User Manual
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Aperio

User Manual

EMERSON

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As each system may be configured for each delivery, the content and illustrations in this manual may differ from your system.

User Manual for Aperio software version 6 in English

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Abbreviation and Denomination

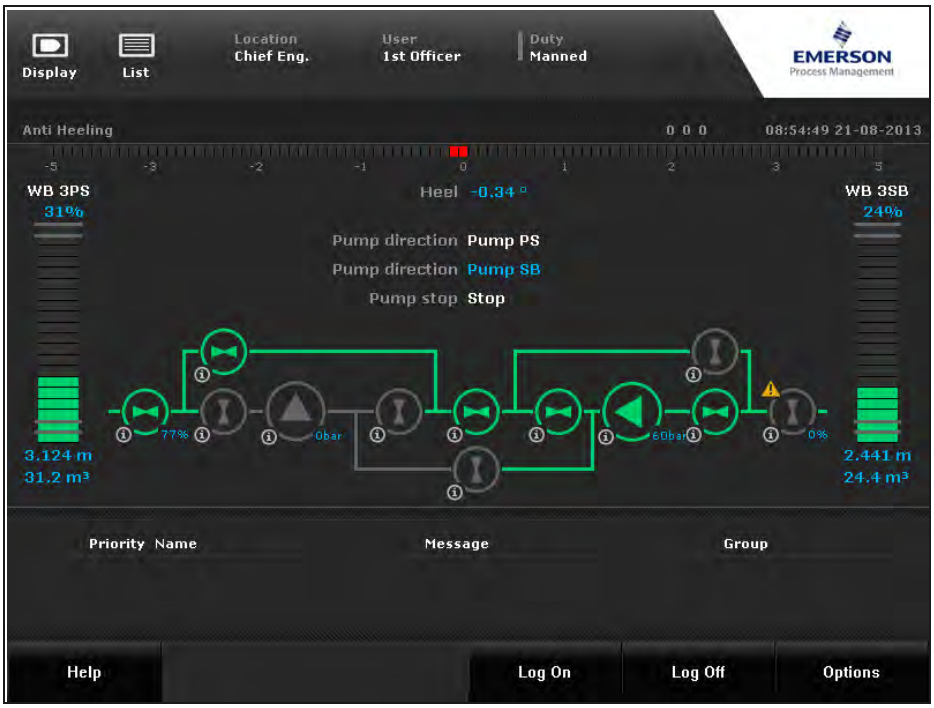
CMS	Cargo Monitoring System
CSV	Comma Separated Values
DPI-C	Direct Position Indicator - Continuous
DPI-E	Direct Position Indicator - End Stop
ESD	Emergency Shut Down
GMT	Greenwich Mean Time
Hash Code (SHA-1)	Cryptographic hash function designed by the United States National Security Agency
ICMS	Integrated Control and Monitoring System
LPU	Local Power Unit (Valve actuator)
NAS	Network Attached Storage
PMS	Power Management System
SG	Specific Gravity
UMS	Unmanned Machinery Space
VPI-C	Volumetric Position Indicator - Continuous
VPI-E	Volumetric Position Indicator - End Stop
VRC	Valve Remote Control
WS	Workstation

Software Guideline

A Short Guideline to the

Aperio Software

Description



This is an example of a 10" local operator panel.

Aperio is a computer based system developed for tank monitoring, valve and pump control and alarm acquisition in marine applications. It is a marine management solution suited for a number of stand-alone systems such as:

- Ballast tanks
- Bilge wells
- Service tanks
- Cargo tanks
- Bunkering
- Fuel oil consumption
- Machinery and service systems
- Other systems

Aperio can also be combined in an integrated control and monitoring system (ICMS).

Short History

The Aperio marine integrated control and monitoring system is a general system developed to solve any automation task onboard.

Development of the system started back in 1985. At that time the first computer based tank contents computer was launched. Subsequently the concept was extended to include valve and pump control and alarm acquisition. Ongoing development of the system has led to today's system, with thousands of vessels in service worldwide.

The operation of the system can be done from different sizes of operator panels, for example from a small operator panel of 10" (inch) that can be used for local control and accommodation alarm panel or a workstation with 24" wide screen. The same user interface is used on all sizes of workstations.

How to Operate Aperio

This part describes how to operate the software and an explanation of the symbols and functions used within the system.

Aperio is based on the Microsoft® Windows philosophy.

For optimal use of all Aperio facilities it is recommended to become acquainted with the general Windows based principles.

The following pointer symbols are Windows standard icons:

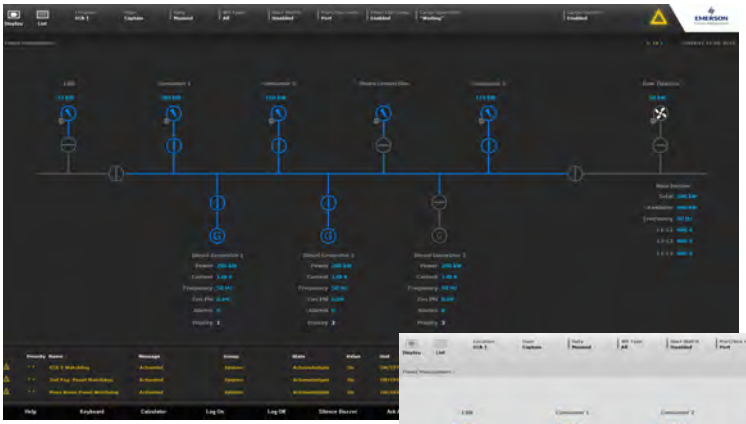
	The mouse, track ball or touch screen operated pointer is symbolized by an arrow.
	To indicate the possibility of activating something the cursor will change from an arrow to a hand symbol. If the hand is placed on a component for a few seconds, a small tool tip is displayed with the name of the component.
	Activating the left mouse button the hand symbol will change as shown.

The pointers symbolizing a hand applies to icons related to components i.e. pumps, valves, display selections etc. and only in run-mode.

The pointers symbolizing an arrow applies to programmed facilities, such as a menu bars, etc.

Themes

In order get a clear read-out, the operator has the possibility to select between two different themes.

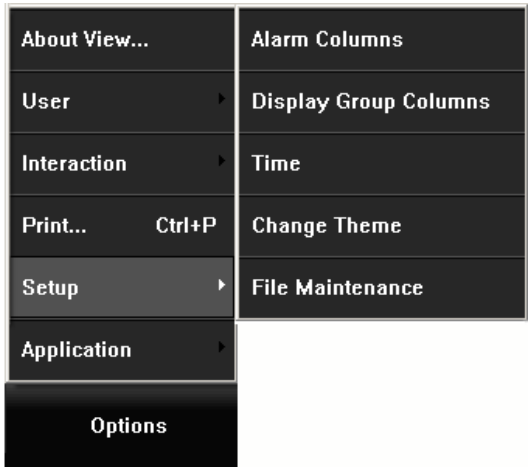


The main theme is "dark" and can be used on most applications.

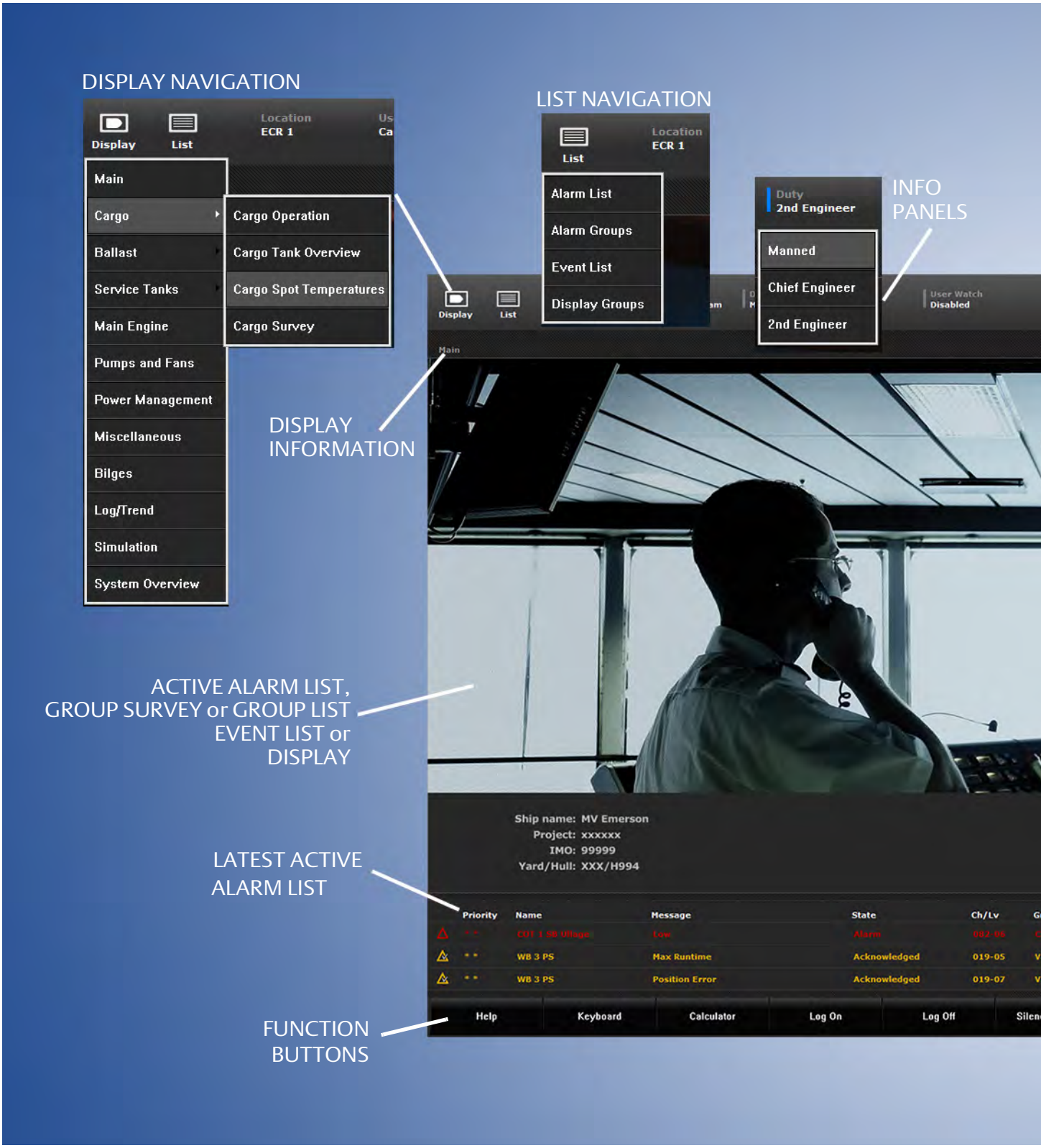
The "light" theme is more suitable in bright light conditions on e.g. a bridge.

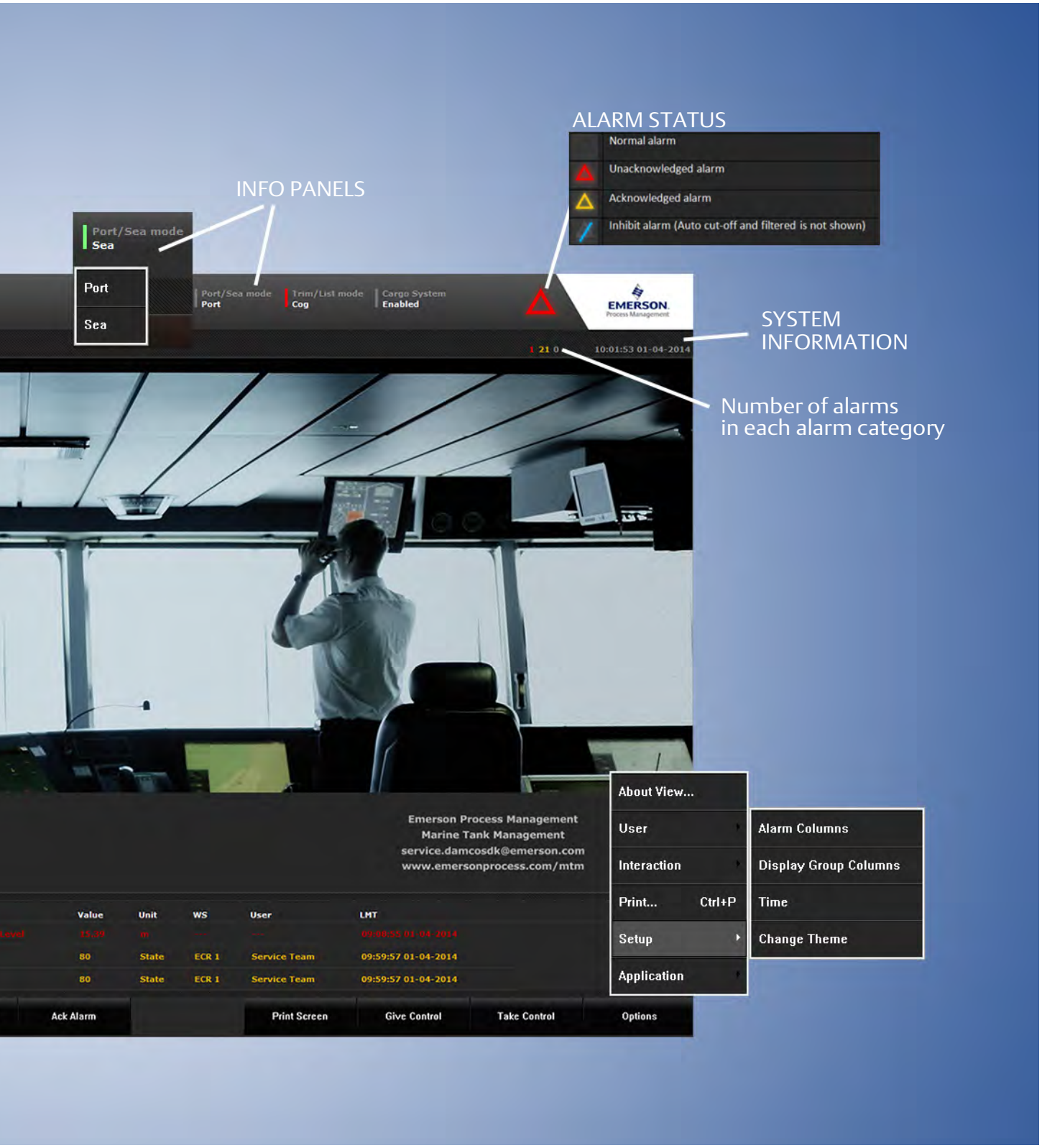
How to Change Theme

The theme can be changed from the **Options** function button.



Screen Layout




ALARM STATUS
Normal alarm
Unacknowledged alarm
Acknowledged alarm
Inhibit alarm (Auto cut-off and filtered is not shown)
INFO PANELS
Port/Sea mode
Sea
Port
Sea
Port/Sea mode
Port
Trim/List mode
Cog
Cargo System
Enabled
EMERSON
Process Management
SYSTEM
INFORMATION
1 21 0
10:01:53 01-04-2014
Number of alarms
in each alarm category
Emerson Process Management
Marine Tank Management
service.damcosdk@emerson.com
www.emersonprocess.com/mtm
About View...
User
Interaction
Print... Ctrl+P
Setup
Application
Alarm Columns
Display Group Columns
Time
Change Theme
Value
Unit
WS
User
LMT
80
State
ECR 1
Service Team
09:59:57 01-04-2014
80
State
ECR 1
Service Team
09:59:57 01-04-2014
Ack Alarm
Print Screen
Give Control
Take Control
Options

Item	Description
Display Navigation	Clicking this button reveals a drop-down list for the available displays within the system. Display selectors can also be placed directly on the display and clicking on them will change the display to the selected one.
List Navigation	List navigation includes the following functions: • Alarm list (active alarms) • Alarm groups • Event list • Display groups
Info Panel	The information panel displays various states together with a color indication. States can be changed by clicking the button and select from the drop-down list. This function can be password protected. Example of info panels are: person in duty, port/sea mode, trim/list, system in operation, etc.
Alarm status	The alarm status shows the state for all alarm groups related to the workstation. Following icons presents the status for the alarm group: • Normal alarm • Unacknowledged alarm • Acknowledged alarm • Inhibited alarm See also section about “Alarm System” on page 43.
Display information	Shows information related to the actual display e.g. the name of the display, alarm information, interlock information.
System information	Shows system information such as time, number of alarms etc.
Active alarm list, the group survey or group list, event list or a display	In this section the various displays and lists are shown.
Latest active alarm list	The latest active alarm shows the last incoming alarms. The alarm is shown in the following order: unacknowledged, acknowledged and inhibited.
Function buttons	At the bottom of the screen a number of function buttons can be displayed. The functions displayed is dependent on the system as described on following page (page 15).

Function Buttons

The function buttons are assigned to the function keys F1 to F12 on the keyboard. For the 10” alarm panel, with the smaller screen, there is only the first six functions keys.
The normal standard used for the function keys are:

Function key	Workstation	10” Alarm Panel	Description
F1	Help	Help	Opens the online help.
F2	1	1	
F3	1	1	
F4	Log on	Log on	User log on
F5	Log off	Log off	User log off
F6	Silence Horn	Options	Silence horn / Various settings
F7	Ack alarm		Acknowledge alarm
F8	1		
F9	Print Screen[1]		Print Screen
F10	Release Ctrl[1]		Interlock - release control
F11	Take Ctrl[1]		Interlock - take control
F12	Options		Various settings, see next page.

1. System specific function (project specific).

Options

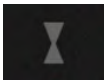
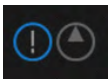
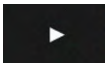
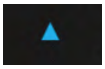
The Options function buttons opens a menu with the most used functions within the system.

Menu	Sub Menu	Description
About view		Information about view.
User	Log on	Open the log on menu.
	Log off	Log off the user.
Interaction	Take over control	Take over the control of the selected process display, means that only the selected process can be operated from this workstation. See also “Switch Control Functions - Interlock” on page 29.
	Give over control	Give over the control of the selected process display to another workstation. See also “Switch Control Functions - Interlock” on page 29.
Print (Ctrl+P)		Print a screen dump to the default windows printer.
Setup	Alarm Columns	Open the Alarm Columns dialog to change the contents of the active alarm list, latest alarm list, event list and the alarm group list. See page 26 for more information.
	Display Group Columns	Open the Display Group Columns dialog to change content of the Display Group Columns. See also page 27.
	Time	Open the Time dialog to change the time and date. See page 25 for more information.
	Change Theme	Switch between two themes, one light and one dark. See also page 11.
	File Maintenance	Open the File Maintenance dialog and is used to clean up in old bunker reports and data files. See also page 28.
Application	Open (Ctrl+O)	Open a project file.[1]
	Run/Stop (Ctrl+F9)	Change between stop and run mode.[1]
	Exit	Exit the application.

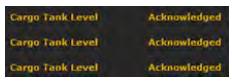
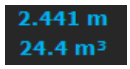
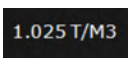
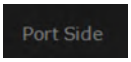
1. Designated for use by service engineers only.

Symbol Guide

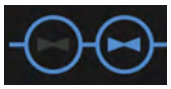
Within Aperio there are several colors and shapes that express different functions and events. The table below explains the shapes used on screen:

Symbol	Shape	Description
	Circle	Circled objects are objects which can be operated.
	No circle	Object without circle is used to indicate that it is a static object with no possibility to be operated.
	Small circle	Event or a static pump.
	Warning triangles	Alarm or warning which require attention from the user.
	Small white triangle	More selections are available.
	Small blue triangle	Indicating a direction. For example when filling or emptying a tank.
	Frame	Indicating a current selection.

