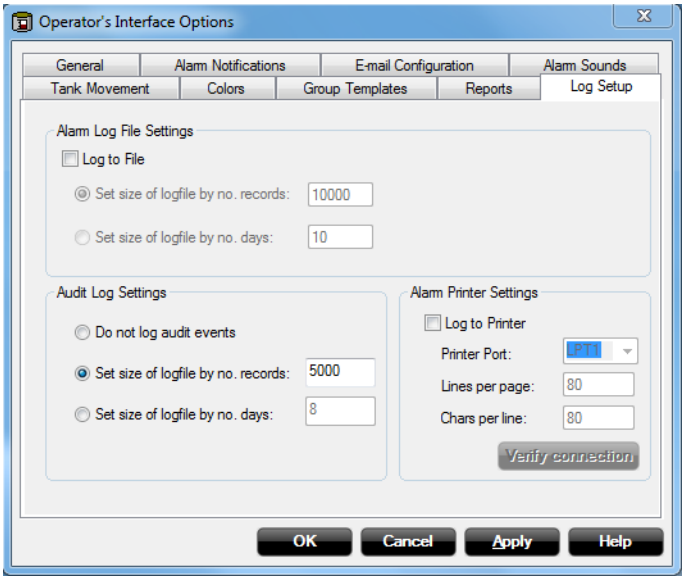
The Audit Log function enables operations performed by a Rosemount TankMaster™ user to be recorded. Audit log records can include events and actions such as changing alarm limits, logging on or off, and setting parameter values manually.

7.1 Setup an audit log

The Audit Log function can be enabled or disabled at any time.

Procedure

1. In the TankMaster workspace, select menu option **Tools** → **Options**, and then select the ***Log Setup*** tab.



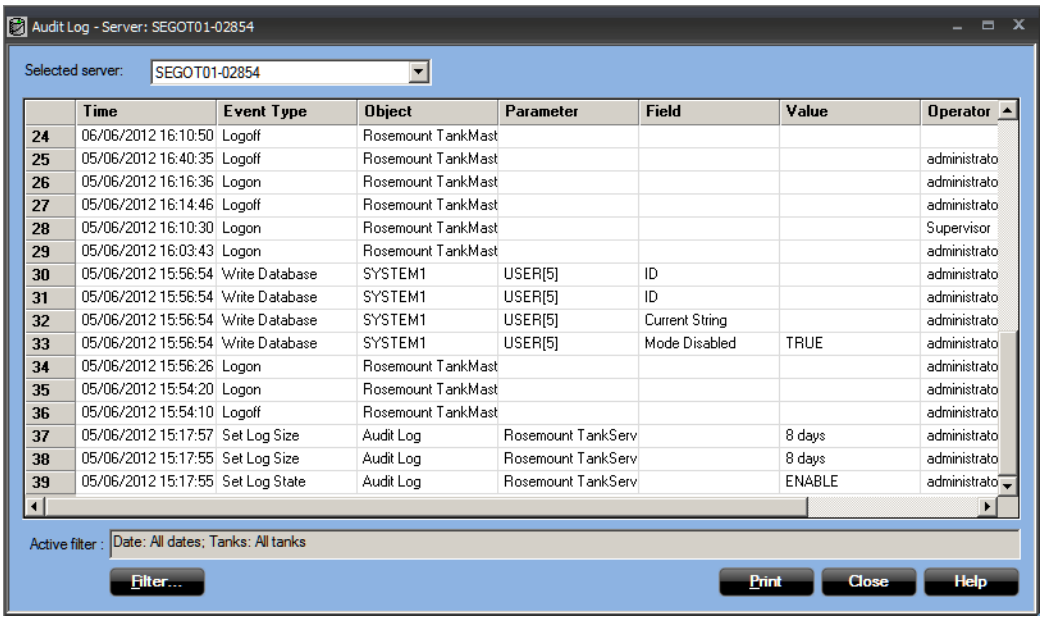
2. Under **Audit Log Settings**, select the desired Tankserver to be monitored by the **Audit Log** function.
3. Activate the **Audit Log** function by selecting one of the two options:
   - Set size of log file by number of records
   - Set size of log file by number of days

   Either of these two options can be used to limit the size of the Audit Log file. When the file reaches its limit, the oldest records will be removed as new records are stored.
4. Click **OK**, or **Apply** to activate the new settings.

7.2 Viewing the audit log

Procedure

1. In the TankMaster workspace, select menu option **Tools** → **View Audit Log**.
2. Select a server. The Audit Log can only be viewed for one tank server at a time.