The colors used are explained in the following table:

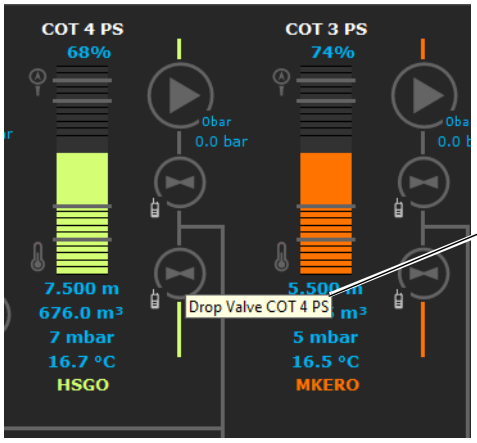
Example	Color	Description
	Red	Indicates attention and used for unacknowledged alarms, mixing of cargos etc.
	Yellow	Indicates important events such as acknowledged alarms.
	Blue	Information to the user which is not editable, such as measuring value, state, direction, event, inhibit alarms.
	White on dark theme / black on light theme	Information such as set point, state etc. The information is editable.
	Grey	Indicates a not active object such as normal alarm, closed valve, empty pipeline, static text etc.

Some functions are also indicated with flashing as described in the following table.

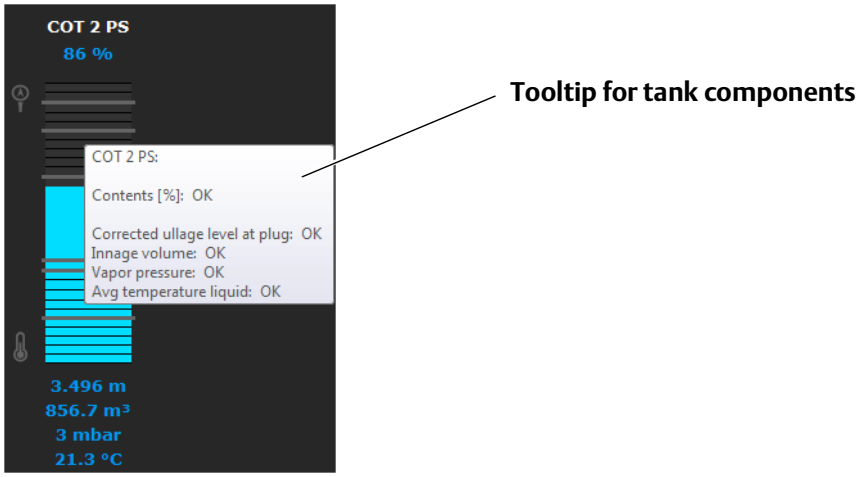
Symbol	Flashing	Description
	Alarm Indication	Unacknowledged alarm indication will flash between on and off.
	Closing valve	Closing valve will be indicated with the symbol flashing from dark grey to the product color (in this case blue color).
	Opening valve	Opening valve will be indicated with the symbol flashing from dark grey to the product color.

Tooltip

Each component on the screen holds a tool tip which is a yellow box appearing when the mouse pointer slides over the component. The text in the tooltip box often contains the tag number for the component.



For the tank components the tooltip can also show the status for the connected sensors.



Components

The following icons are used to indicate the various types of components. Grey is indicating closed, stopped or disconnected, and product color is indicating open, running or connected.

Symbol	Description	Symbol	Description
	Valve		Circuit breaker
	Pump		Generator
	Fan or bow thruster (PMS)		Consumer

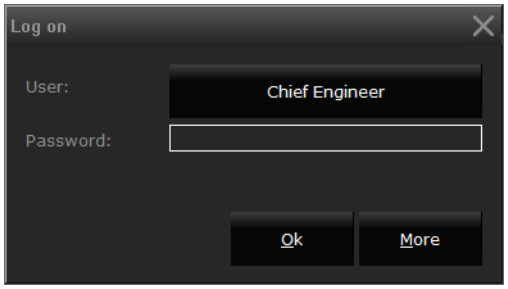
System Setup

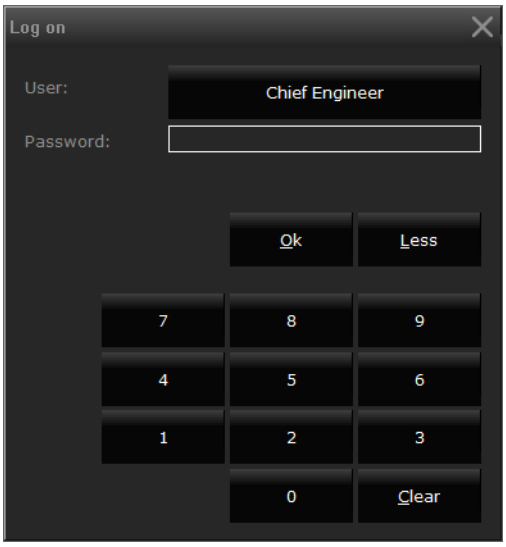
How to setup and control the system

Log On

How to open window

Click on **Log On** alternatively click on **Options** and select **User - Log on**.





Window description

The functions within the system e.g. controlling a pump or valve can be password protected. The password can be set before operation or during operation.

If no keyboard is available the More button can be activated and a numeric “Key-pad” is available to key-in the password.

Item	Description
User	Lists the different users defined within the system. Select the appropriate user definition from the drop down list box.
Password	Enter the password for the selected user. Only numbers are supported.
More	Click this button to reveal the “numeric key pad”.
Less	Click this button to hide the “numeric key pad”.

Log Off

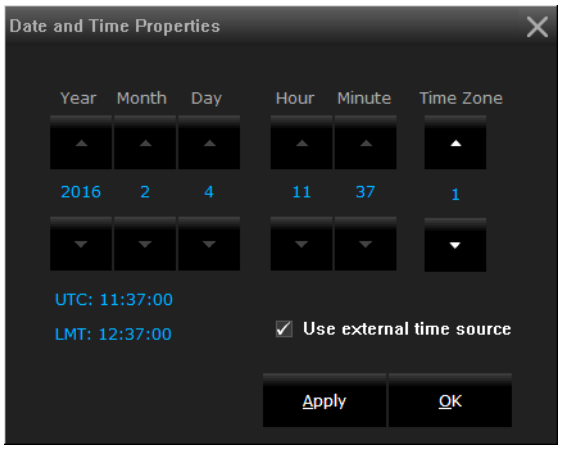
The LogOff type function button will log off the current user.

This function can also be reached by selecting the **Options - User - Log Off** button.

Setup Date and Time

How to open window

Click on **Options (F12) - Setup - Time**.



Window description

Setting the time, date and the GMT offset will adjust the time in all connected controllers and workstations.

The “Use external time source” can be selected when a GPS is connected to the system. If the GPS is not available the selection will be disabled.

Setup - Alarm Columns

How to open window

Select **Options (F12) - Setup - Columns**.

Window description

In this window you setup the columns to be displayed with the alarm listing. Columns are setup simply by moving the selected data to the right side and the unselected to the left side. Hereafter sort the visible data by the up and down keys. The setup of the alarm columns is valid for the following displays:

- Active alarm list
- Alarm group list
- Latest active alarm list

Event list (The event list will have one extra column with a unique number that always will be indicated).

Item	Description
Available list	Available alternatives that can be selected.
Arrow buttons	Click these button to move items from one list to another. Double arrows indicates that all items are to be moved.
Selected list	The selected alternatives that will be displayed as alarm columns.
Up and Down scrolling	The selected list box can be sorted by selecting item and then move it up or down by use of these buttons.

Setup - Display Group Columns

How to open window

Select **Options (F12) - Setup - Display Group Columns**.

Window description

In this window you setup the columns to be displayed with the display group list. Columns are setup simply by moving the selected data to the right side and the unselected to the left side. Hereafter sort the visible data by the up and down keys. The setup of the display group columns is valid for the following displays:

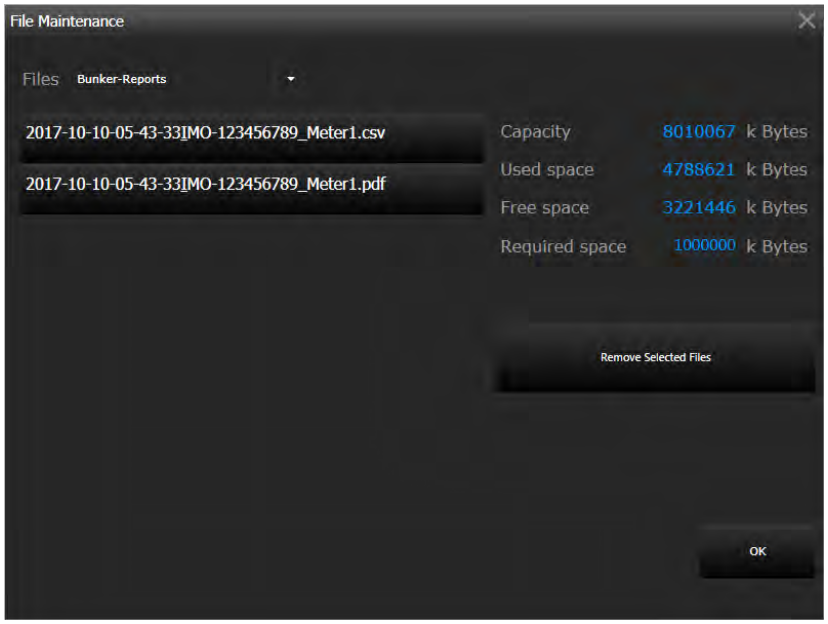
- Display group list

Item	Description
Available list	Available alternatives that can be selected.
Arrow buttons	Click these button to move items from one list to another. Double arrows indicates that all items are to be moved.
Selected list	The selected alternatives that will be displayed as alarm columns.
Up and Down scrolling	The selected list box can be sorted by selecting item and then move it up or down by use of these buttons.

Setup - File Maintenance

How to open window

Select **Options (F12) - Setup - File Maintenance**.



Window description

In this window you can remove old reports and files. Select type of files from the drop-down list box in the upper left corner and then select the files to remove from the list below. Data for selected file is shown to the right in the window.

Item	Description
Files	Choose from the drop-down list box which type of files to be shown in the list below. It could be data files or reports.
List of files/reports	The files shown reflects the file type selected above. Select the files by clicking on them.
Capacity ... Required space	Information regarding the disk area.
Remove Selected Files	Select files from the files list and then click this button to delete them.
OK	Choose this button to close the window.

Switch Control Functions - Interlock

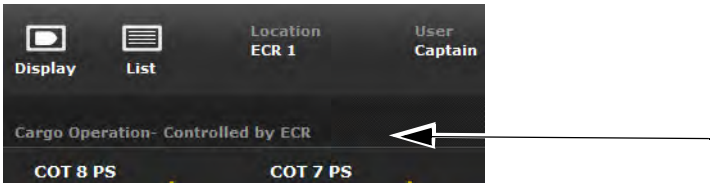
Interlock is a feature that allows the control over the components possible from one location at a time. That is, it will be impossible to control the components from different locations at the same time. Only one location will have the control when this function is activated.

How to select interlock

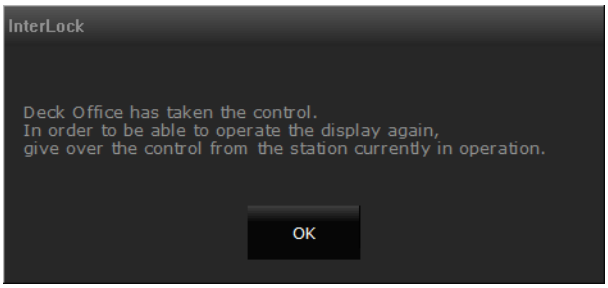
This function is activated through selecting the buttons at the bottom of the display. Control can be taken or given via those function buttons or simply by operating a component

How interlock is displayed

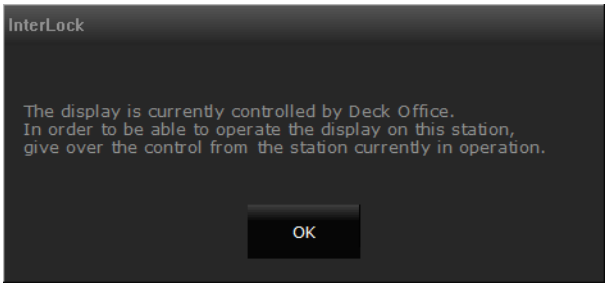
Indication of workstation in control is indicated in the display header:



How to interpret some messages when using the interlock function

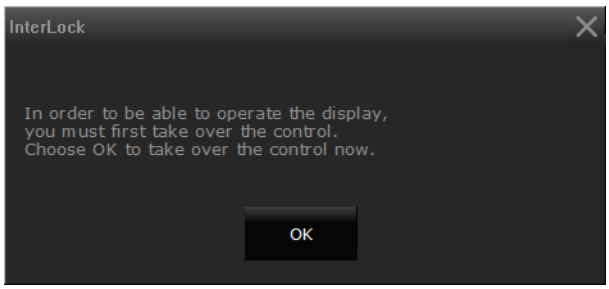


This message indicates that your workstation was in control and another master workstation took over the control.



When another workstation is in control and you try to operate a component from your workstation. If you are not a master, the above dialog will be shown. In this case the control should be released from the workstation in control before you can obtain the control.

When another workstation is in control and you try to operate a component from your workstation. If you are a master, the above dialog will be shown.



If no workstation has the control

In case no workstation has the control, the control will be taken when you operate a component or when clicking the **F11** button the workstation takes the control automatically.

Clicking **F10** will release the interlock control.

Note! It is recommended to release the control before closing down a workstation in control. In case a workstation in control is closed down without releasing control only a master workstation can take control.

Other Function Buttons

	The **Print Screen** function button prints a screen dump to the default windows printer. The Print function can also be reached by selecting **Options - Print** (ctrl+P).
	The **Exit** function button exits the application. If exit password is configured you will be prompted before quitting the application. Exit can also be reached by selecting **Options - Application - Exit**.
	The **Silence Buzzer** function button silences the configured Buzzer(s). Can also be silenced by clicking the **F6** button.
	The **Ack Alarm** function button acknowledges the latest raised alarm. This can also be acknowledged by selecting the **F7** button.
	The **Command** function button executes a command, like opening the Calculator, Notepad etc.

Warnings

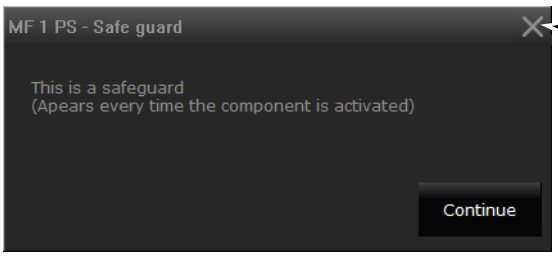
The warnings are divided into to two groups, Safeguards and Operational warnings.

Safeguards

Safeguards are warnings emerging as a dialog box each time a control is opened, reminding the operator what special precautions should be taken if the control is activated.

You can acknowledge the Safeguard and operate the control or cancel and nothing will happen.

Example:



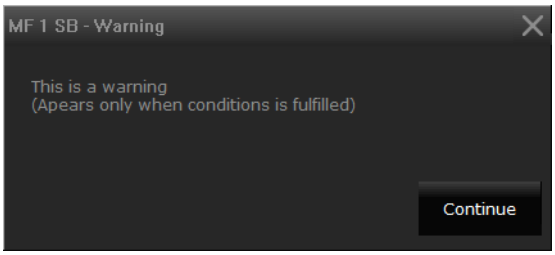
Click here to cancel and close the window.

Operational Warnings

Operational warnings emerge as dialog boxes only if predefined situations are present.

Acknowledge the operational warning and operate the control. If the operational warnings are canceled nothing happens.

Example:



Operator Watch

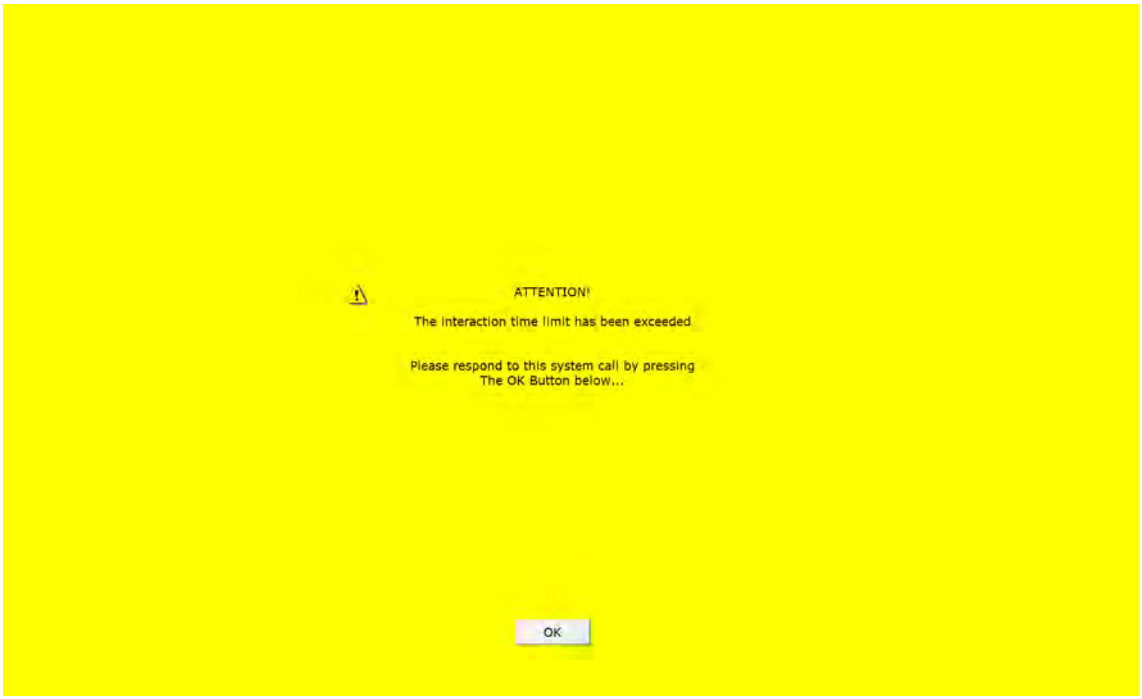
The operator watch function is an additional feature supervising the operating of the system, e.g. at cargo handling.

If the workstation has not been operated within an predefined time, a dialog box informs the operator that the attention time has expired. If nothing happens within an adjusted time the operator watch warning activates.

The operator watch system time is reset by a “mouse click” (moving the mouse / trackball are not enough).

The operator watch attention and warning is reset by accepting the dialog box.

Below is shown the attention dialog (fills out the complete screen):



The attention dialog is yellow and the warning dialog orange.When the warning dialog is displayed on the screen the buzzer can also be activated (depends on system setup).

Setup Trend Logging

How to open window

Select **Display - Log/Trend** to open the Setup Logging Display.

Window description

The logging display shows the logged or trend values or both.

Above is an example of a trend logging display. There are different possibilities to setup the display, i.e. colors, size, contents, scales, slider, legend, grid etc.

Logging of components can be done in two ways, either it is logged continuously or the component can be selected/deselected to be logged.

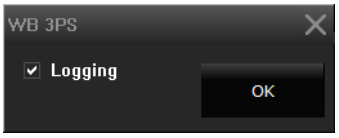
The trend logging can be set up in the **Setup TrendLog** window, see page 36

Item	Description
Scales	Scales are set in the **Setup TrendLog** window.
Log Area	The displays can hold up to ten predefined data sets at a time. Data can however be changed directly in the window by right clicking in the curve field. The **Setup TrendLog** window will be opened.
Marker/Flag	A marker can be set to show the values at a certain time. The flag shows detailed information of time and values. The flag is set by clicking in the window on the curve field.
	Click this button to open the **Setup TrendLog** window.

Item	Description
	Click this button to open the **Select Center Period Date** window for indication of historical data. This button will be disabled during trend logging.
	Zoom in and out buttons for the time span in steps: 4 min, 20 min, 1 hour, 4 hour, 8 hour, 12 hour and 24 hours. These buttons are disabled during trend logging.
	Scroll buttons used to scroll within the selected time period for historical data. These buttons are disabled during trend logging.
	Toggle button. Historical data is shown.
	Toggle button. Trend data is shown. Components that are available for trend logging but not logged will be shown as dotted lines. Components that are logged will be shown with full lines.

How to Select Component to be Logged

Right-click on the component to be logged and click **OK** in the appearing dialog.



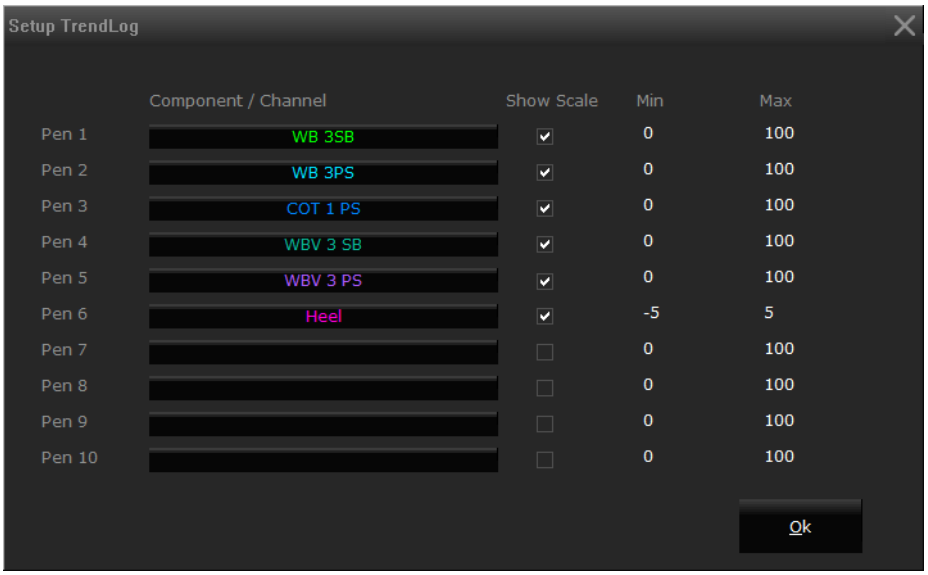
A maximum of 50 components can be logged at the same time. If more than 50 components are selected the last selected component will not be logged and a message will be displayed via a dialog. To be able to select more data deselect other logs to be able to select new.

Setup TrendLog

How to open window

The **Trend curve on-line selection setup** is opened by right-clicking at the curve field in the **Logging display** or

by clicking the  button.



Window description

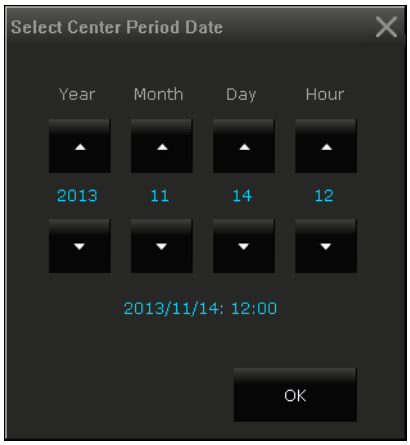
Up to ten values can be indicated at the same time.

Item	Description
Pen1 to 10	Ten different values can be shown in the Log area. Each pen will have its own color.
Component/Channel	The name of the component or channel is listed here.
Show Scale	Click here if the selected component shall be indicated with its scale. If more values with the same scale are indicated it could be enough with only scale for the first component.
Min and Max	The minimum and maximum values for the scale.

Select Center Period Date

How to open window

The **Select Center Period Date** is open by clicking the  button in the Logging window.



Window description

When the date is selected the **Log Trend** window will open with the selected date at the center of the window with 12 hours to each side. The window can maximum hold 24 hours. If another period than the selected shall be shown a new center selection is necessary.

By the use of the zoom buttons and the **Flag** more detailed data can be indicated. Position the **Flag** over the selected data and use the zoom buttons and the **Flag** will be in the center of the window again with the new zoom.

Note! It is not possible to select data older than 10 days.

Log/Event Log Export

In addition to the above-described Trend Logging, it is possible to have a pre-defined logging to CSV files of values and/or events.

The logging takes place behind the Aperio user interface and there are no user settings. The logging 1s done to a location that can be locally or on an external drive e.g. an NAS.

Event CSV file is created at each 24 hours.

Value CSV files is created in interval of 1, 6, 12 or 24 hours and contains data logged in sampling rate 1, 2, 5, 10, 30 or 60 seconds.

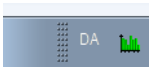
All files created are protected against tampering with inserted hash codes.

Alarm Panel Specific Operation

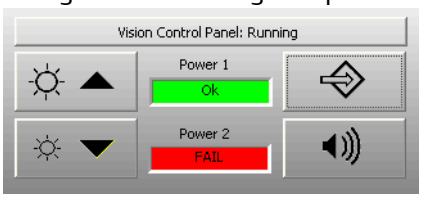
This section holds information related to the specific use of the Workstation and the Local Workstation / Alarm Panel.

Vision Control Panel

The Vision Control Panel is a program that must be running to be able to control the internal buzzer and backlight of the Vision 10". The program is running when there is a small logo like the one below in the task bar.



By touching in the top right of the screen on the "Emerson" logo the below dialog will appear. This dialog is for controlling the special features on the Vision.



	Dim Up.
	Dim down. (If the screen is dimmed 100% just touch the screen again below the Emerson logo and hold for short time and the dim will be adjusted "visible" again).
	Exit vision control panel.
	Test internal buzzer.

Furthermore there is an indication if the two power supplies are OK or not.

Quick User Guide

Log in and log off

Click on the **Log On** alternatively **Log Off** button. This can be reached from the **Options** button as well.

Setup date and time

Click on the **Options** button and then select **Setup - Time**.

Setup alarm columns

Click on the **Options (F12) - Setup -Alarm Columns** button and select the columns to be displayed with the alarm listing.

Setup group columns

Click on the **Options (F12) - Setup - Display Group Columns** button and select the columns to be displayed in the display group columns listing.

Switch control - interlock function

The interlock function is used to control components from one place at a time. Select the **Take Control** button or **Release Control** button to use the interlock function.
The workstation in control is indicated in the display header.
If no workstation is in control the control is taken when operating the component.

Setup trend logging

Select **Display - Log/Trend** to open the **Setup Logging Display**. From there you can set up how the logging are to be displayed and also select component to be logged.

Vision control panel

The **Vision Control Panel** is a program that must be running to be able to control the internal buzzer and backlight of the Vision 10". There will be a logo in the task bar indicating when the program is running.

Alarm System Operation

How to Setup and Use the Alarm System

Alarm System

Functionality

The Alarm system is used to monitor onboard systems such as engines, generators, switchboard and other service systems. The alarms can be presented on workstations as well as on alarm panels in accommodation and public areas. The Alarm system is flexible and can be set up to enable alarm indications at given locations to ensure the correct handling and status presentation. The Alarm system includes a number of advanced alarm management functions, such as grouping, filtering and presentation to ensure the correct alarm indication in time for easy access and handling.

Alarm Setup

Alarms can be setup to be presented with different status and mode at defined locations, such as bridge, cargo control room and engine control room. Which alarms to be displayed, acknowledge or activated with internal buzzer (only alarm panel) can be set and determined in the system.

Setup Alarm Columns / Display Group Columns

How to setup alarm columns are described in “Setup - Alarm Columns” on page 26 and “Setup - Display Group Columns” on page 27.

Group Alarms

Up to 32 alarm groups can be used to handle the various alarms for the various systems on-board. The groups can also be used to implement functions such as **Call engineer on duty**, **Call all engineers**, **Repeat alarm** etc.

The single alarm group can either be used in a single alarm system or it can be common for more alarm systems.

It will also be possible to always show certain alarm groups on certain workstations, or it will be possible for the crew to change which groups shall be shown on different workstations.

Alarm Channel Filters

The alarm channels can be configured in three ways:

- As a normal alarm channel which can be attached to one of the alarm groups. When the alarm occurs the alarm has to be acknowledged and the buzzer / horn has to be reset.
- Auto acknowledged means that the system itself acknowledges the alarm. Here the buzzer/horn is normally not activated.
- As an event, then the **alarm** is only showed in the event list. All event alarms is normally placed in one group.

Alarm System Displays

The alarm system consists of five main displays for monitoring:

- Active alarm list
- Alarm group display
- Alarm group list
- Event list
- Display groups
- Tank groups

These displays are shown as examples on the following pages.

Active Alarm List

The active alarm list shows the active alarms in the order they occur. The different active alarms includes unacknowledged, acknowledged and inhibited alarms.

Acknowledgment of alarms are password protected.

The content of the alarm list header can be changed using the **Options** function button.

Latest Active Alarm List

The latest active alarm list panel can be displayed at the bottom of all displays and can consist of 1 to 5 lines. The latest alarm list will always have the unacknowledged alarms in the top of the list, followed by acknowledged and inhibited alarms.

Alarm Groups

The alarm group display gives an overall view of 4, 8, 16 or 32 alarm groups within the system.

By clicking on the group a detailed alarm group list display will open.

Alarm Group List

At the actual filter it is possible to select between all alarms or active alarms.

Event List

The events are lists of everything that has happened in the alarm system:

- Alarm active, alarm acknowledged and alarm normal
- Change in alarm settings: Limit, delay, off delay, inhibit
- Interaction, e.g. open/close of valves
- Configured events, e.g. automatic pump start etc

The configured events will normally be held in its own group of the 32 groups.

Note! The event list holds the last 1000 events. At 1000 events and a new event occurs the oldest event is deleted. Each event is logged with a unique number, time and date for the event.

Display Groups

The Display Group display gives an overall view of 4, 8, 16 or 32 display groups within the system. By clicking on the groups a detailed Display Group List will open.

Display Group List

The Display Groups are a listing of values that belongs together.

Each Display Group indicates the updated value and its connected information such as unit, tag, alarm status etc.

The content of the Display Group List header can be changed using the **Options** function button.

It is possible to configure each Display Group to be printed or saved to file independently, either on demand by the user input or at given time intervals. This is configured by the Settings button on each separate Group Display List.

Tank Groups

The Tank Groups are a user configured grouping of tanks. The groups can be configured freely between all tanks in the system (Cargo, Ballast and service tanks).

Up to 16 groups can be configured and each group can be configured to view between 8 and 16 tanks

Note! The Tank Group menu is only visible for projects that includes tanks and on monitors sizes larger than 10”!

Alarm Status

The different alarm status are presented by the following icons:

	No alarm. Status is normal.		Acknowledged alarm.
	Unacknowledged alarm.		Inhibited alarm (cut-off and filtered alarm are not shown).

The different alarm status sub-icons displayed with component icons or lists:

	Normal alarm.		Inhibited alarm.
	Unacknowledged alarm.		Cut-off alarm.
	Unacknowledged alarm that are to be acknowledged from another workstation.		Filtered alarm.
	Acknowledged alarm.		Active event.
	Auto acknowledged alarm, that is the controller itself has acknowledged the alarm.		Passive event.
	Component error indication, such as loss of communication.		

Example of sub-icons displayed with components icons

	A valve with status unacknowledged alarm.
	A pump with status unacknowledged alarm.

Alarm Display - Active Alarm List


Number of alarms
Status of highest priority alarm
PRINT OR SAVE LIST ON SCREEN
ACKNOWLEDGE ALL VISIBLE ALARMS
SETUP ALARM LIST FOR EXPORT
Select Alarm Columns to change alarm list header
ACKNOWLEDGE THE LATEST ALARM
LATEST ACTIVE ALARM LIST
Export
Ack Page
Setup
Help
User
Interaction
Print... Ctrl+P
Setup
Application
Alarm Columns
Display Group Columns
Time
Change Theme
Buzzer
Ack Alarm
Touch
Print Screen
Give Control
Take Control
Options

Alarm Display - Alarm Groups

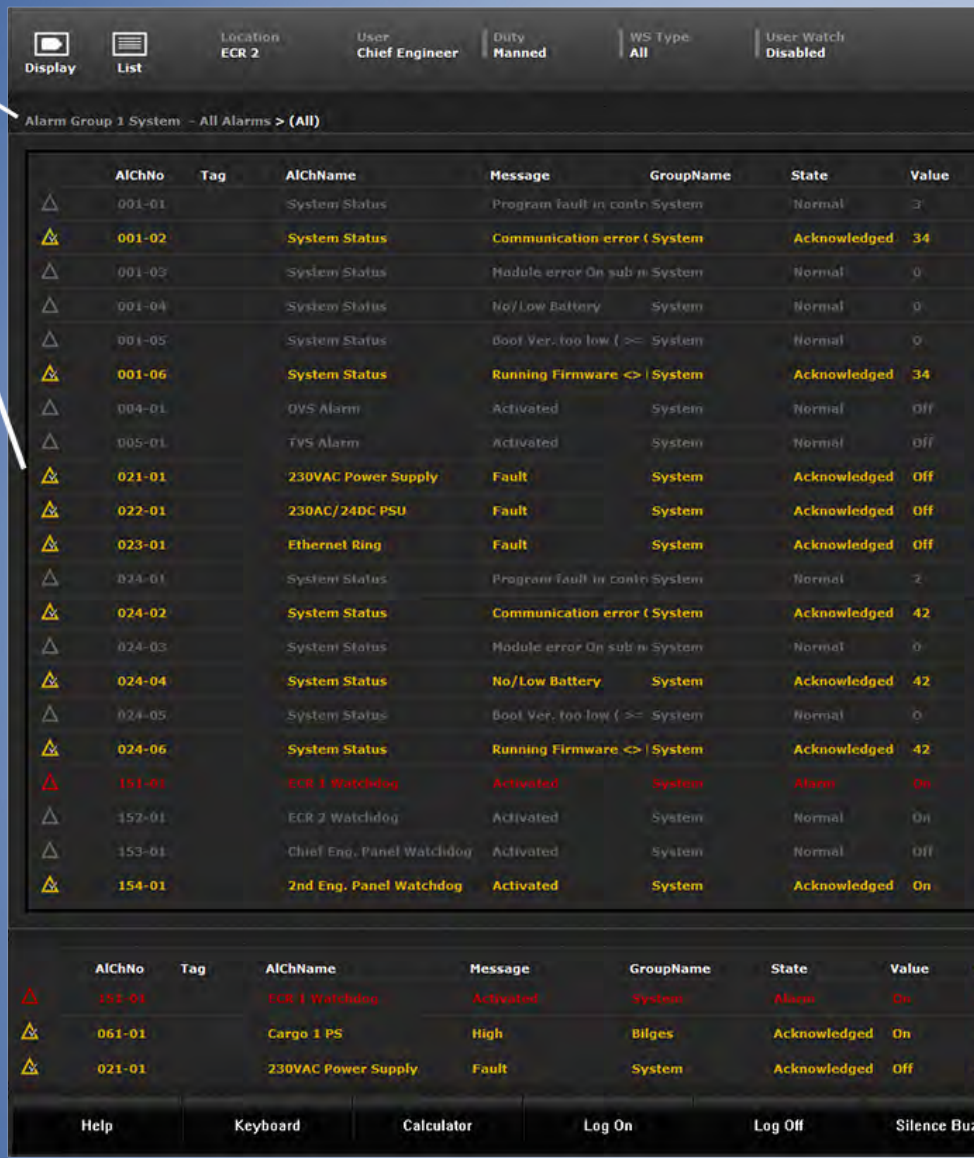

Click group to view content
(Alarm Group List window)
Port/Sea mode
Port
Trim/List comp.
Enabled
Cargo Operation
"Waiting"
Cargo System
Enabled
EMERSON
10:59:23 21-08-2013
Cargo Tank Level
Cargo Tank Pressure
Ballast Tanks Level
Cargo Pumps
Power Unit
Main Engine
Auxilery #3
Power Management
Doors
Navigation
Miscellaneous
Events
State
Value
Unit
WS
User
LMT
NodeName
Ch/Lv
Acknowledged
On
ON/OFF
ECR 1
Captain
08:36:10 21-08-2013
M3101
152-01
Silence Buzzer
Ack Alarm
Print Screen
Release Control
Take Control
Options
ACKNOWLEDGE THE LATEST ALARM
LATEST ACTIVE
ALARM LIST

Alarm Display - Alarm Group List

This window is opened by clicking an alarm group in the Alarm Group Display

DISPLAY NAME

Click to select alarm



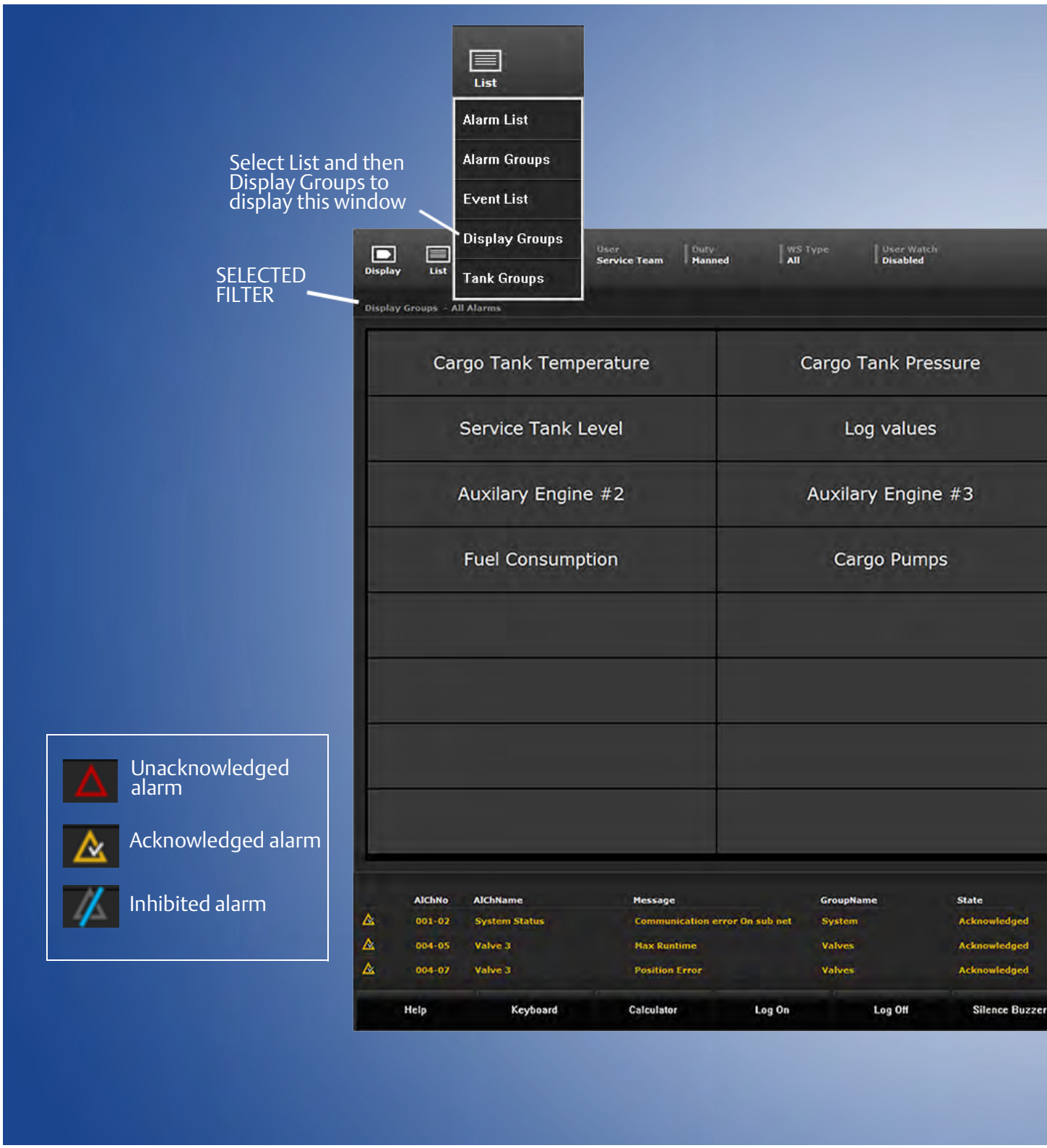
- No alarm
- Unacknowledged alarm
- Acknowledged alarm
- Inhibited alarm
- Filtered alarm