	Time	Event Type	Object	Parameter	Field	Value	Operator
24	06/06/2012 16:10:50	Logoff	Rosemount TankMast				
25	05/06/2012 16:40:35	Logoff	Rosemount TankMast				administrato
26	05/06/2012 16:16:36	Logon	Rosemount TankMast				administrato
27	05/06/2012 16:14:46	Logoff	Rosemount TankMast				administrato
28	05/06/2012 16:10:30	Logon	Rosemount TankMast				Supervisor
29	05/06/2012 16:03:43	Logon	Rosemount TankMast				administrato
30	05/06/2012 15:56:54	Write Database	SYSTEM1	USER[5]	ID		administrato
31	05/06/2012 15:56:54	Write Database	SYSTEM1	USER[5]	ID		administrato
32	05/06/2012 15:56:54	Write Database	SYSTEM1	USER[5]	Current String		administrato
33	05/06/2012 15:56:54	Write Database	SYSTEM1	USER[5]	Mode Disabled	TRUE	administrato
34	05/06/2012 15:56:26	Logon	Rosemount TankMast				administrato
35	05/06/2012 15:54:20	Logon	Rosemount TankMast				administrato
36	05/06/2012 15:54:10	Logoff	Rosemount TankMast				administrato
37	05/06/2012 15:17:57	Set Log Size	Audit Log	Rosemount TankServ		8 days	administrato
38	05/06/2012 15:17:55	Set Log Size	Audit Log	Rosemount TankServ		8 days	administrato
39	05/06/2012 15:17:55	Set Log State	Audit Log	Rosemount TankServ		ENABLE	administrato

The **Audit Log** displays the time stamps for each event and the Operator who was logged on at the time.

The **Filter** button allows you to record events over a certain time period, and for specific tanks.

7.3 Filtering the audit log

The Audit Log can be set up to record events over a certain period of time and for specific tanks.

The **Filter** button in the ***Audit Log*** window opens the ***Audit Log Filter Settings*** window which allows you to record events over a certain time period, and specific tanks.

To configure desired filtering options, open menu **Tools** → **View Audit Log** and select the **Filter** button.

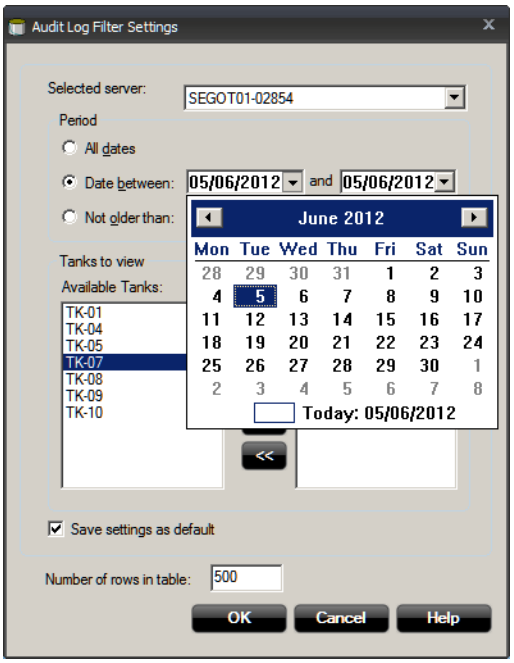
7.3.1 Filtering by date

There are three options available for date filtering:

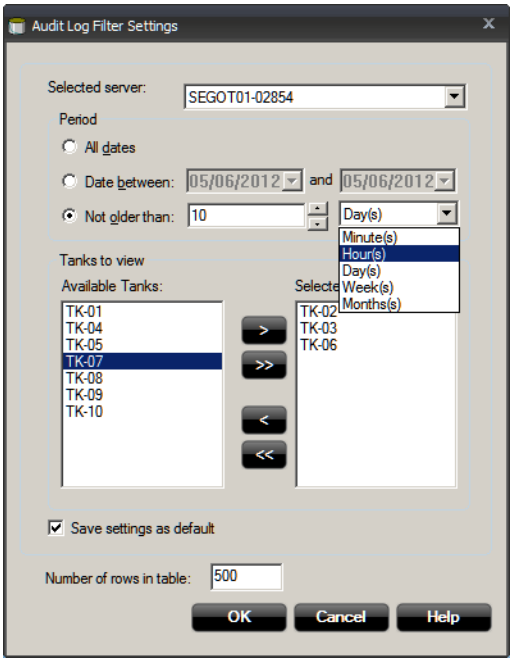
- All dates
- Date between
- Not older than

Procedure

1. In the TankMaster workspace, select menu option **Tools** → **View Audit Log**.
2. In the ***Audit Log*** window, select the **Filter** button.
3. To log events within a certain period, select **Date between** and set the dates using the pop-up calendar.



4. To limit the audit log to events which are not older than a specific period, select **Not older than**. The log can be limited to minutes, hours, days, weeks, or months.



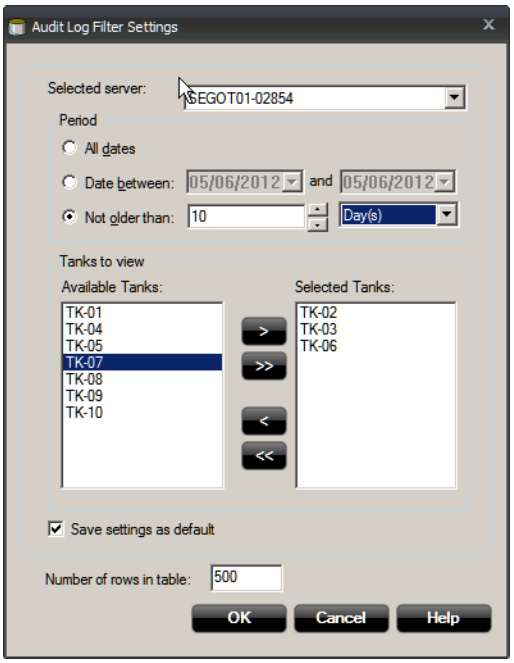
5. Select **All dates** in case you want to disable filtering by date. All records regardless of date appear in the ***Audit Log*** window.

7.3.2 Filtering by tanks

The audit log can be filtered to display only those events which are related to specific tanks.

Procedure

1. In the TankMaster workspace, select menu option **Tools** → **View Audit Log**.
2. In the ***Audit Log*** window, select the **Filter** button:



3. In the **Available Tanks** pane, select a tank to be included in the audit log.
4. Click the **Add** > button. The tank appears in the **Selected Tanks** pane on the right.
5. Proceed by adding the desired tanks to appear in the ***Audit Log*** window.

   Click the **Add All** >> button in case you want to include all tanks.

   You can remove tanks by using the **Remove** < and **Remove All** << buttons. Tanks can also be added and removed by double-clicking an entry.
6. To set the maximum number of rows to be displayed in an audit log, enter a number between 1 and 5000 in the **Number of rows in table** field.
7. In case you want to save the current settings as default, select the **Save settings as default** check box.
8. Click the **OK** button to save the current filtering settings.

8 Customizing the layout

You can create customized menus, windows and tool bars. This enables you to add a menu item to the **Tools** menu for easy access to a program, such as TankMaster WinSetup, or design windows showing specific parameters.

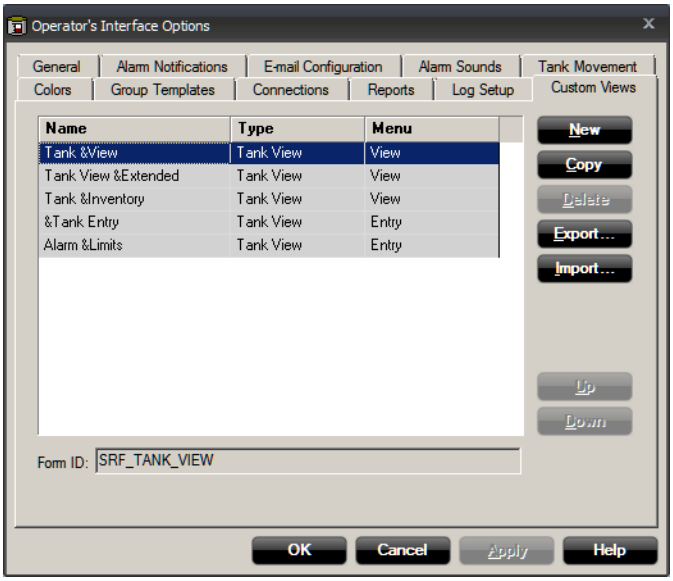
8.1 Create a customizable window

This is a description of how to create a customizable window in TankMaster WinView. Once it is created you may modify it to fit your requirements.

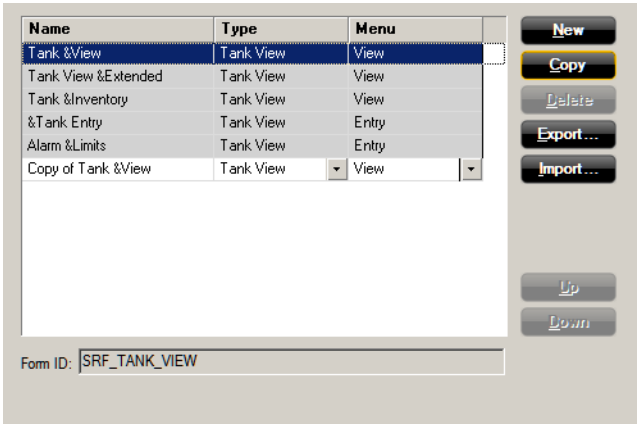
There are five default options available that you can edit to create a customizable window. You may also create an entirely new window.