Cargo Operation "Waiting"
Port/Sea mode Port
Trim/List mode Plug
Cargo System Enabled
EMERSON. Process Management
11:49:34 22-09-2015
Unit WS User LMT DPI SubNodeIOChNo
Export
Ack Page
Setup
Edit
PRINT OR SAVE LIST ON SCREEN
ACKNOW. ALL VISIBLE ALARMS
SETUP ALARM LIST FOR EXPORT
EDIT ALARM
STEP LIST ONE ROW UP
Select Options - Setup to change alarm list header
Help
User
Interaction
Print... Ctrl+P
Setup
Application
Alarm Columns
Display Group Columns
Time
Change Theme
Ack Alarm
Touch
Print Screen
Give Control
Take Control
Options
ACKNOWLEDGE THE LATEST ALARM

Alarm Display - Event List


PRINT OR SAVE LIST ON SCREEN
SETUP EVENT LIST FOR EXPORT
STEP LIST ONE ROW UP
Select Setup Columns to change alarm list header
ACKNOWLEDGE THE LATEST ALARM
Export
Setup
Help
User
Interaction
Print... Ctrl+P
Setup
Application
Alarm Columns
Display Group Columns
Time
Change Theme
Ack Alarm
Touch
Print Screen
Give Control
Take Control
Options

Alarm Display - Display Groups

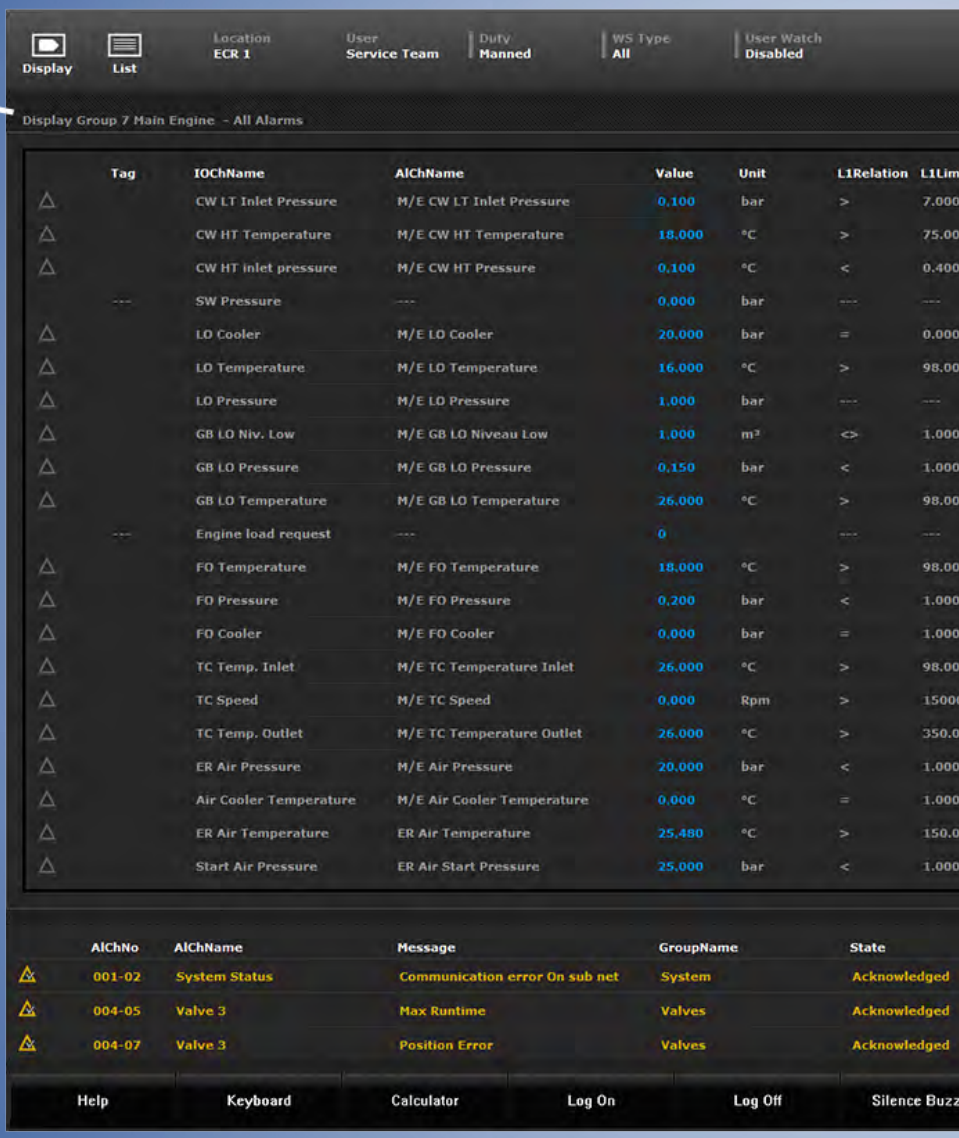



Click group to view content
(Display Group List window)
Cargo Operation
"Waiting"
Port/Sea mode
Port
Trim/List mode
Plug
Cargo System
Enabled
EMERSON.
Process Management
0 16 1
11:21:14 03-06-2015
Cargo Tank Ullage
Ballast Tank Level
Main Engine
Auxilary Engine #1
Cargo Pump and Manifold Pressure
Power Managment
Valves
Miscellaneous
Value
Unit
WS
User
LMT
2
State
ECR 1
Service Team
11:12:56 03
80
State
ECR 1
Service Team
10:58:39 03
80
State
ECR 1
Service Team
10:58:39 03
Ack Alarm
Touch
Print Screen
Give Control
Take Control
Options
ACKNOWLEDGE THE LATEST ALARM
LATEST ACTIVE ALARM LIST

Alarm Display - Display Group List

This window is opened by clicking a display group in the Display Group Display

DISPLAY GROUP NAME



- No alarm
- Unacknowledged alarm
- Acknowledged alarm
- Inhibited alarm
- Filtered alarm

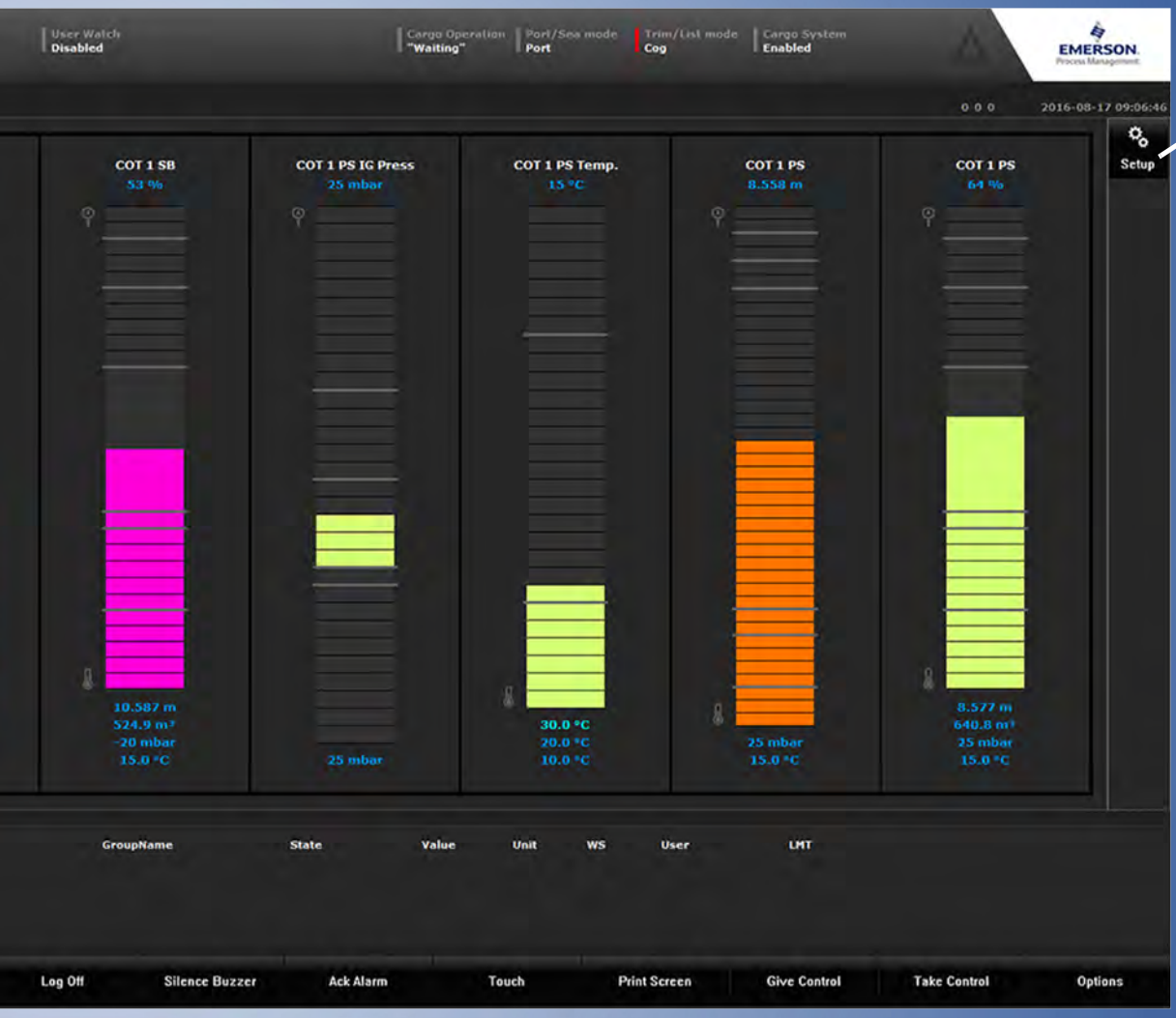

Cargo Operation "Waiting"
Port/Sea mode Port
Trim/List mode Plug
Cargo System Enabled
EMERSON. Process Management
11:19:34 03-06-2015
Export
Setup
PRINT OR SAVE LIST ON SCREEN
SETUP DISPLAY LIST FOR EXPORT
STEP LIST ONE ROW UP
Help
User
Interaction
Print... Ctrl+P
Setup
Application
Alarm Columns
Display Group Columns
Time
Change Theme
Select Setup Display Group Columns to change display columns
Buzzer
Ack Alarm
Touch
Print Screen
Give Control
Take Control
Options
ACKNOWLEDGE THE LATEST ALARM
LATEST ACTIVE ALARM LIST

Alarm Display - Tank Groups


Click group to view content
(Tank Group List window)
User Watch
Disabled
Cargo Operation
"Waiting"
Port
Trim/List mode
Cog
Cargo System
Enabled
EMERSON
2016-08-17 09:05:59
COT 1 PS/SB
Setup #1
COT PS
Tank Group 6
Tank Group 7
Tank Group 8
Tank Group 10
Tank Group 11
Tank Group 12
Tank Group 14
Tank Group 15
Setup #2
GroupName
State
Value
Unit
WS
User
LMT
Log Off
Silence Buzzer
Ack Alarm
Touch
Print Screen
Give Control
Take Control
Options

Alarm Display - Tank Group List

This window is opened by clicking a tank group in the Tank Groups Display

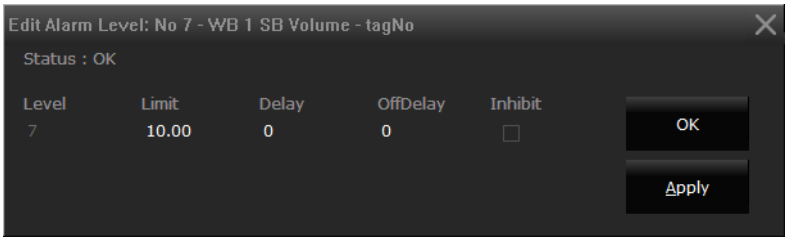


SETUP THE TANK GROUP

Edit Alarms Dialog

How to open window

This dialog is opened by clicking the **Edit** button in the **Alarm Group List** display.
It will display the data from the selected alarm. This function is password protected.



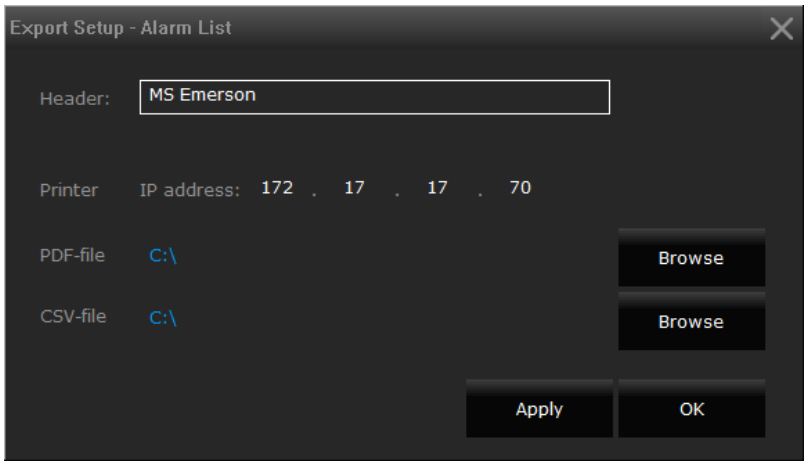
Window description

Item	Description
Alarm limit	The value the alarm is compared with.
Alarm delay	The time in seconds (max. 255 seconds) before the alarm is activated.
Alarm off delay	The time in seconds (max. 255 seconds) before the alarm is set to normal after the values are normal.
Inhibit	Alarms that are inhibited are not used, but still listed.

Setup Alarm List Export

How to open window

This dialog is opened by clicking the **Setup** button in the **Alarm List** or **Alarm Group List** display.



Window description

In this window you setup how the alarm list will be exported.

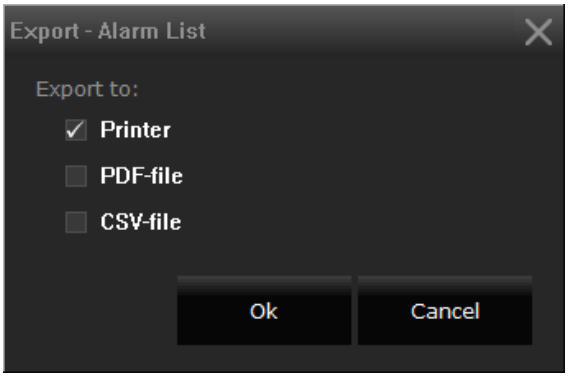
Alarm lists can be exported to a printer, as a PDF-file or CSV-file. It is possible to select several options.

Item	Description
Header	The text printed on top of each page.
Printer	Set the IP address for the printer to be used.
Browse	Browse to select where to store PDF-files and CSV files.

Export Alarm List

How to open window

This dialog is opened by clicking the **Export** button in the **Active Alarm List** or **Alarm Group List** window.



Window description

You can select to send the list directly to printer or save it as PDF or CSV file!

See alarm list print example next page.

Example of an Active Alarm List printout:

EMERSON
Process Management

Alarm - MS Emerson

23-09-2015 09:33

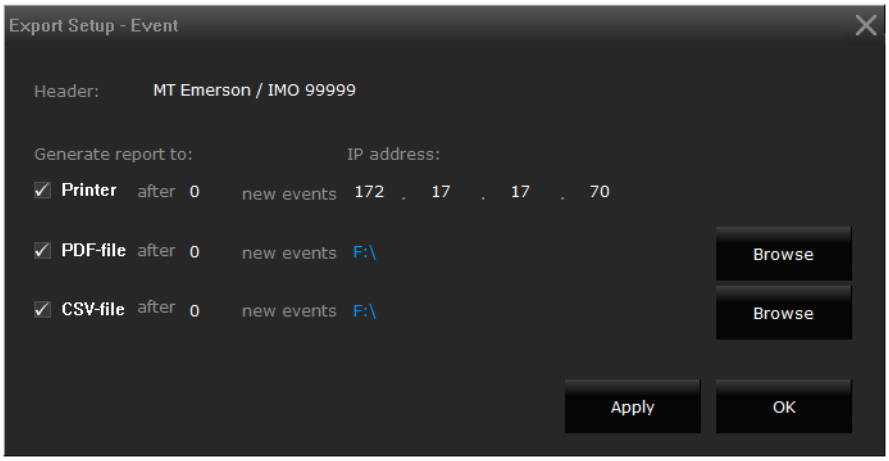
AlChNo	AlChName	Message	GroupName	State	Value	Unit	LMT
029-01	Extended Alarm	Activated	Extended alarm	Inhibited	Off	ON/OFF	14:41:41 16-09-2015
021-01	230VAC Power Supply	Fault	System	Acknowledged	Off	ON/OFF	13:28:38 16-09-2015
022-01	230AC/24DC PSU	Fault	System	Acknowledged	Off	ON/OFF	13:28:38 16-09-2015
023-01	Ethernet Ring	Fault	System	Acknowledged	Off	ON/OFF	13:28:38 16-09-2015
024-02	System Status	Communication error On sub net	System	Acknowledged	42	State	13:28:38 16-09-2015
024-04	System Status	No/Low Battery	System	Acknowledged	42	State	13:28:38 16-09-2015
024-06	System Status	Running Firmware <> Project Firmware	System	Acknowledged	42	State	13:28:38 16-09-2015
154-01	2nd Eng. Panel Watchdog	Activated	System	Acknowledged	On	ON/OFF	13:27:44 16-09-2015
159-01	2nd Eng. Panel PSU 2	Fault	System	Acknowledged	On	ON/OFF	13:27:44 16-09-2015
163-02	System Status	Communication error On sub net	System	Acknowledged	34	State	13:27:44 16-09-2015
163-06	System Status	Running Firmware <> Project Firmware	System	Acknowledged	34	State	13:27:44 16-09-2015
167-01	ECR #2 PSU 2	Fault	System	Acknowledged	Off	ON/OFF	13:27:44 16-09-2015
169-01	Deck Office PSU 2	Fault	System	Acknowledged	Off	ON/OFF	13:27:44 16-09-2015
170-01	Deck Office Watchdog	Activated	System	Acknowledged	On	ON/OFF	13:27:44 16-09-2015
001-02	System Status	Communication error On sub net	System	Acknowledged	34	State	13:27:23 16-09-2015
001-06	System Status	Running Firmware <> Project Firmware	System	Acknowledged	34	State	13:27:23 16-09-2015

1of 1

Setup Event Export

How to open window

This dialog is opened by clicking the **Setup** button in the **Event List** display.



Window description

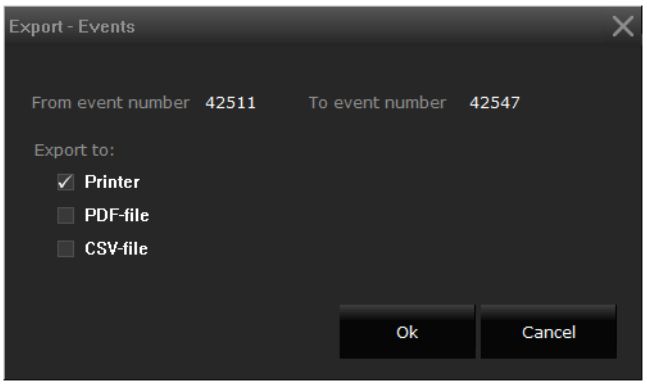
Reports can be exported to a printer, as a PDF-file or CSV-file. It is possible to select several options. Set the value for “Generate report after” to how many events the reports should be generated after. If the value is set to 0 no prints or files will be created.

Item	Description
Header	The text printed on top of each page.
Generate report to	Can be Printer, PDF-file or CSV-file. Multiple selections are possible.
IP Address	The IP address of the printer to where the report should be printed.
Browse	Browse to select where to store PDF-files and CSV files.

Export Event List Dialog

How to open window

This dialog is opened by clicking the **Export** button in the **Event List** display.



Window description

When the Export Event List dialog is opened it suggests by itself to print out the last events that will fill one page. If other events are to be printed, then simply key in the area of event numbers to be printed.

You can select to send the event lists directly to printer or save it as PDF or CSV file!

See event list print example next page.