Procedure

1. Select menu option **Tools** → **Options** and select the ***Custom Views*** tab.

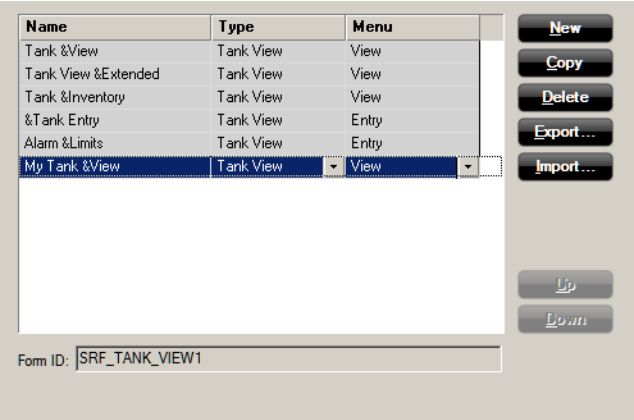


2. Select a view to edit, for example Tank &View, and click **Copy**.



3. Double-click the **Name** field and rename your customized view.

4. Enter a new name and click **OK**.



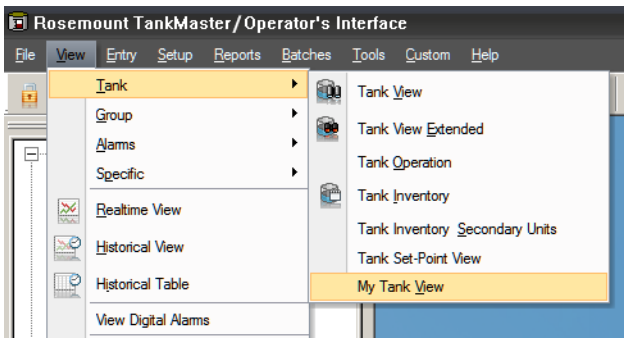
The new name appears in the **Name** column.

8.1.1 Custom views

The new window will be available in menu option **View>Tank**.

Example

In this example, the custom window is available in **View** → **Tank** → **My Tank View**:



8.2 Edit customizable window

A customizable window is available in the **View** menu. For TankMaster WinOpi a customizable window may also be available in the **Entry** menu, depending on the menu option chosen when creating the window.

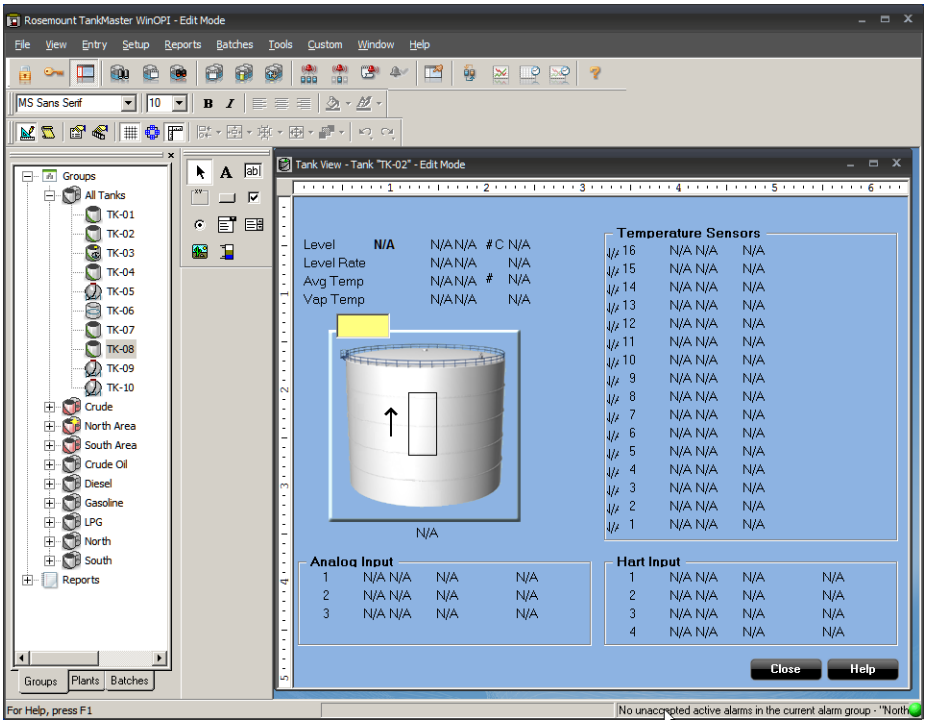
The following description is an example of how to modify the design and appearance of a customizable window.

Procedure

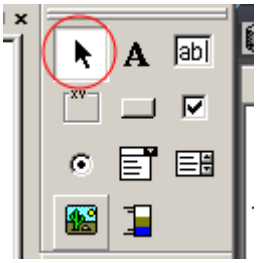
1. Select a tank in the TankMaster workspace and open a customizable window.

   Note
   Only windows which have been created as Custom Views can be edited. The Edit Tools feature is not available for standard windows.