Event list print example:

EMERSON
Process Management

Event - MS Emerson

23-09-2015 09:34

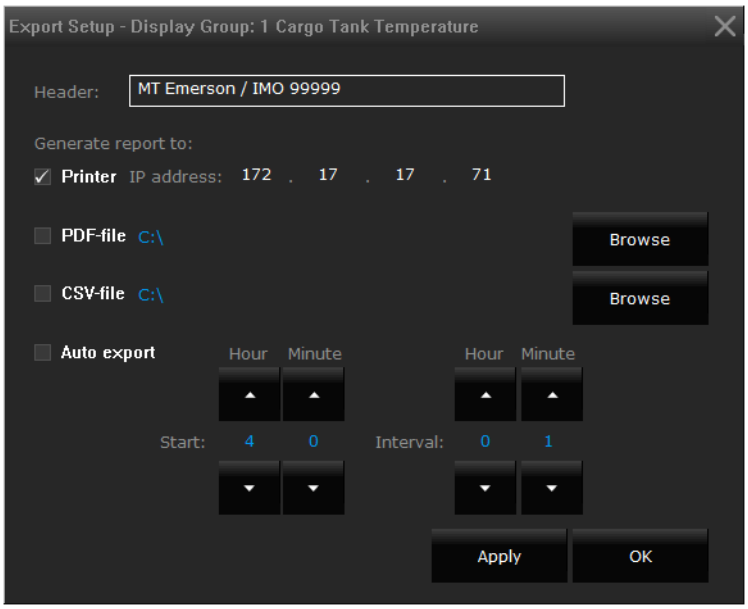
No	AlChNo	AlChName	Message	GroupName	State	Value	Unit	LMT
346	—	Cargo 1 PS	Value changed	—	Event	0.000	—	11:29:06 23-09-2015
345	061-01	Cargo 1 PS	High	Bilges	Normal	On	—	11:28:46 23-09-2015
344	155-01	Mess Room Panel Watchdog	Activated	System	Normal	On	ON/OFF	11:26:51 23-09-2015
343	155-01	Mess Room Panel Watchdog	Activated	System	Acknowledged	On	ON/OFF	11:26:51 23-09-2015
342	151-01	ECR 1 Watchdog	Activated	System	Normal	On	ON/OFF	11:26:50 23-09-2015
341	151-01	ECR 1 Watchdog	Activated	System	Acknowledged	On	ON/OFF	11:26:50 23-09-2015
340	—	—	Exceeds maximum of logging elements	System Event	Event	—	—	11:26:13 23-09-2015
339	—	—	Master IP...51 Activated	—	Event			—
338	—	—	Now Logged On	System Event	Event	—	—	11:15:44 23-09-2015
337	—	—	Now Logged On	System Event	Event	—	—	11:15:06 23-09-2015
336	155-01	Mess Room Panel Watchdog	Activated	System	Normal	On	ON/OFF	11:14:12 23-09-2015
335	153-01	Chief Eng. Panel Watchdog	Activated	System	Normal	On	ON/OFF	11:08:03 23-09-2015
334	153-01	Chief Eng. Panel Watchdog	Activated	System	Acknowledged	On	ON/OFF	11:08:03 23-09-2015
333	155-01	Mess Room Panel Watchdog	Activated	System	Acknowledged	On	ON/OFF	11:07:59 23-09-2015
332	152-01	ECR 2 Watchdog	Activated	System	Acknowledged	On	ON/OFF	11:07:58 23-09-2015
331	152-01	ECR 2 Watchdog	Activated	System	Alarm	On	ON/OFF	11:05:46 23-09-2015
330	155-01	Mess Room Panel Watchdog	Activated	System	Alarm	On	ON/OFF	11:03:31 23-09-2015
329	—	—	Now Logged On	System Event	Event	—	—	11:02:04 23-09-2015
328	153-01	Chief Eng. Panel Watchdog	Activated	System	Alarm	On	ON/OFF	10:55:33 23-09-2015
327	—	—	Now Logged On	System Event	Event	—	—	10:54:02 23-09-2015
326	—	—	Exceeds maximum of logging elements	System Event	Event	—	—	—
325	—	—	Exceeds maximum of logging elements	System Event	Event	—	—	—
324	—	—	Exceeds maximum of logging elements	System Event	Event	—	—	—
323	152-01	ECR 2 Watchdog	Activated	System	Normal	On	ON/OFF	09:36:41 23-09-2015
322	—	—	Exceeds maximum of logging elements	System Event	Event	—	—	09:36:47 23-09-2015
321	061-01	Cargo 1 PS	High	Bilges	Acknowledged	On	—	09:33:45 23-09-2015
320	—	—	Exceeds maximum of logging elements	System Event	Event	—	—	—
319	—	Duty Panel	Manned	—	Event	0	—	08:36:23 23-09-2015
318	152-01	ECR 2 Watchdog	Activated	System	Acknowledged	On	ON/OFF	08:27:14 23-09-2015
317	—	—	Exceeds maximum of logging elements	System Event	Event	—	—	08:27:16 23-09-2015
316	—	—	Master IP...51 Activated	—	Event			—
315	—	—	Exceeds maximum of logging elements	System Event	Event	—	—	—
314	—	DG1	Start	—	Event	2	—	14:28:59 22-09-2015
313	151-01	ECR 1 Watchdog	Activated	System	Normal	On	ON/OFF	13:17:53 22-09-2015
312	151-01	ECR 1 Watchdog	Activated	System	Acknowledged	On	ON/OFF	13:17:53 22-09-2015

1 of 1

Setup Display Group Export

How to open window

This dialog is opened by clicking the **Setup** button in the **Display Group List** display.



Window description

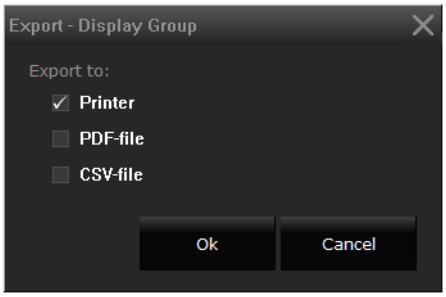
Reports can be exported to a printer, as a PDF-file or CSV-file. It is possible to select several options. Reports can be produced at certain intervals by selecting the Auto export option.

Item	Description
Header	The text printed on top of each page.
Generate report to	Can be Printer, PDF-file or CSV-file. Multiple selections are possible.
IP Address	The IP address of the printer to where the report should be printed.
Browse	Browse to select where to store PDF-files and CSV files.
Auto export	Click this check box to produce reports at certain intervals. Decide start time and interval by using the up and down arrows. Reports will be sent to the defined printer and printed automatically.

Export Display Group

How to open window

This dialog is opened by clicking the **Export** button in the **Display Group List** display.



Window description

You can select to send the event lists directly to printer or save it as PDF or CSV file!
See print example next page.

Example of a Display group printout

EMERSON
Process Management

Display Group 7 - Main Engine - MS Emerson

23-09-2015 09:37

DPI	AlChName	AlChNo	Value	Unit	L1Relation	L1Limit
M3101	M/E CW LT Inlet Pressure	1	0.100	bar	>	7.000
M3101	M/E CW HT Temperature	2	18.000	°C	>	75.000
M3101	M/E CW HT Pressure	3	0.100	°C	<	0.400
M3101	—	0	0.000	bar	—	—
M3101	M/E LO Cooler	6	1.000	bar	=	0.000
M3101	M/E LO Temperature	4	16.000	°C	>	98.000
M3101	M/E LO Pressure	5	1.000	bar	—	—
M3101	M/E GB LO Niveau Low	9	1.000	m^3	<>	1.000
M3101	M/E GB LO Pressure	8	0.150	bar	<	1.000
M3101	M/E GB LO Temperature	7	26.000	°C	>	98.000
M3101	—	0	0		—	—
M3101	M/E FO Temperature	10	18.000	°C	>	98.000
M3101	M/E FO Pressure	11	0.200	bar	<	1.000
M3101	M/E FO Cooler	12	0.000	bar	=	1.000
M3101	M/E TC Temperature Inlet	15	26.000	°C	>	98.000
M3101	M/E TC Speed	13	0.000	Rpm	>	15000.001
M3101	M/E TC Temperature Outlet	14	26.000	°C	>	350.000
M3101	M/E Air Pressure	16	1.000	bar	<	1.000
M3101	M/E Air Cooler Temperature	17	0.000	°C	=	1.000
M3101	ER Air Temperature	18	25.480	°C	>	150.000
M3101	ER Air Start Pressure	19	1.000	bar	<	1.000
M3101	M/E Cylinder 1	20	65.000	°C	>	310.000
M3101	M/E Cylinder 2	21	65.000	°C	>	310.000
M3101	M/E Cylinder 3	22	65.000	°C	>	310.000
M3101	M/E Cylinder 4	23	65.000	°C	>	310.000
M3101	M/E Cylinder 5	24	65.000	°C	>	310.000
M3101	M/E Cylinder 6	25	65.000	°C	>	310.000
M3101	M/E Cylinder 7	26	65.000	°C	>	310.000
M3101	M/E Cylinder 8	27	65.000	°C	>	310.000
M3101	—	0	65.000	°C	—	—
M3101	M/E Cylinder 1 Deviation	28	0.000	°C	>	50.000
M3101	M/E Cylinder 2 Deviation	29	0.000	°C	>	50.000
M3101	M/E Cylinder 3 Deviation	30	0.000	°C	>	50.000
M3101	M/E Cylinder 4 Deviation	31	0.000	°C	>	50.000
M3101	M/E Cylinder 5 Deviation	32	0.000	°C	>	50.000

1of 2

Setup Tank Group

How to open window

This dialog is opened by clicking the **Setup** button in the **Tank Group List** display.

Window description

In this window you setup the tank group you selected in the Group List display.

Item	Description
Tank Group Name	User configured Tank Group Name that will be indicated in the header and on the Tank Groups Overview.
Rows/Columns	Selection is between either 1x8 or 2x8 tanks.
Tanks	Selection of what tanks to be viewed in the display. The selection order is at the same time the position in the Tank Group display

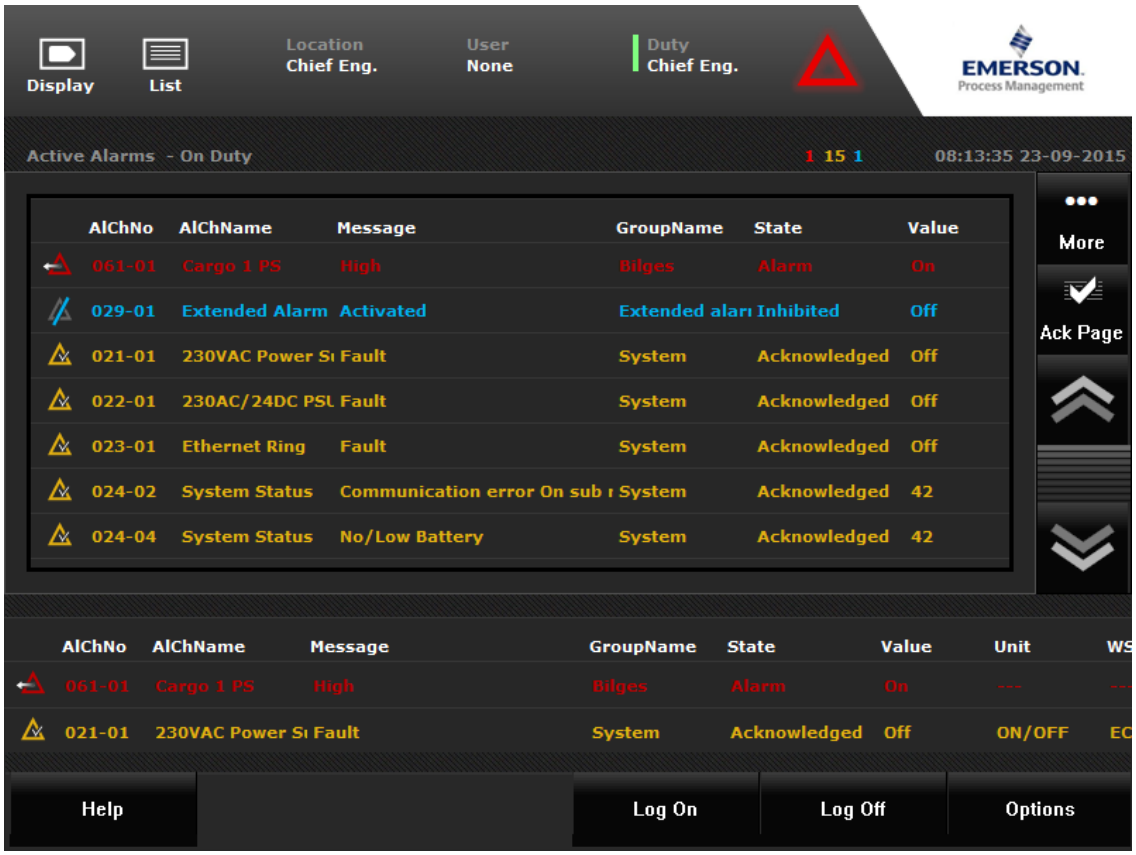
Alarm Panel Displays

The Local workstation and Alarm Panel uses the same software as the workstations, only difference is that the visible area is smaller. When it is used as an alarm panel only the alarm displays are used. When it is used as a local panel only simplified mimics are configured.

Active Alarm List

How to open window

The window is opened by selecting **List** and then **Alarm List.**



Example from a 10" workstation.

Window description

Item	Description	
Active alarms filter	Displays the active filter.	
Active alarm list	Displays the alarms with header in the middle of the display. Header is setup in the “Setup - Alarm Columns” on page 26.	
Latest active alarms	Shown below active alarm list and consists of 1to 5 rows.	
More	More displays a small window for more functions to select, such as Export, Edit and Setup.	
	Export	Use this button to export the alarm group list to printer or save to CSV or PDF file. See “Export Alarm List” on page 66
	Edit	Select alarm channel to edit and then click this button to change the channel data. See “Edit Alarms Dialog” on page 64.
	Setup	Use this button to setup the alarm group display. See “Setup Alarm List Export” on page 65.
Ack Page	Click to acknowledge the alarms shown in the current alarm list.	

Alarm Group Display

How to open window

The display is opened by selecting **List - Alarm Groups**.

Example from a 10" workstation.

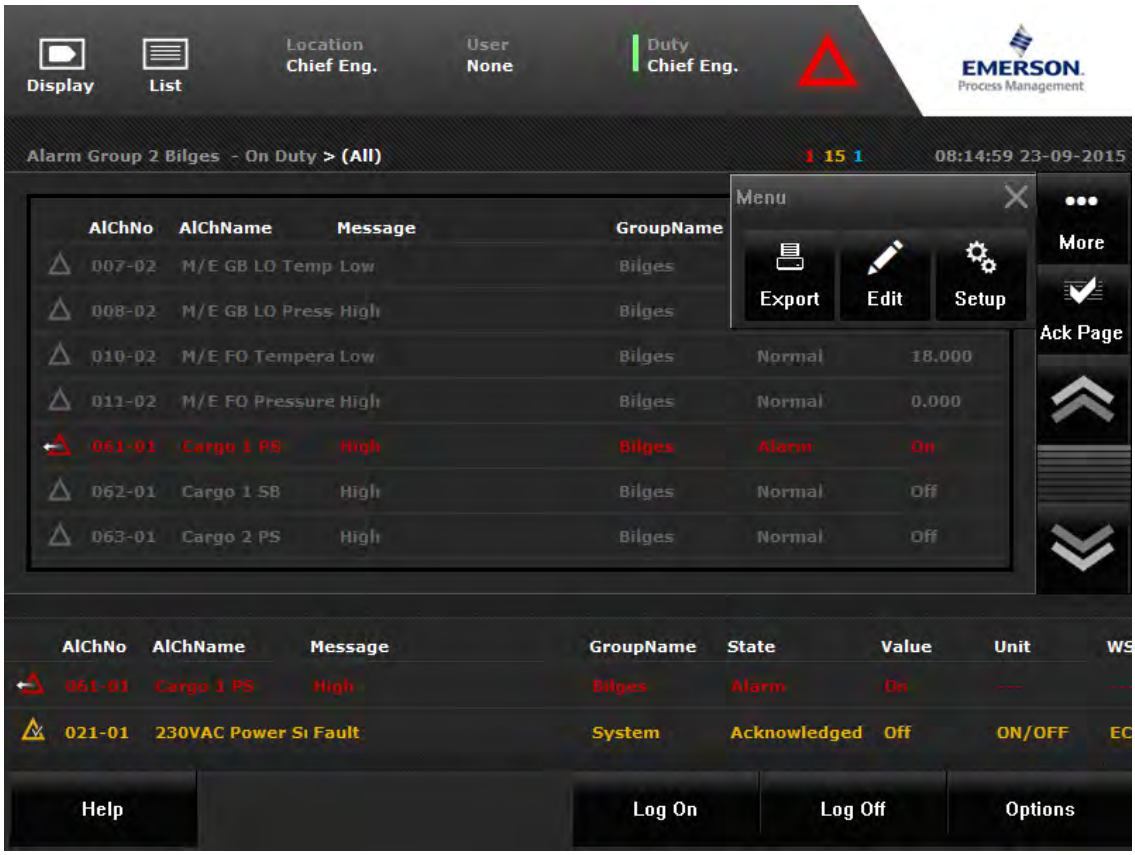
Window description

Item	Description
Alarm Group filter	Displays the active filter.
Alarm Groups list	Displays the alarm groups according to alarm group filter.
Latest active alarms	Shown below alarm groups list and consists of 1 or 2 rows.

Alarm Group List

How to open window

The display is opened by selecting **List - Alarm Groups** and then clicking on an alarm group.



Example from a 10" workstation.

Window description

Item	Description	
Alarm Group No. filter	Click directly on the text and select the filter (all or active).	
Alarm Group list	Displays the alarm channels included in the selected alarm group and according to selected filter.	
Latest active alarms	Shown below alarm group list and consists of 1or 2 rows.	
More	More displays a small window for more functions to select, such as Export, Edit and Setup.	
	Export	Use this button to export the alarm group list to printer or save to CSV or PDF file. See “Export Alarm List” on page 66
	Edit	Select alarm channel to edit and then click this button to change the channel data. See “Edit Alarms Dialog” on page 64.
	Setup	Use this button to setup the alarm group display. See “Setup Alarm List Export” on page 65.
Ack Page	Acknowledge the alarms as shown in the display.	

Quick User Guide

Acknowledge alarms

To acknowledge all the displayed alarms click on the **Ack Page** button. All the alarms shown on the screen will be acknowledged.
To acknowledge one or more selected alarms, click on the alarm line(s) and then select **Ack Alarm** function button.

Change between alarm displays

Click on the **List** button and then select **Alarm List, Alarm Groups, Event List** or **Display Groups**.

Edit an alarm

In the **Alarm Group List** display select the alarm and then click the **Edit** button.

Filter the alarms to be shown

In the **Alarm List, Alarm Group** or **Alarm Group List** display click directly on the actual filter and select the filter to be used.

Print alarms

To print the alarms shown on the screen click the **Print** button or **Print Screen** function button.

Silence buzzer

Click on the **Silence Buzzer** function button.
(Can be done on any display).

Valve Operation

How to Setup and Use the

Valve Components

Valve Components

Valve Main Icons

Main states	Sub states	Layout	Description
Operation	Closed		Position closed. Colored grey.
	Open		Position open. Product colored.
	Closing		When closing a valve the symbol will flash in closed position.
	Opening		When opening a valve the symbol will flash in open position.
	Pending		Indicates that a command is given and accepted by the valve component, but the valve is still in the same position. As soon the valve changes its position the sub icon disappears and the valve indicates its position.
Plot	Closed		When Plot function is configured the valve has to be treated as a manual / virtual valve, i.e. physical in the plant, but with no electrical feedback. When single clicking on the valve the state shall change, i.e. it is not necessary to open a dialog to change the state.
	Open		See above.

Apart from the main icons, a number of sub icons are used to indicate various states as shown in following table.

Valve Sub Icons

Sub icon	Example	Description
Alarm		Indicate the state of the connected alarm channel. Alarm status could be active (unacknowledged) alarm, acknowledged alarm or inhibited alarm.
Module Error		Indicates that there is an error in connection with the valve. For more information see also chapter about Trouble-shooting.
Emergency shut down (ESD)		Shows that the valve has been brought to a safe position by an external signal. It can be configured to close, open or keep the actual position. The signal has to be removed before the valve can be operated again.
Locked		The padlock indicates the valve is blocked for operation. Before any operation can take place the valve has to be unblocked.
Local		The L indicates valve is set into local mode and can only be operated locally directly on the valve.
Pending & Settling		Pending: When the valve has been given a command but has not started moving. Settling: The icon is only seen for controls of valves with volumetric indication (VPI). The cheese appears when the direction of the valve is changed. A delay of 7 seconds is active from the valve stops until the new direction is started. The delay is for the hydraulic oil to decompress before direction is changed.
Queued		The valve manager is a feature that limits the amount of valves (LPUs) that can be in operation simultaneously - to limit the power consumption on the 230VAC. When this icon is displayed the valve is queued because too many valves are in operation. When valves already in operation are completed, the valves in queue will be operated automatically with the given command.
Plot function		A plot valve is a hand operated valve with no automatic feedback into the automation system. Instead of plotting the current state to e.g. a whiteboard, the valve is configured as a virtual valve, which can be operated by the operator. The feedback is normally transferred from e.g. deck to the cargo control room using a Walkie Talkie.

Read only - only status shown		Only status is shown i.e. it is not possible to operate the valve from this workstation.
Positional valve		There are two kinds of valves, each one of them has its own dialog for operation: • The Open/Close valve is a valve that can only be positioned in either open or close position (DPI-E/VPI-E). • The Positional valve is a valve that can be set to any position between 0-100% (DPI-C/VPI-C).
Maintenance		The maintenance tool indicates that additional information are available in the valve control dialog i.e. “Reposition error” or “Position System Error”. A “Pos Sys Error” will also generate an “Position” Alarm as shown in this example.
Learning		The learning indicate a request of the learning feature. For further description see below section.
Learning Failure		The learning failure indicate that a learning request cannot be completed. A “Position” Alarm will typically also be generated as shown in this example. A mechanical adjustment of the valve with for example the speed will typically be necessary before a new learning request.

Valve Setup

Closed valve

Opened valve colored by product

Flashing valve is closing

Flashing valve is opening

Pending valve waiting for valve to change position

Plotted* closed valve

Plotted* opened valve

*) Plotted valves do not have any electrical feedback and are controlled manually

Valve with module error alarm

Locally operated valve

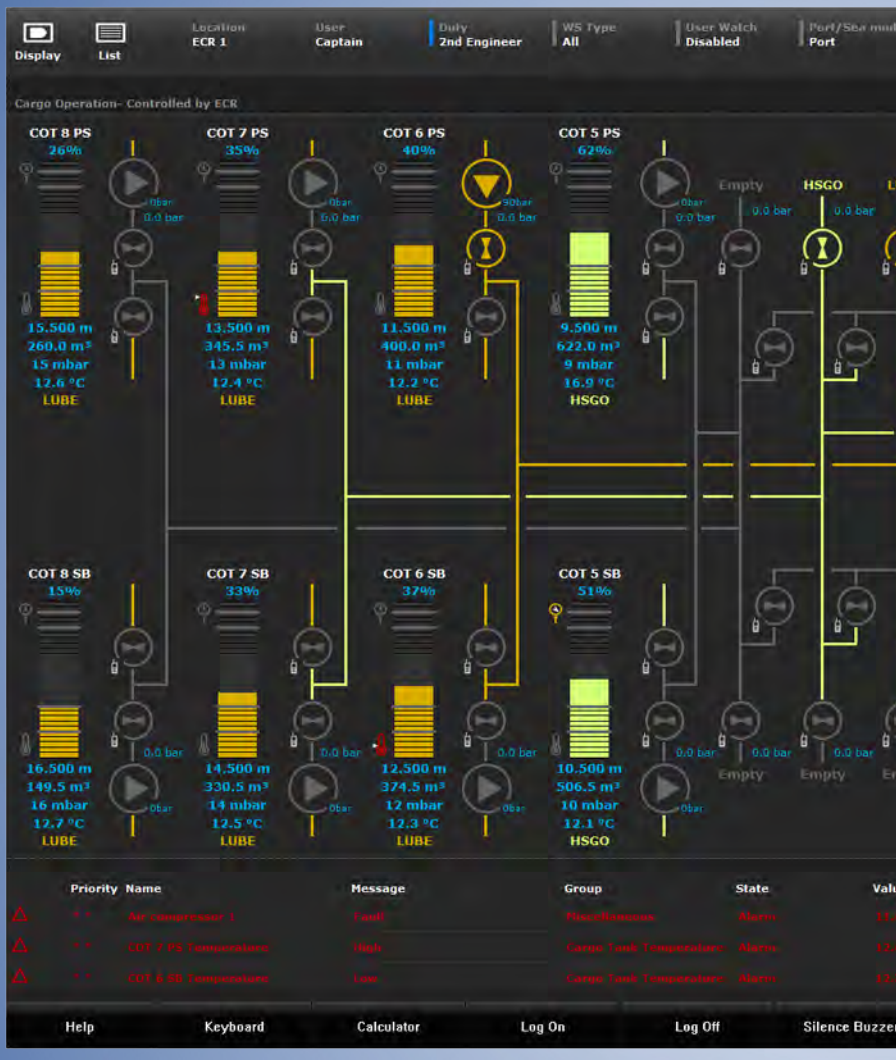
Valve with read only status

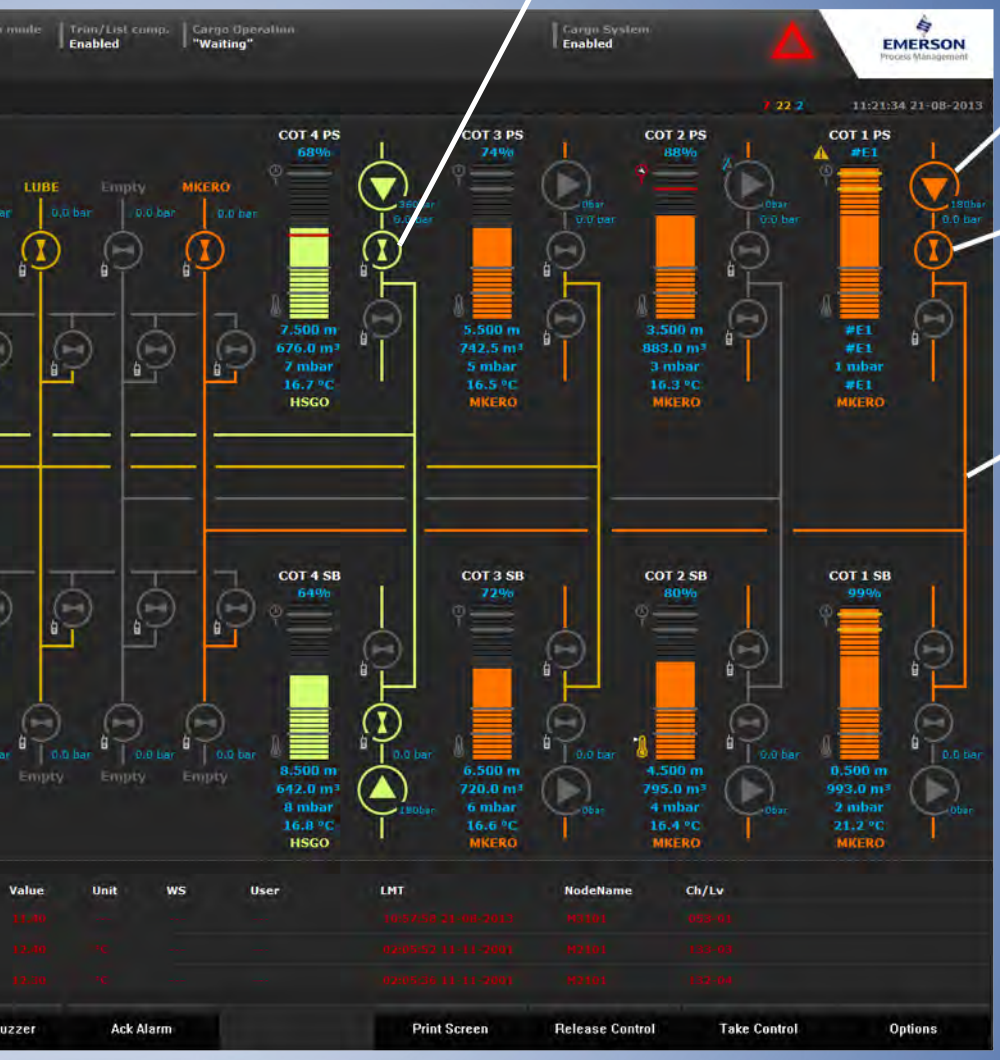
Valve that has been Emergency Shut Down

Valve with inhibited alarm, blocked and positioned opened at 80%

Valve with maintenance information in the valve control dialog

Valve in learning status





Click to change plotted valve from open to close

Pump running at 180 bar

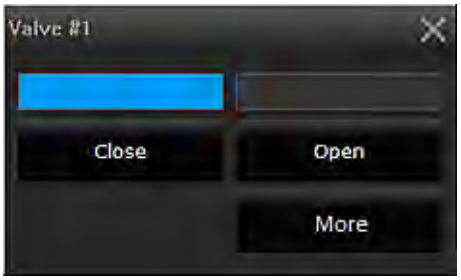
Click to view a dialog to open or close valve

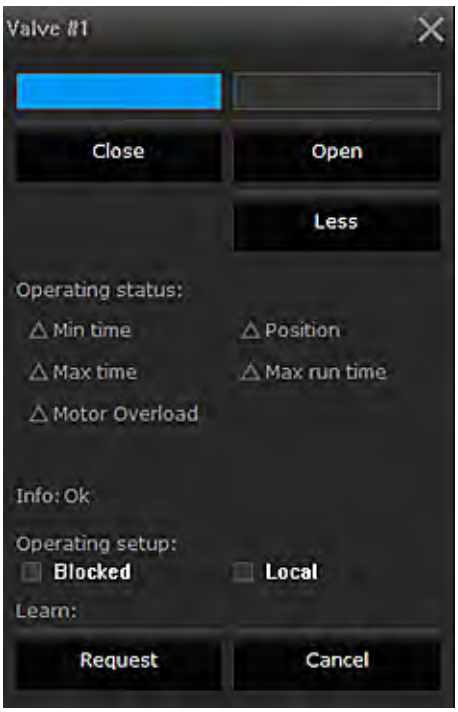
Color as defined for tank content, if contents are mixed it will be colored red.

Open/Close valve type

How to open window

When activating the valve icon with the pointer the below control opens. From there it is possible to give a command for the valve to open/close and see operating status and setup.





Window description

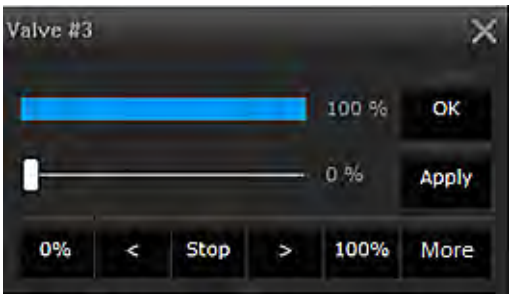
Item	Description
Bar with blue indication	The blue bar indicates the actual position of the valve (close or open). If both bars are blue the valve is in a middle position.
Close	Select this button to close the valve.
Open	Select this button to open the valve.
More	Select this button to see the operating status of the valve. The More button opens the dialog with more information as shown in the rightmost picture.
Less	Select this button to close the status part of this window.
Operating status	Shows the operating status of the valve. The status is also indicated with the following icons: unacknowledged, acknowledged and inhibited alarm. If greyed status is normal.

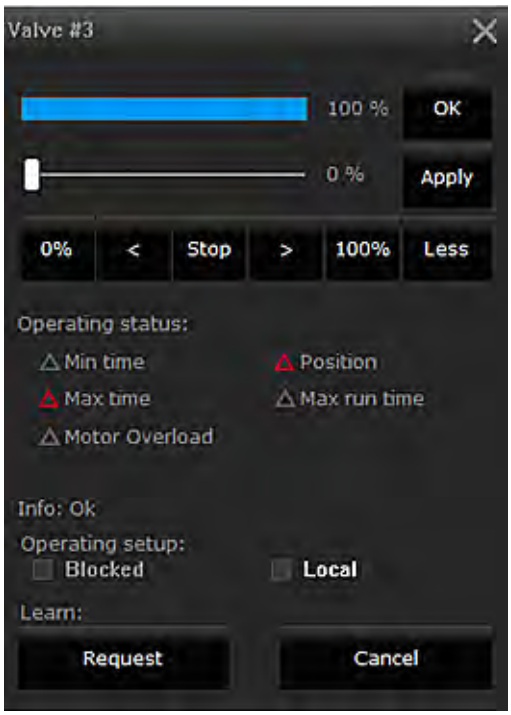
Item	Description	
Info	OK	Indicates that status is normal and there is no more information to be shown.
	Reposition Error	Occurs when the auto correction has been running more than four times within the last two hours and the maintenance tool is shown on the valve icon.
	Position System Error	Occurs when the open and closed position feedback are both high at the same time and the maintenance tool is shown on the valve icon.
Operating setup	If greyed these features are disabled and cannot be changed by the operator.	
	Blocked	The valve can be blocked by checking the check box. If blocked the valve sub icon is marked with a padlock and cannot be operated from the mimics. The system will supervise that the valve stay in position.
	Local	The valve can be set to local by checking the check box. If set to local the valve sub icon is marked with an L. This indicates local operation of the valve and that valve cannot be operated from the mimics. The position on the mimics will follow the actual position. The system will not supervise that the valve stay in its position.
Learn	Request	A ”Learn Request” will start the learning feature for the valve. The execution of the “Learn Request” requires the valve to be operated from Closed > Open > Closed or the opposite direction Open > Closed > Open. The system will then collect information about the valve movement to be able to generate the necessary settings, alarms limits etc.
	Cancel	Select this button to stop the learning request.

Positional Valve Type

How to open window

When activating the valve icon with the pointer the below control opens. From here it is possible to give a valve a command between 0-100%.





Window description

The position system for the modulating valves can be calibrated using the Learn Request function. If calibrated with the valve manager in operation then please read also “Valve Manager” on page 92.

Item	Description
Bar with blue indication	Indicates in percent how much the valve is opened.
Bar with slider	Move the slider to change the valve position in percent.
< and > buttons	Change the position of the valve to less or more. The slider on the bar will be moved.
0%	Select 0% and then click Apply to close the valve
100%	Select 100% and then click Apply to open the valve.
Apply	Click this button to apply the changes done for the position of the valve in the bar with slider.
Stop	Select this button to stop the valve moving.

Item		Description
More	Select this button to see the operating status of the valve.	
Less	Select this button to close the status part of this window.	
Operating status	Shows the operating status of the valve. The status is also indicated with the following icons: unacknowledged, acknowledged and inhibited alarm. If greyed status is normal.	
Info	OK	Indicates that status is normal and there is no more information to be shown.
	Reposition Error	Occurs when the auto correction has been running more than four times within the last two hours.
	Position System Error	Occurs when the analog feedback is outside the expected range.
Operating setup	If greyed these features are disabled and cannot be changed by the operator.	
	Blocked	The valve can be blocked by checking the check box. If blocked the valve sub icon is marked with a padlock and cannot be operated from the mimics. The system will supervise that the valve stay in position.
	Local	The valve can be set to local by checking the check box. If set to local the valve sub icon is marked with an L. This indicates local operation of the valve and that valve cannot be operated from the mimics. The position on the mimics will follow the actual position. The system will not supervise that the valve stay in its position.
Learn	Request	A “Learn Request” will start the learning feature for the valve. The execution of the “Learn Request” requires that the valve operates from Closed > Open > Closed or the opposite direction Open > Closed > Open. The system will then collect information about the valve movement to be able to generate the necessary settings, alarms limits etc. For valve with continuously feedback the learning feature will also calibrate the analog feedback.
	Cancel	Select this button to stop the learning request.

Valve Manager

The valve manager is an internal control that is used to limit the amount of LPUs in operation at the same time and thereby limit the power consumption on the 230VAC supply.

If too many valves are set in operation the **ValveManager** will queue the excessive valves. As valves complete their operation, valves in queue will be started automatically by the **ValveManager,** until all valves operations are completed.

Quick User Guide

Close/Open valve

To close or open valves double click on the valve icon and select the **Close** or **Open** button in the appearing dialog.
If the valve is a positional valve type then you can set the position of the valve to a percentage of opening/closing.

Calibrate valve

Double click on the valve icon and then select **More** button and then the **Learn - Request** button. The valve will operate from Closed > Open > Closed or the opposite direction Open > Closed > Open and the system will collect information about the valve movement to be able to generate the necessary settings, such as alarms limits etc.

Queue valves

To limit the amount of LPUs in operation and also the power consumption the valve manager can be used as an internal control. When the limit of LPUs in operation is exceeded the valves will be set in a queue and will automatically start operating when the first valves are completed.

Block valves

Double click on the valve icon and then select **More** button and then check the **Operating Setup - Blocked** check box. A pad lock will be added to the valve icon and the valve cannot be operated from the mimics.

Set valves in local mode

Double click on the valve icon and then select **More** button and then check the **Operating Setup - Local** check box. The valve icon will be marked with an L and local operation of the valve can now be performed. The valve cannot be operated from the mimics.

Pump Operation

How to Setup and Use the

Pump Components

Pump Components

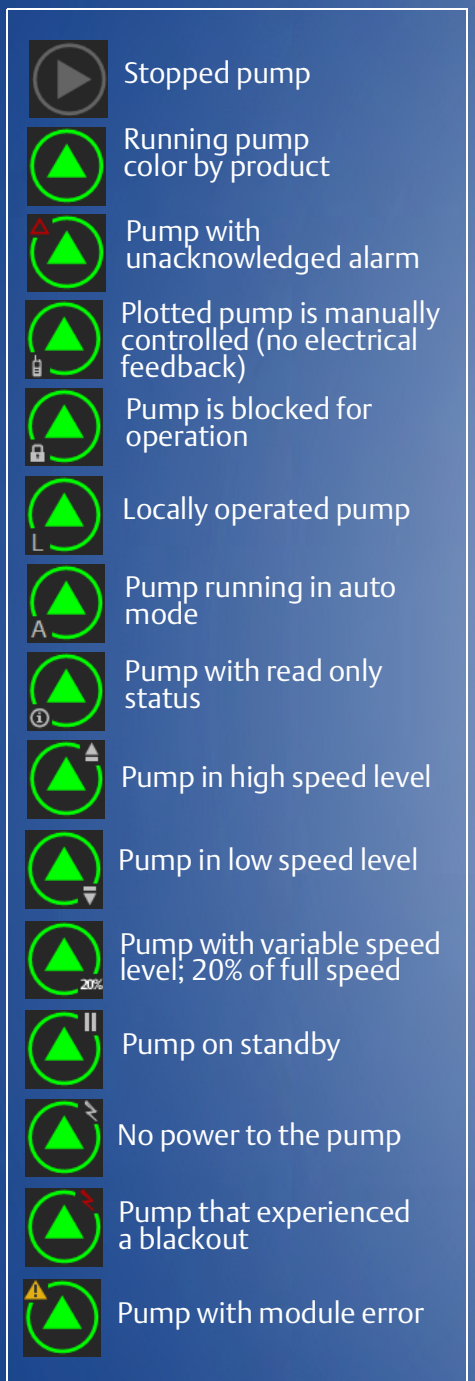
Main icon	Status	Description
	Stopped Shut down	Position stopped. Colored grey.
	Running Turned on	Position running. Product colored. Triangle pointing at pump direction.