2. Press **Ctrl+E** when the customizable window is active to open the **Edit Toolbox**:

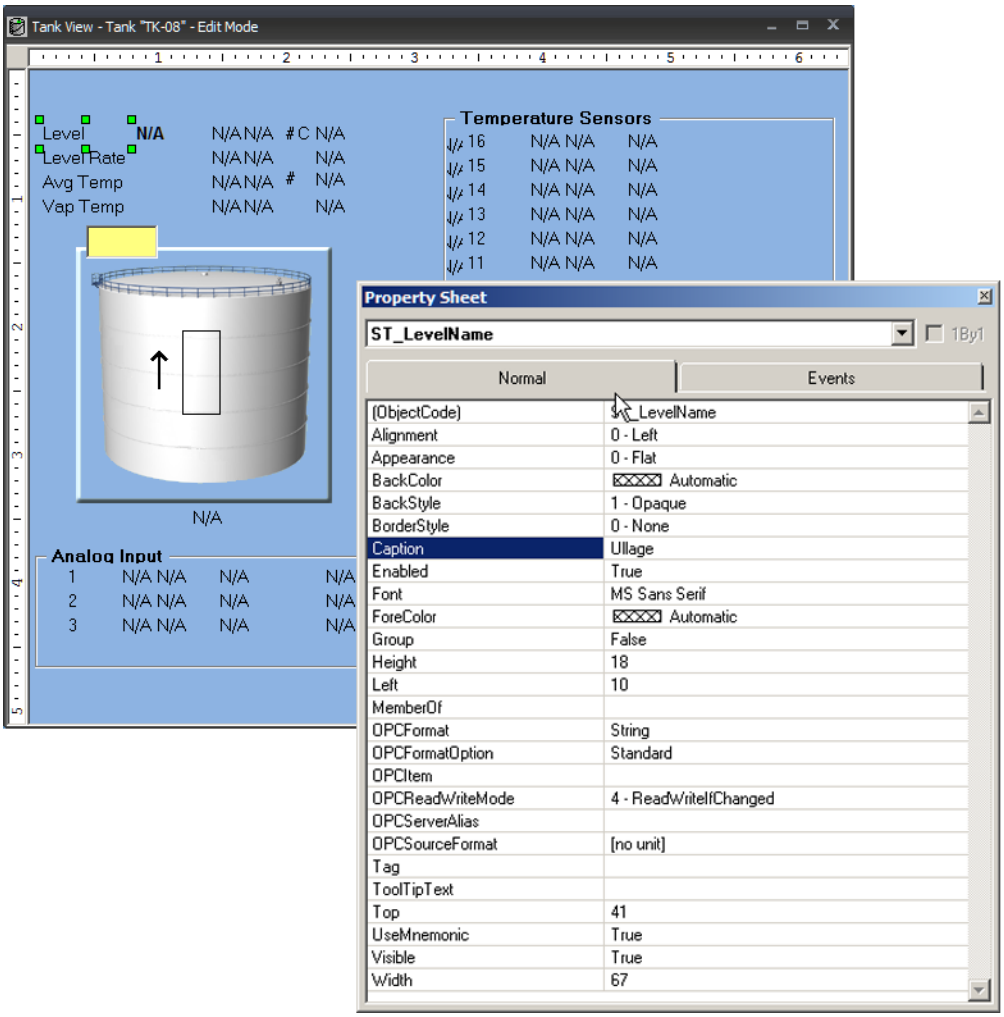


3. Choose the **Selection Tool** in the edit toolbox.



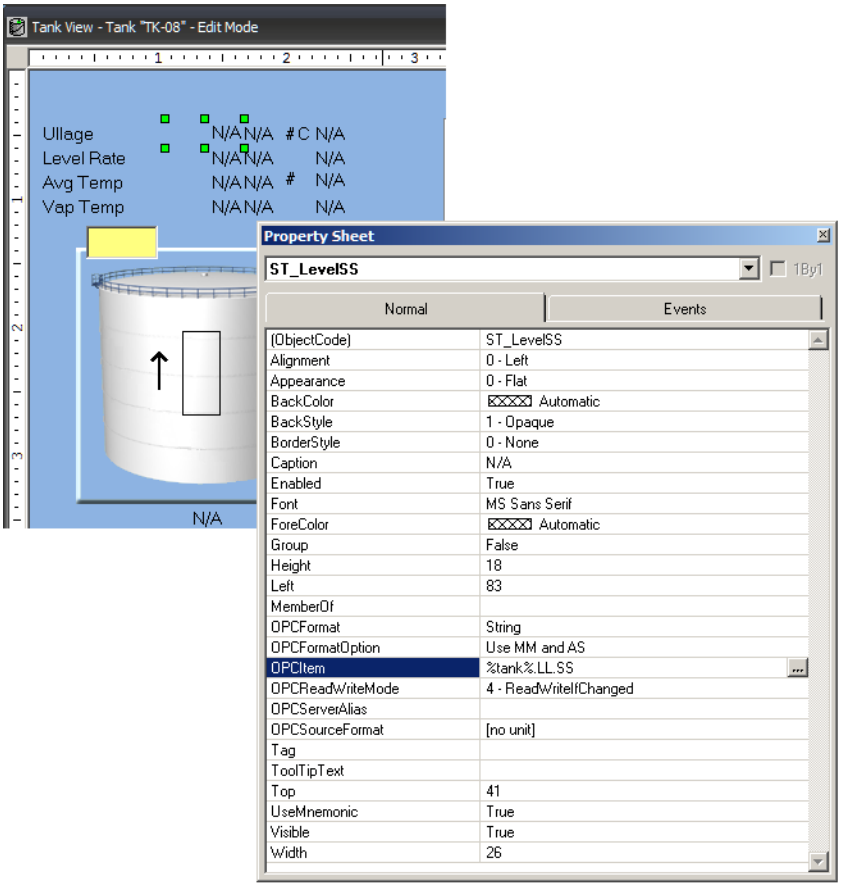
The **Selection Tool** lets you select items in the customizable window. Then you can delete or move items such as, for example, HART Input or Analog Input.

4. To change, for example, **Level** to **Ullage** in the tank view, the following actions must be performed:
   - Change the text label from **Level** to **Ullage**
   - Change the OPC item **Current Value (CV)** for level to Current Value for ullage
   - Change the OPC item **Value Unit (VU)** for level to Value Unit for ullage
   - Change the OPC item **Alarm Status (AS)** for level to Alarm Status for ullage
5. To change the text label from **Level** to **Ullage**, select the Level text block and right click to open the ***Property Sheet***:



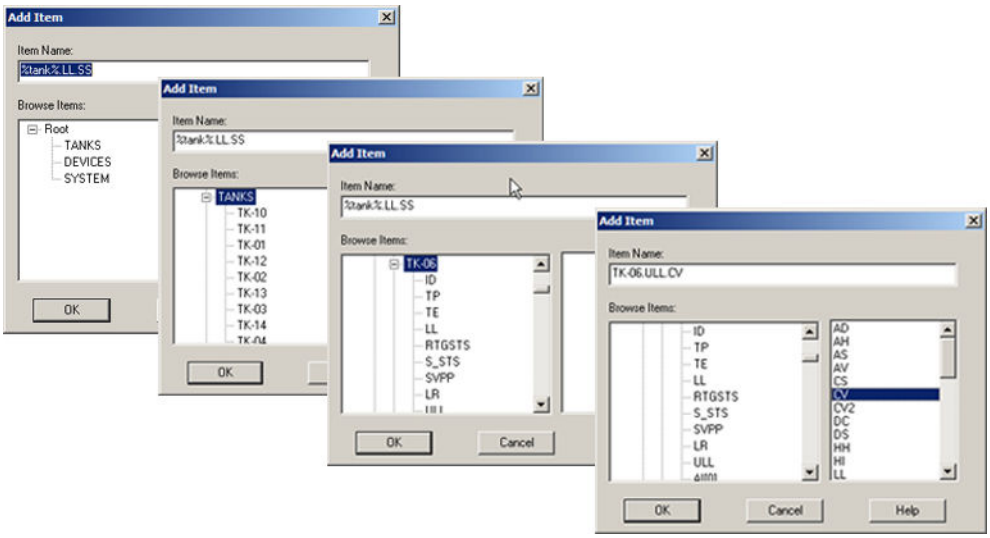
6. In the ***Property Sheet***, double-click on the **Caption** entry and change **Level** to **Ullage**.
7. Close the ***Property Sheet*** window to verify the change.

8. To change the OPC item **Current Value (CV)** for **Level** to **Current Value (CV)** for **Ullage**, right click the parameter block to bring up the ***Property Sheet***:



9. In the ***Property Sheet***, select **OPCItem** in the left-hand column and click the browse ... button.

10. In the ***Browse OPC Items*** window, open TANKS>%tank%>ULL>CV:
    a) Click on **TANKS** and browse to find the name of the tank to be edited. In this example, TK-06.
    b) Select the item **ULL**.
    c) Select the item **CV**.
    d) The **Item Name** shown should be **%tank%.ULL.CV**. In this example; **TK-06.ULL.CV**.