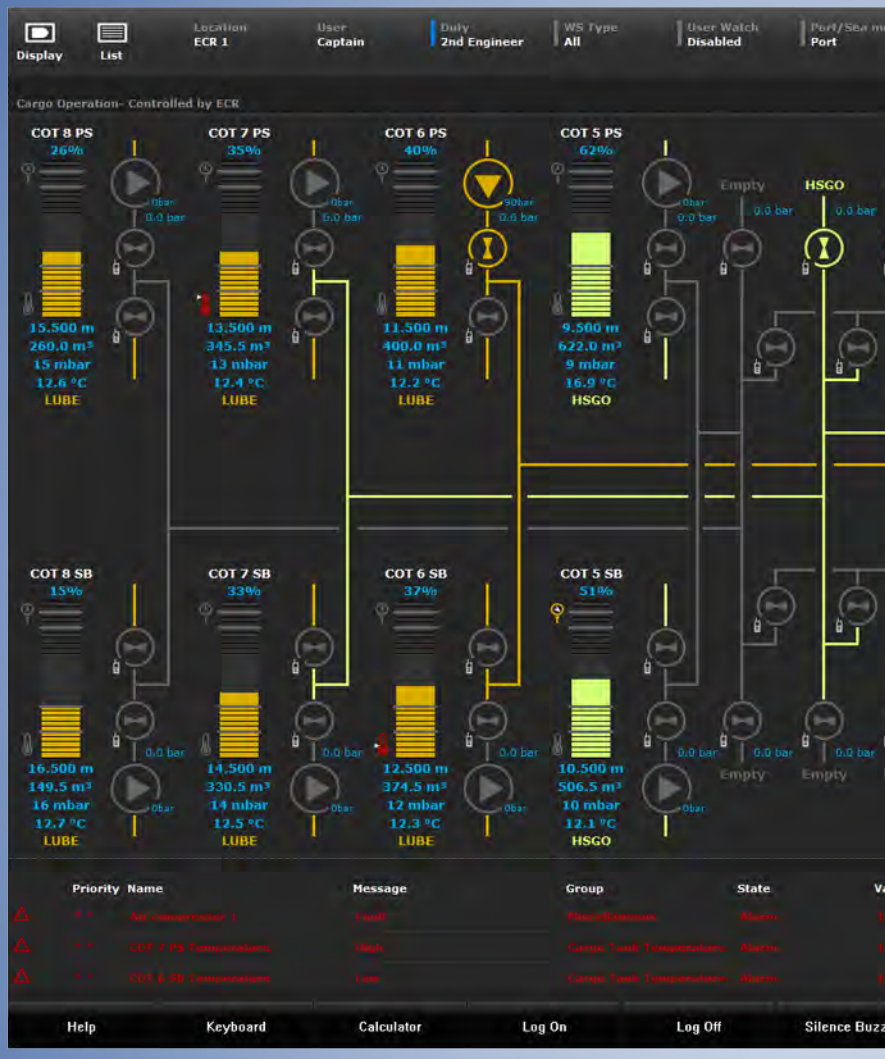
Apart from the main icon, a number of sub icons are used to indicate various states:

Main icon	Status	Description
	Alarm	Indicate the state of the connected alarm channel. Alarm status could be active (unacknowledged) alarm, acknowledged alarm or inhibited alarm.
	Module error	Indicates problem with the specific pump, such loss of communication etc. See also trouble shooting in Reference Manual.
	Plot	When Plot function is configured the pump has to be treated as a manual / virtual valve, i.e. physical in the plant, but with no electrical feedback. When single clicking on the valve the state shall change, i.e. it is not necessary to open a dialog to change the state.
	Blocked	The padlock indicates the pump is blocked for operation. Before any operation can take place the valve has to be unblocked.
	Local	The L indicates the pump is operated manually. The L is removed next time the pump is operated from the mimics.

	Auto	The A indicates the pump is running in Auto mode.
	Read only	Only the status for this pump is shown i.e. it is not possible to operate the pump from this workstation.
	High speed	Pump with two or more speed levels indicates when in high speed level.
	Low speed	Pump with two or more speed levels indicates when in low speed level.
	Variable speed	The actual speed for the pump. Unit can be in rpm, %, amp, bar etc.
	Standby	Pump on standby.
	No power	No power on the pump.
	Blackout	The pump experienced a blackout.

Pump Setup


Stopped pump
Running pump color by product
Pump with unacknowledged alarm
Plotted pump is manually controlled (no electrical feedback)
Pump is blocked for operation
Locally operated pump
Pump running in auto mode
Pump with read only status
Pump in high speed level
Pump in low speed level
Pump with variable speed level; 20% of full speed
Pump on standby
No power to the pump
Pump that experienced a blackout
Pump with module error


Display
List
Location ECR 1
User Captain
Duty 2nd Engineer
WS Type All
User Watch Disabled
Port
Cargo Operation- Controlled by ECR
COT 8 PS
26%
15.500 m
260.0 m³
15 mbar
12.6 °C
LUBE
COT 7 PS
35%
13.500 m
345.5 m³
13 mbar
12.4 °C
LUBE
COT 6 PS
40%
11.500 m
400.0 m³
11 mbar
12.2 °C
LUBE
COT 5 PS
62%
9.500 m
622.0 m³
9 mbar
16.9 °C
HSGO
Empty
HSGO
COT 8 SB
15%
16.500 m
149.5 m³
16 mbar
12.7 °C
LUBE
COT 7 SB
33%
14.500 m
330.5 m³
14 mbar
12.5 °C
LUBE
COT 6 SB
37%
12.500 m
374.5 m³
12 mbar
12.3 °C
LUBE
COT 5 SB
51%
10.500 m
506.5 m³
10 mbar
12.1 °C
HSGO
Empty
Empty
Priority
Name
Message
Group
State
Help
Keyboard
Calculator
Log On
Log Off

Pump running at 180 bar

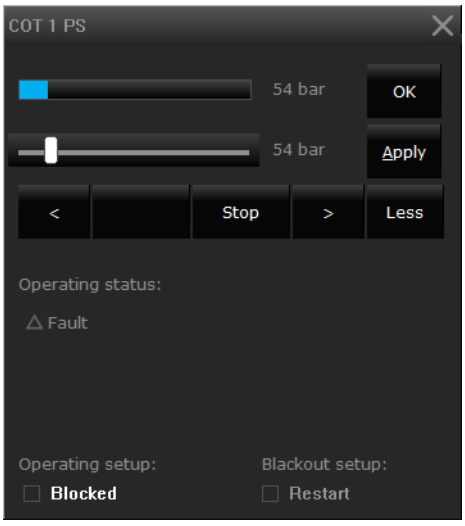
Open Valve

Color as defined for tank content, if contents are mixed it will be colored red.

Pump Modulating

How to open window

Click on the **Pump** icon to open the **Pump** dialog.



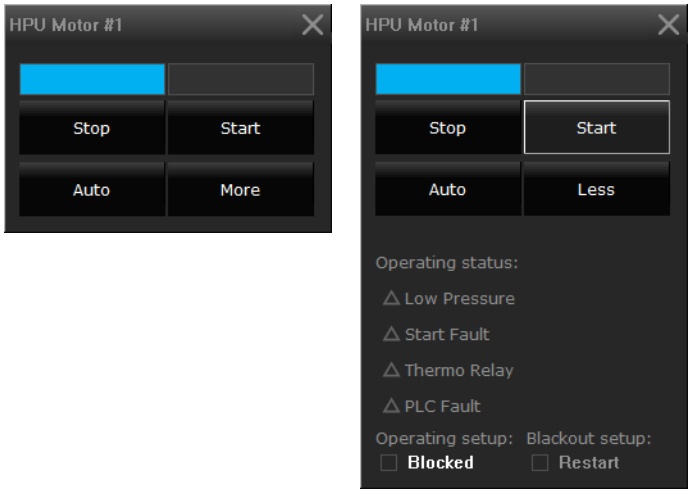
Window description

Item	Description
Bar with blue indication	Indicates the speed of the pump.
Bar with slider	Move the slider to change the speed.
< and > buttons	Change the speed of the pump to less or more.
Stop	Click this button to stop the pump.
Apply	Click this button to apply the changes done to the pump position bar.
More	Click this button to see the status of the pump.
Operating status	Detailed indication of alarm status for the connected alarms.
Operating setup	Can be set to blocked by checking the check box. If blocked the pump main icon is marked with a padlock and cannot be operated. If greyed this feature is disabled and cannot be changed by the operator.
Blackout setup	When checked the pump will automatically restart after power have been restored in case of a blackout (if running when the blackout occurred). If greyed this feature is disabled and cannot be changed.

Turn Pump On or Off

How to open window

Click on the **Pump** icon to open the **Pump** dialog



Window description

Item	Description
Bar with blue indication	The blue bars indicates actual position of the pump (stop or start). If both bars are blue then the pump is in a middle position.
Stop	Click this button to stop the pump.
Start	Click this button to start the pump.
Auto	The Auto selection is a project depending feature and can be of different definitions. Please refer to the specific project description for a detailed Auto function.
More	Click this button to see the status of the pump.
Less	Click this button to close the status part of this window.
Operating status	Detailed indication of alarm status for the connected alarms.
Operating setup	Can be set to blocked by checking the check box. If blocked the pump main icon is marked with a padlock and cannot be operated. If greyed this feature is disabled and cannot be changed by the operator.
Blackout setup	When checked the pump will automatically restart after power have been restored in case of a blackout (if running when the blackout occurred). If greyed this feature is disabled and cannot be changed.

Quick User Guide

Turn pump on/off

To turn the pump on/off double click on the pump icon and select the **Start** or **Stop** button in the appearing dialog.
If the pump is of a modulation type then you can set the pump speed with the slide bar and then select the **Apply** button.

Ballast, Bilge and Service Tank System

How to Setup and Use the

Ballast, Bilge and Service Tank System

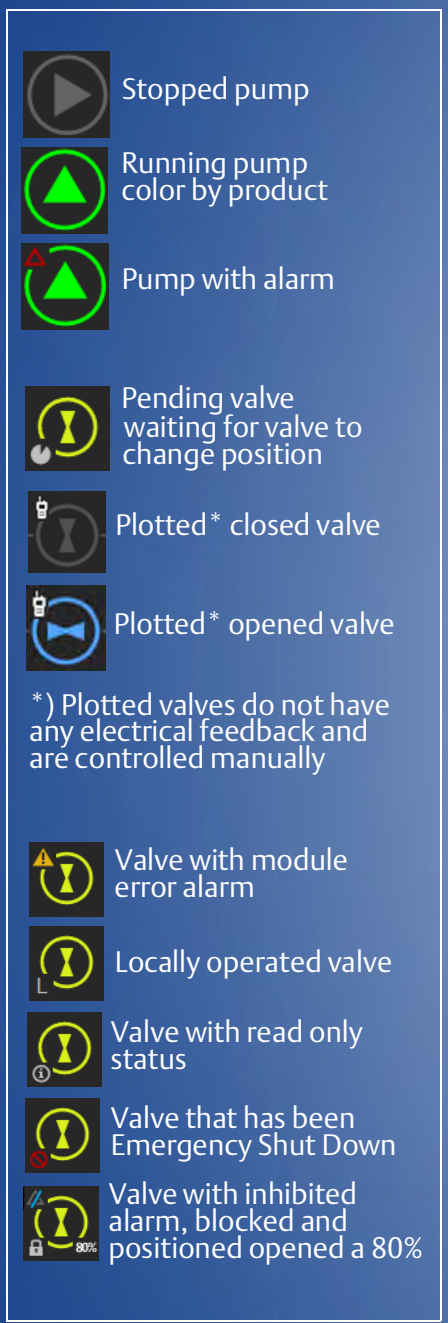
Ballast, Bilge and Service Tank Systems

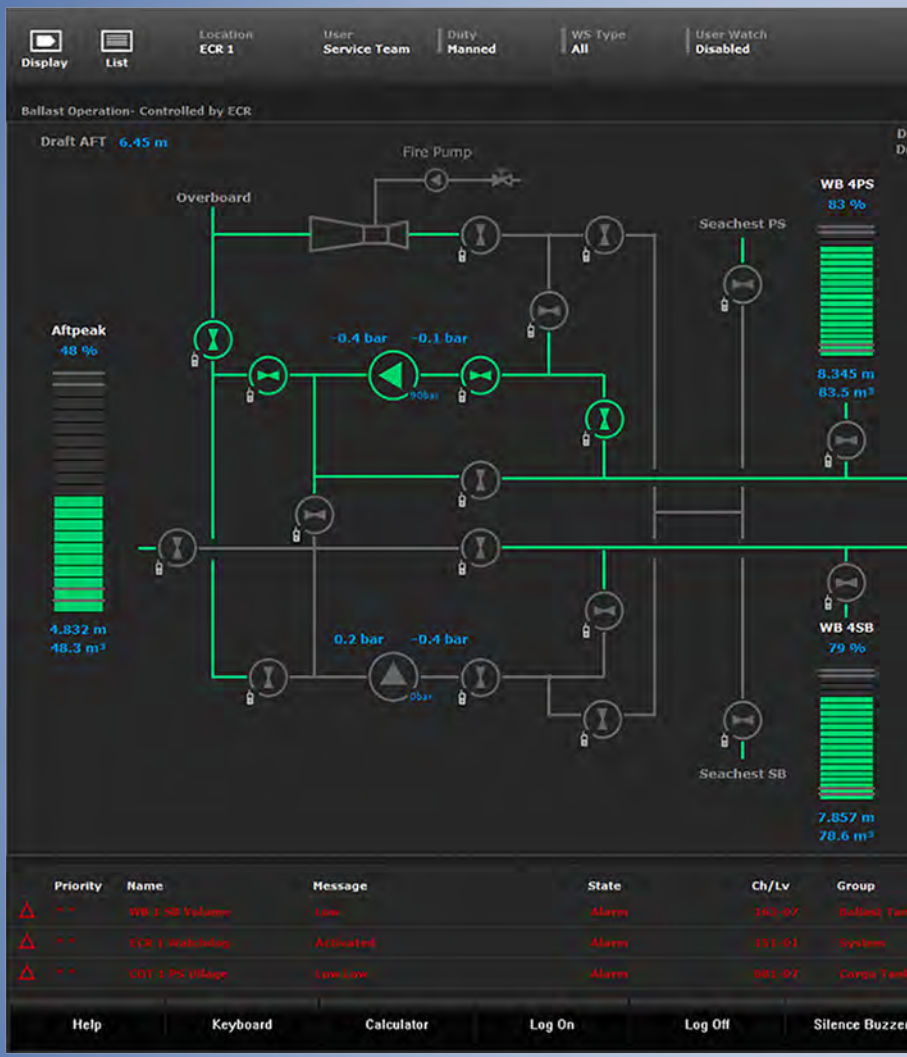
Functionality

The Ballast, Bilge and Service tank systems can include the following features:

- Level and tank contents gauging by using electronic level (MAS2600) or electro pneumatic sensors (LevelDatic)
- Remote control of pumps and valves
- Draft, trim and heel gauging
- Temperature gauging
- Tank heating control
- Level, contents, pressure and temperature alarms
- Automatically control of pumps and valves
- Interlock between several workstations
- Dynamic colouring of pipelines, valves, pumps and tanks
- Transfer of tank contents information to loading and stability computer

Ballast Display





Tank name

Content in percent

Tank component with unacknowledged level alarm - flashing red box

Content level in m

Volume

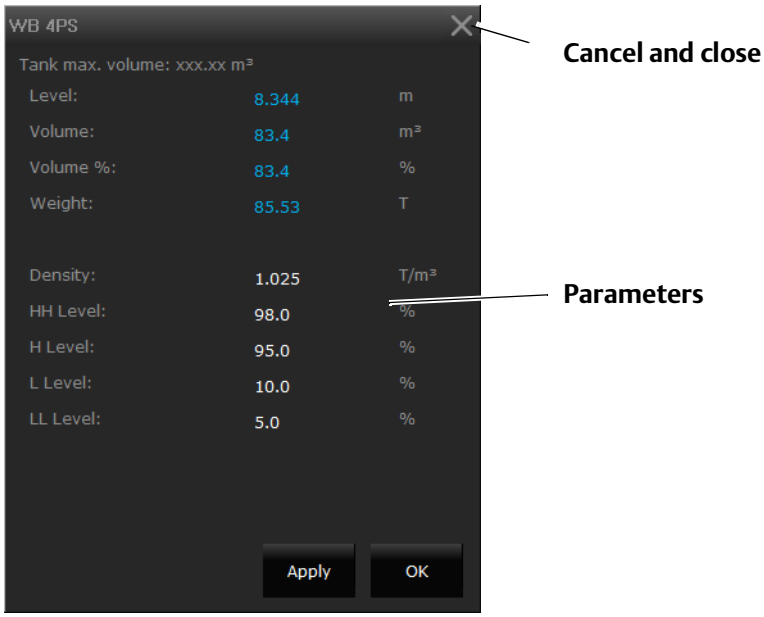
Tank Component Dialog

How to open window

Click on the tank component icon to open the dialog.

Window description

Depending of the configuration the tank component can be displayed in different ways. Here below is an example of a ballast tank with high and low level alarms. Here it is also possible to key-in the density.



How to change density

1. Click on the density parameter and change the value.
2. Click on the **Apply** button.
3. Click on the **OK** button to close and save changes.

Tank Details and Settings

The tank component is used to indicate tank data and related alarms. The tank component dialog can contain:

- A bargraph showing e.g. the contents.
- Up to four tank related values.
- Alarm indication contents, temperature and pressure.