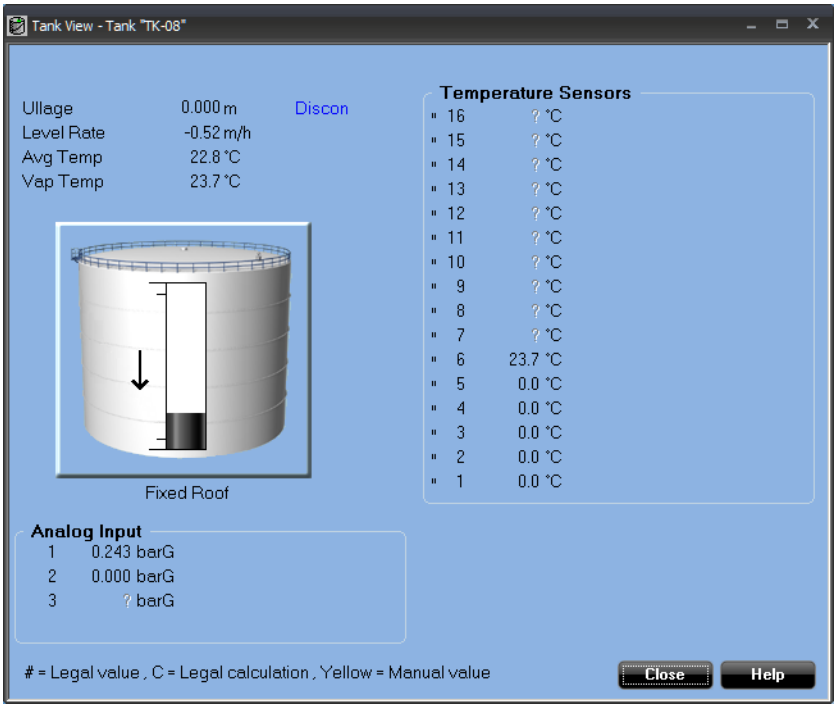


11. Click **OK**.
12. Now repeat these steps for the other OPC items in the same way. Select the corresponding parameter block, right-click to bring up the ***Property Sheet***, and edit the OPC items:

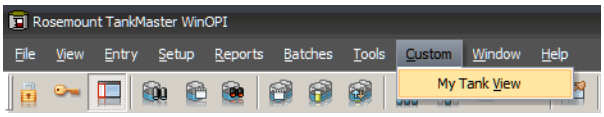
OPC Item	Original Value	New Value
Value Unit (VU)	%tank%.LL.VU	%tank%.ULL.VU
Alarm Status (AS)	%tank%.LL.AS	%tank%.ULL.AS

13. To exit **edit** mode, press `Ctrl+E`.

14. Open the customized window from the **View** or **Entry** menu depending on the selected option when creating the customizable window, and verify the changes:



15. Optional: The customized window can also be opened from the **Custom** menu:



9 Servo commands

For tanks configured as servo tanks, it is possible to send commands to a servo gauge using the ***Servo Command*** window.

9.1 Sending a servo command

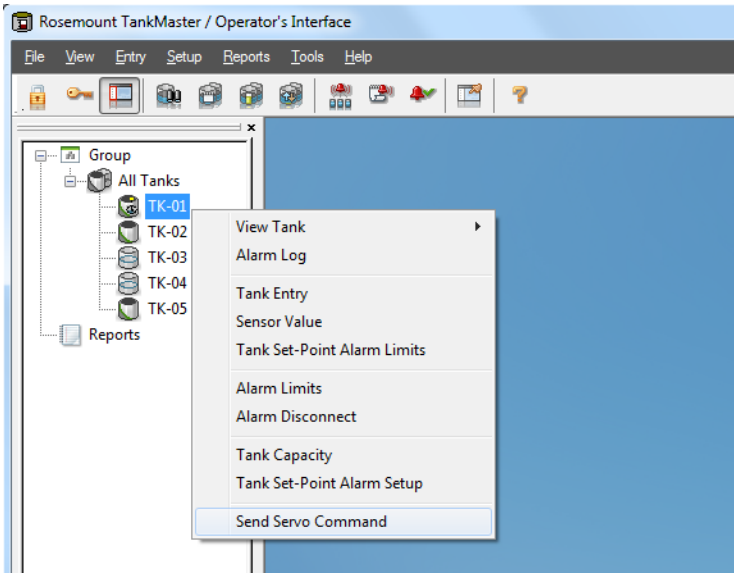
Prerequisites

To send a servo command, the tank must be configured as a servo tank.

See the Rosemount Tank Gauging System Configuration manual for more information.

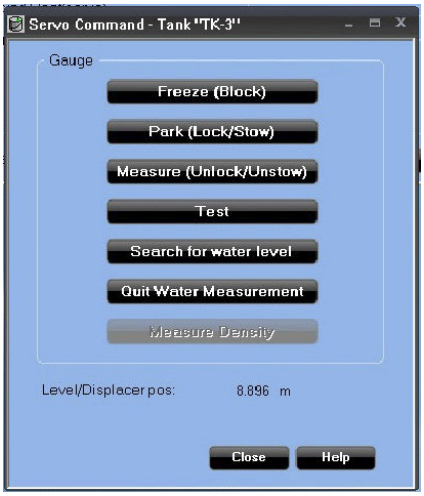
Procedure

1. Right-click on a servo tank in the Workspace window. Do one of the following:
   - Select **Send Servo Command**
   - Select main menu option **Entry → Send Servo Command**



The ***Servo Command*** window appears.

2. Click the desired servo command.



When a servo command is sent, the **Level /Displacer position** field in the ***Servo Command*** window turns orange and the servo state is displayed to the left of the **Level /Displacer position**.

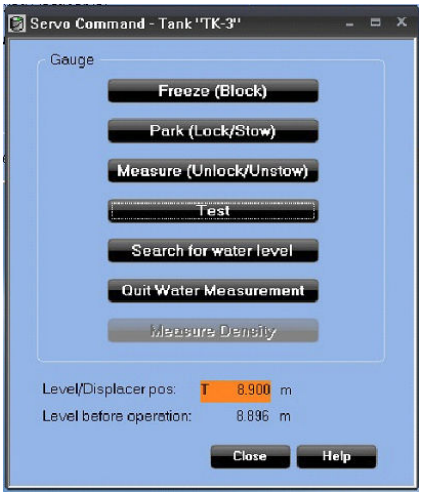
3. Click **Close**.

Note

Before you close the ***Servo Command*** window, verify that the servo command indicator next to **Level /Displacer pos** field is cleared.

Example

For example, in case the **Test** command was sent to the gauge, ensure that **T** (Test) is not visible before you close the window.



9.1.1 Servo commands

Table 9-1: Servo Commands

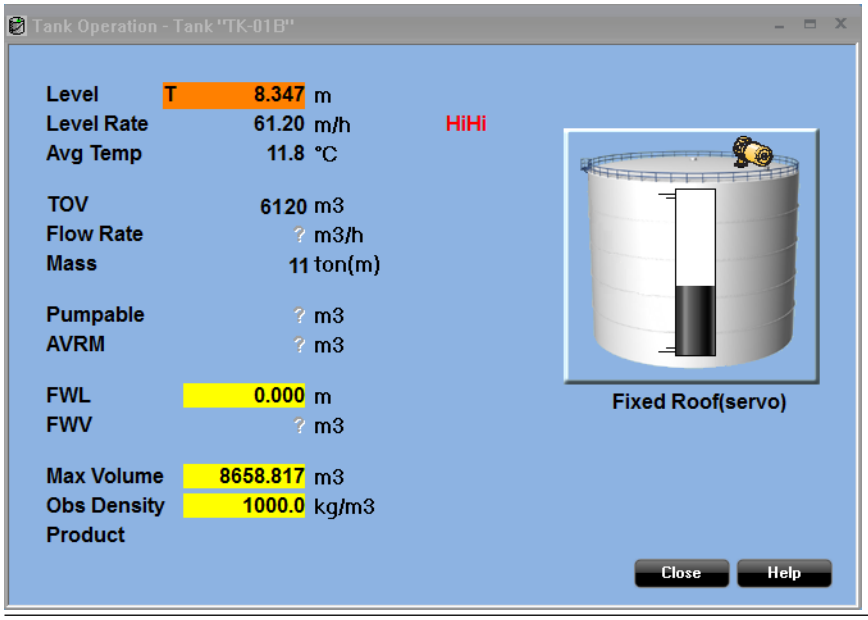
Command	Description
Freeze (Block)	Holds the displacer in its current position.
Park (Lock/Stow)	Raises the displacer to the top of the tank.
Measure (Unlock/Unstow)	Unlocks the gauge after Freeze or Park, and the displacer moves to the surface of the product.
Test	Raises the displacer and then returns it to the surface of the product.
Search for water level	Initiates a search for the product/water interface.
Quit Water Measurement	Quit measuring the water interface and return to measure the product level.
Measure Density	Displacer will be lowered into the product to measure the product density.

9.1.2 Tank operation and active servo command

In the ***Tank Operation*** window, the Level position field turns orange. All Inventory calculations field are disabled as long as the servo command is executed.

Note
When a servo command is active, the Level value does not show the current product level. The level shown is the current displacer level.

Figure 9-1: Tank Operation and Active Servo Command



9.2 Servo states

The table below shows the different servo commands and servo states shown when using CIU and Rosemount 2460 System Hub.

The Up, Freeze and Down states refer to the displacer movement.

Table 9-2: Servo States

Servo Command	Displayed servo state in Windows					
	Enraf® CIU			Rosemount 2460 System Hub		
	Raise	Freeze	Lower	Raise	Freeze	Lower
Freeze (Block)	-	F	-	-	F	-
Park (Lock/Stow)	P	F	-	P	F	-
Measure (Unlock/ Unstow)	-	-	T	-	-	T
Test	T	-	T	T	-	T
Search for water level	-	W	?	-	-	D
Water found				-	W	-
Quit water measurement	T	-	-	T	-	-
Measure density	R	-	R	R	-	R

Note
When a servo command is active and the displacer is in movement, the active device communication is prioritized.

Additional states

Table 9-3: Servo States

Servo state character	Displayed servo state
?	Reduced accuracy
M	Warning
!	Unsupported status
T	Temperature

OPC and Modbus

The current servo command is viewable via OPC or Modbus from a host computer.

To view the servo command status via OPC, use the **TK.xx.LL.SS** tag.

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