Cargo System

How to Setup and Use the

Cargo System

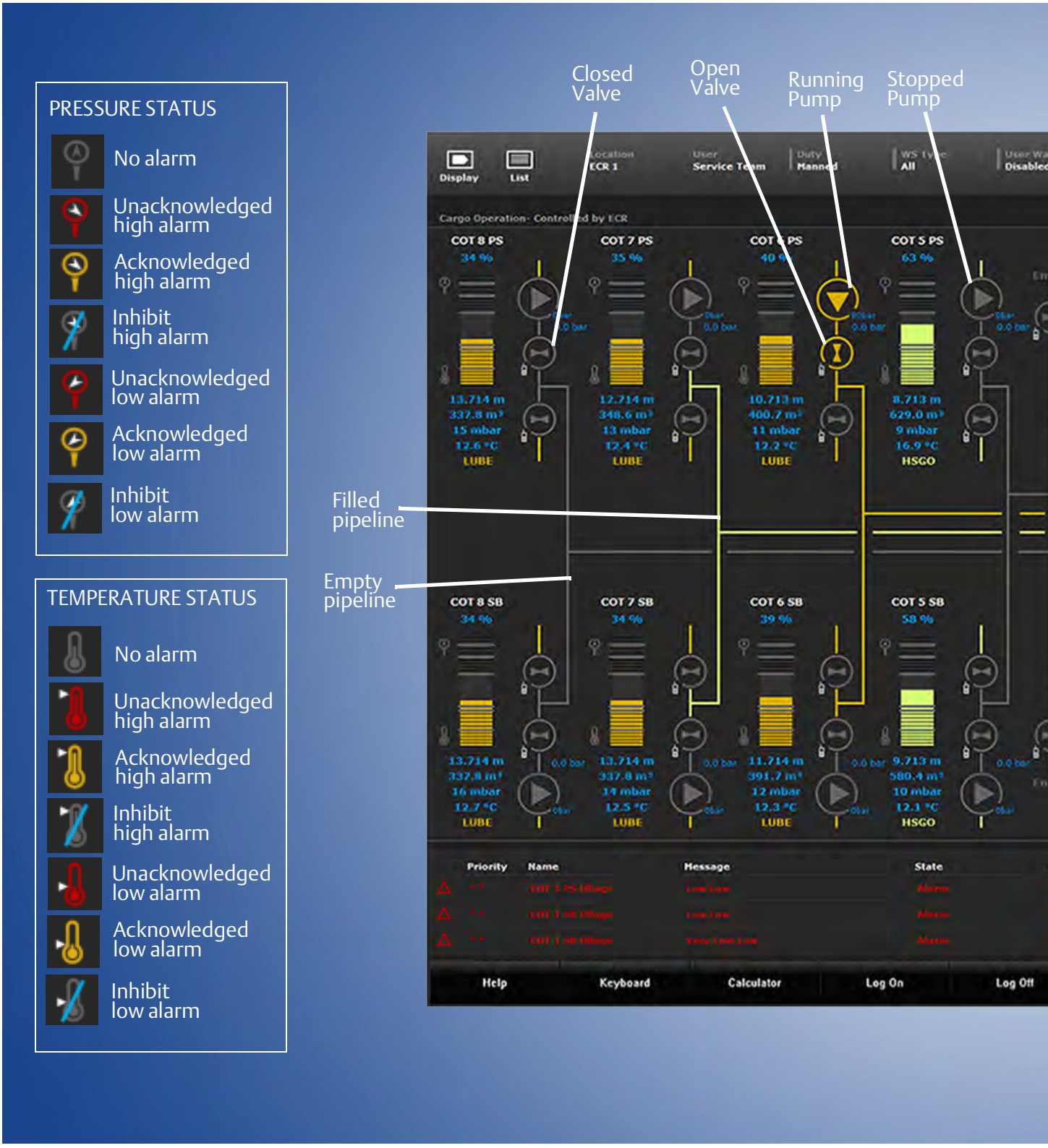
Cargo System

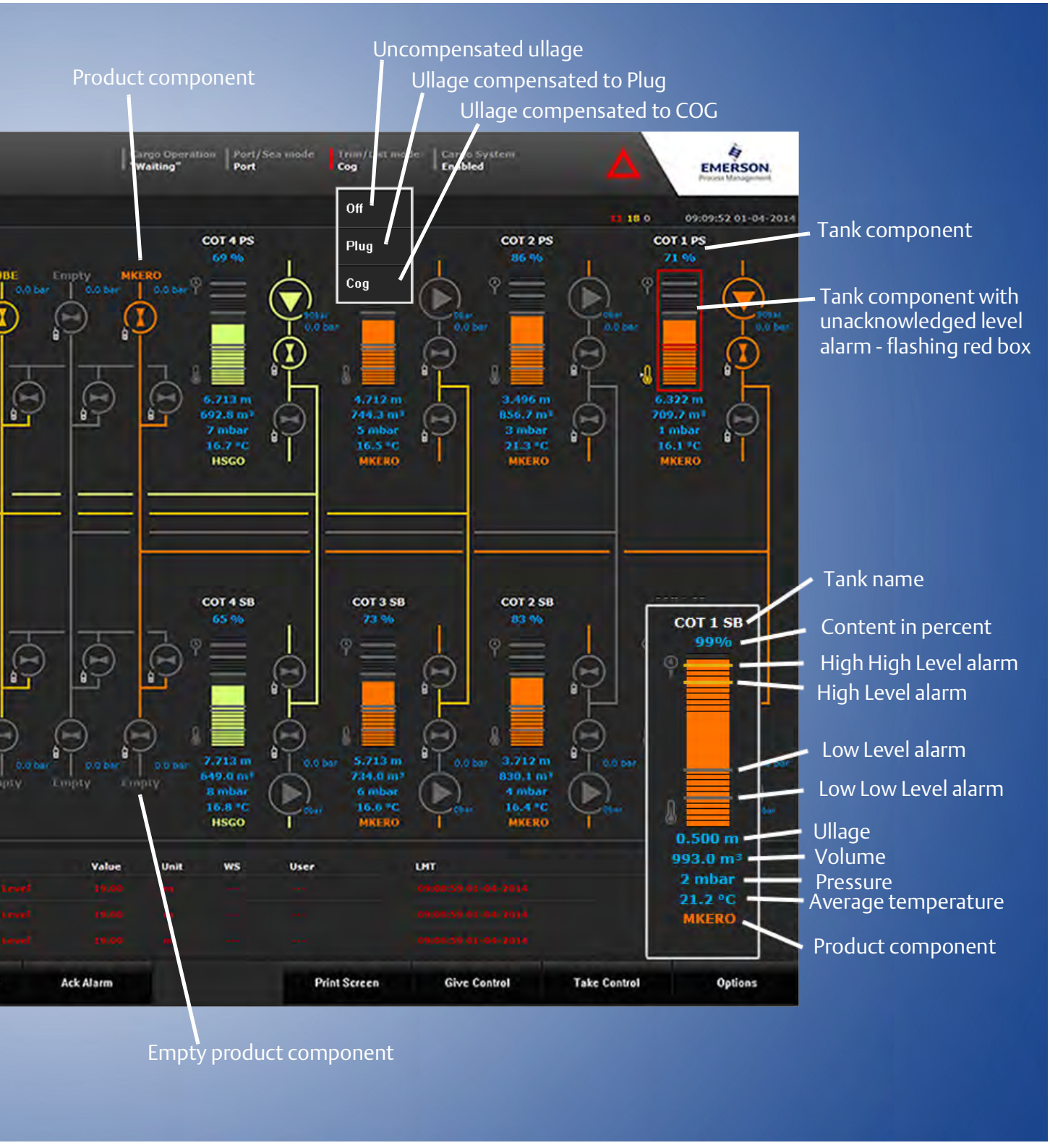
Functionality

The cargo system can include the following features:

- Level and tank contents gauging by means of radar based sensors
- Tank top pressure gauging
- Temperature gauging
- Level, indication, pressure and temperature alarms
- Tank heating control
- Remote control of pumps and valves
- Automatic control of pumps and valves
- Interlock between more workstations
- Dynamic colouring of pipelines, valves, pumps and tanks
- Safeguards (Information which is shown each time e.g. a valve is operated
- Conditional warnings (When operating e.g. a valve it is only shown when a certain condition is present)
- Transfer of tank contents information to loading and stability computer
- Independent high level alarms.

Cargo Display




Product component
Uncompensated ullage
Ullage compensated to Plug
Ullage compensated to COG
Tank component
Tank component with unacknowledged level alarm - flashing red box
Tank name
Content in percent
High High Level alarm
High Level alarm
Low Level alarm
Low Low Level alarm
Ullage
Volume
Pressure
Average temperature
Product component
Empty product component
Off
Plug
Cog
COT 4 PS
69 %
COT 2 PS
86 %
COT 1 PS
71 %
COT 4 SB
65 %
COT 3 SB
73 %
COT 2 SB
83 %
COT 1 SB
99%
0.500 m
993.0 m³
2 mbar
21.2 °C
MKERO
Ack Alarm
Print Screen
Give Control
Take Control
Options

Tank Details and Settings

The tank details is used to indicate tanks data and related alarms. The details and settings can contain:

- Tank component
- A bargraph showing e.g. the contents
- Up to four tank related values
- Alarm indication contents, temperature and pressure.
- Product component

Tank Component

The tank component consists of the tank name and is often placed above the bargraph showing the tank content. Clicking on the tank component name reveals the Tank Component dialog (see page 117).

The coloring of the bargraph in the tank component can either be based on the connected Product Component or based on the actual alarm status/level.

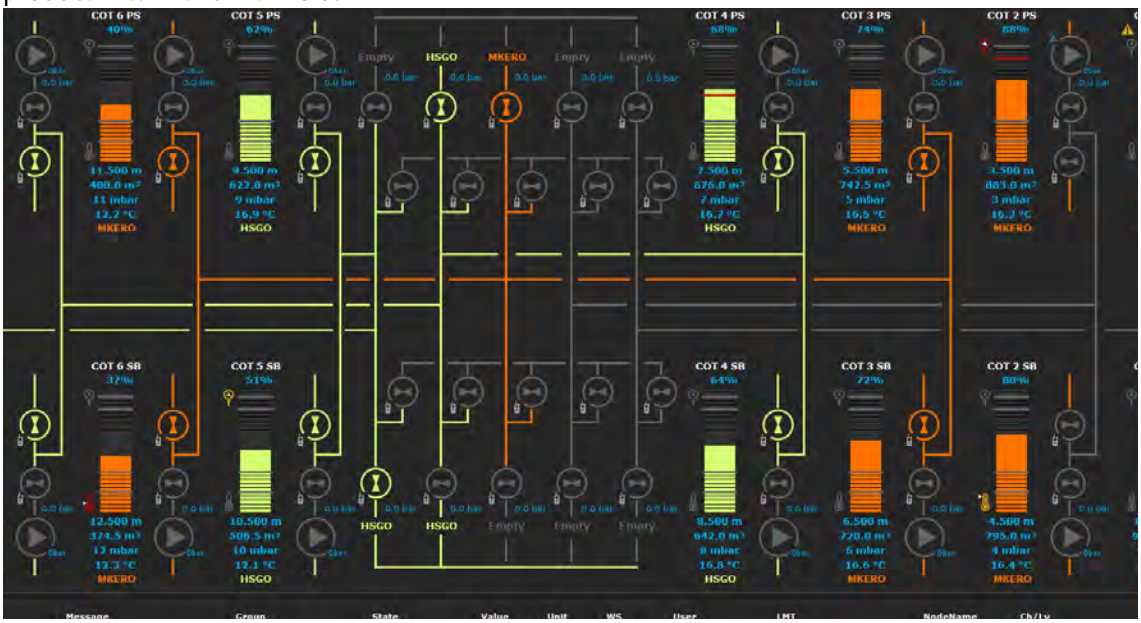
Product Component

The product component will be placed next to the cargo tanks or manifolds where it is used for selection of the actual product. The selected product is assigned to a color that will be used for the coloring of the bargraphs, piping, open valves and started pumps connected to this tank.

Clicking on the product component name reveals the Product Component dialog (see page 118).

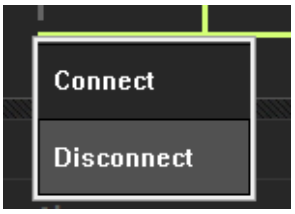
Pipe Line

The dynamic coloring can be used in advanced cargo systems. The product can then flow from a tank or a manifold. The product component is placed at this location to able the selection of the current product in tank and manifold.



Connect / Disconnect Pipeline

A special feature called connect / disconnect can be added to the pipeline. With this feature the operator can change the piping e.g. adding portable connectors to the manifolds. When activating pipelines with this function, the following dialog is displayed:

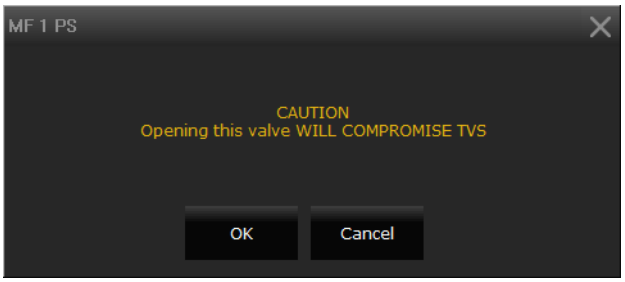


When connect is selected the pipe will be a few pixels longer in each end and thereby connect to the existing piping system. Same as when disconnect is selected the pipe will be a few pixels shorter and thereby disconnect from the existing piping system.

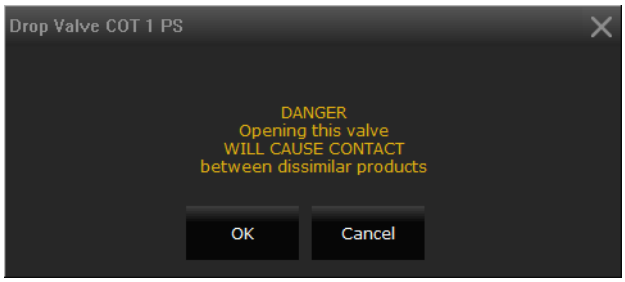
Product Mixing

To assist the user in safe cargo operation a system is built in to supervise that different cargoes are kept apart. Every time a valve or pump is operated on a cargo system the status is checked and based on the cargo and valves the following warnings can appear:

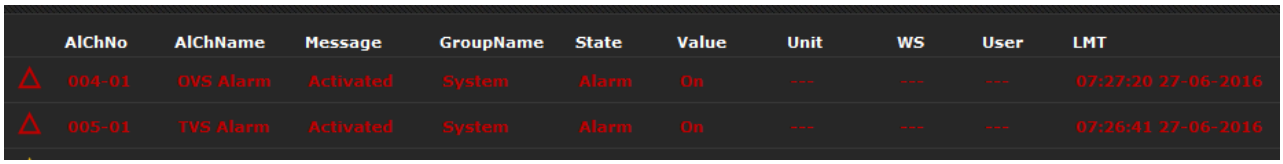
- TVS Warning
  TVS (Two Valve Separation) warns before less than two closed valves are separating two different cargoes. TVS requires a system designed with two valves at all places to be able to make the TVS.



- OVS Warning
  OVS (One Valve Separation) warns before two different cargo is mixed.



In both the above two warnings the user have the possibility to cancel and continue his operation. If the operation is continued and the cargo is “mixed” the influenced system will turn into red cargo color and alarms will be generated for OVS and/or TVS activated. When the valves are closed, the color will change back to the original color.



	AlChNo	AlChName	Message	GroupName	State	Value	Unit	WS	User	LMT
△	004-01	OVS Alarm	Activated	System	Alarm	On	---	---	---	07:27:20 27-06-2016
△	005-01	TVS Alarm	Activated	System	Alarm	On	---	---	---	07:26:41 27-06-2016

Tank Component Dialog

How to open window

This dialog is opened by clicking the tank component in the **Cargo** display.
It will display the data from the selected tank.

Window description

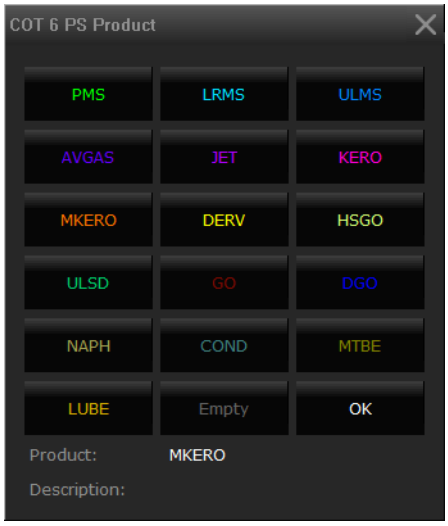
Item	Description
Tank max. volume	The maximum volume of the tank.
Bargraphs	Bargraphs for temperature and pressure with alarm limits.
Tank parameter data	Tank parameters data can be changed by clicking directly on the data and type a new value. This function can be password protected.
Apply	Select the **Apply** button to apply changes made to the tank parameter data.

Note! Blue colored text is static information or read only values and cannot be changed!

Product Component Dialog

How to open window

The product dialog is opened by selecting the product component name. (click on the component).



Window description

Item	Description
Title on window	Name of tank or manifold.
Product names	The product as they are defined in the system. Each product is connected with a color.
Empty	Indicates that no selection for product is done here.
Product	Selected product name. You can change the name by clicking any of the other names in the window.
Description	Description of the product. You can change the description by clicking in the field and type the new description.

Cargo Operation

Basic cargo operation includes supervising and controlling the cargo content when filling or emptying tanks and at sea for safe monitoring at any time. Most of the cargo monitoring is done from the Cargo Display as shown from the examples in the overview picture in the beginning of this chapter.

Planning and setup of important functions can be done before and sometimes during cargo operation. Below is listed the most important functions with a reference where to find more information:

- Setup password levels - see “Log On” on page 23
- Setup and monitor alarms, alarm groups and alarm filters - see “Alarm System Operation” on page 41
- Set Ullage presentation; not compensated or compensated to plug or COG - this function is set from the info panel
- View and set trends - “Setup Trend Logging” on page 34
- Set trim/list - this function is set from the info panel
- Set control to one workstation only - “Switch Control Functions - Interlock” on page 29
- Setup cargo composition - see “Product Component Dialog” on page 118
- Setup sea water density - this is set in the info panel

Quick User Guide

To manually change tank parameters

Open the Tank Component dialog by double clicking the tank component name in the Cargo Display. Click directly on the tank data and type the new value. Then click the **Apply** button to apply the changes to the tank parameter.

Change name of product component

Open the **Product Component** dialog by double clicking the product component name in the Cargo Display. Product name and description can be changed by typing the new names directly in the field of the former ones.
You can switch to another product by clicking directly on its name.

Connect/Disconnect pipelines

Double-click on the piping and select from the drop-down list to connect or disconnect pipelines.

Change ullage presentation

Click the Trim/List function in the info panel and then select:
Off - for non-compensated ullage presentation
Plug - for ullage compensated to plug
COG - for ullage compensated to Center Of Gravity

Show status of connected sensors via tooltip box

Slide the mouse pointer over the tank component and the status of the connected sensors will be shown.

Draft, Trim and Heel

How to Setup and Use the

Draft, Trim and Heel System

Draft, Trim and Heel System

Functionality

The Draft, Trim and Heel system can include the following features:

- Indication of the compensated Draft for the vessel by using the electronic level sensors (MAS2600) or electro pneumatic sensors (LevelDatic)
- Indication of the Trim for the vessel by using compensated Draft values or the electronic inclinometer (G048).
- Indication of the Heel for the vessel by using compensated Draft values or the electronic inclinometer (G048).
- Setting of the sea water Specific Gravity for the Draft compensation.
- Indication of the Draft sensors raw signals for trouble shooting.

Draft, Trim and Heel Display

DRAFT
The compensated Draft measurement (sensor vertical and longitudinal position and SG)

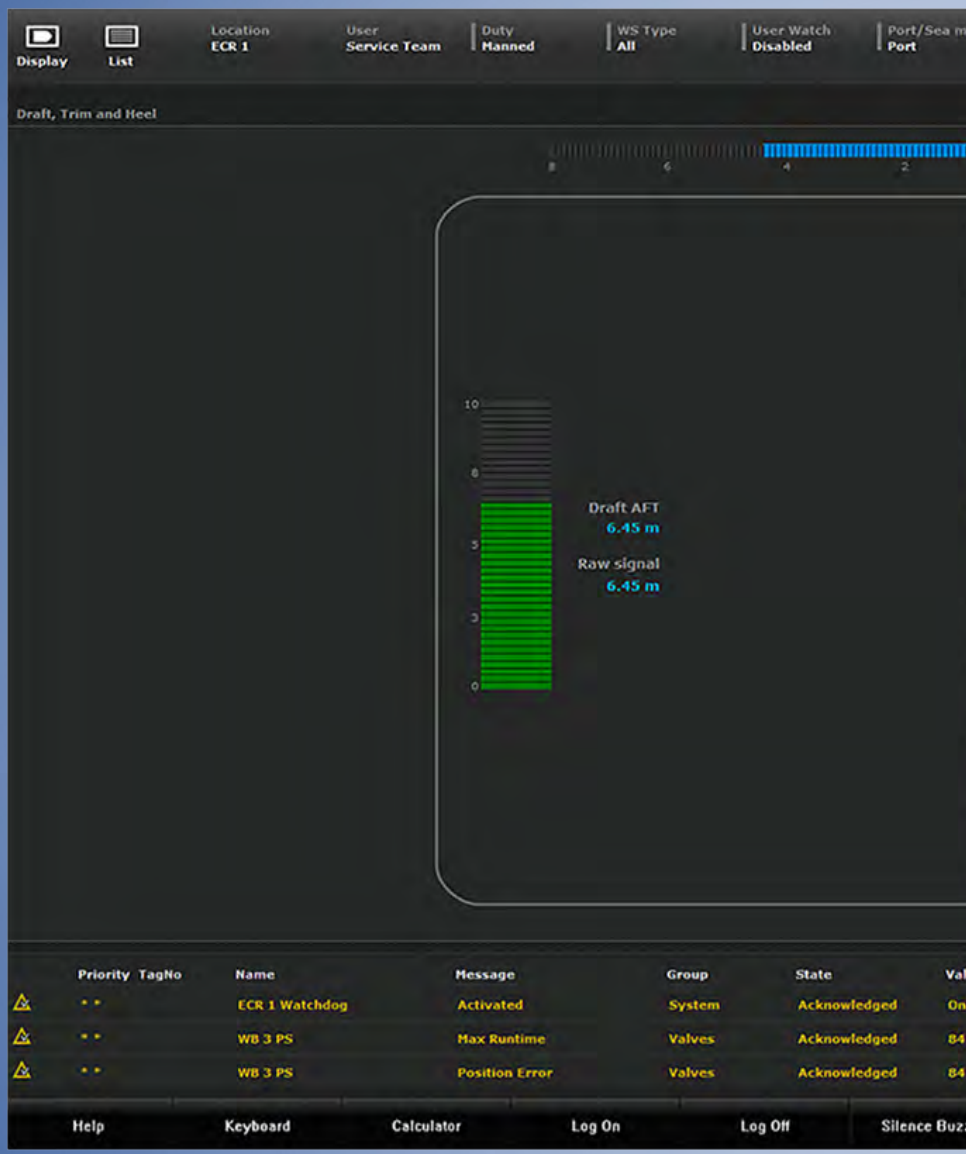
RAW SIGNAL
The raw signal before any compensation

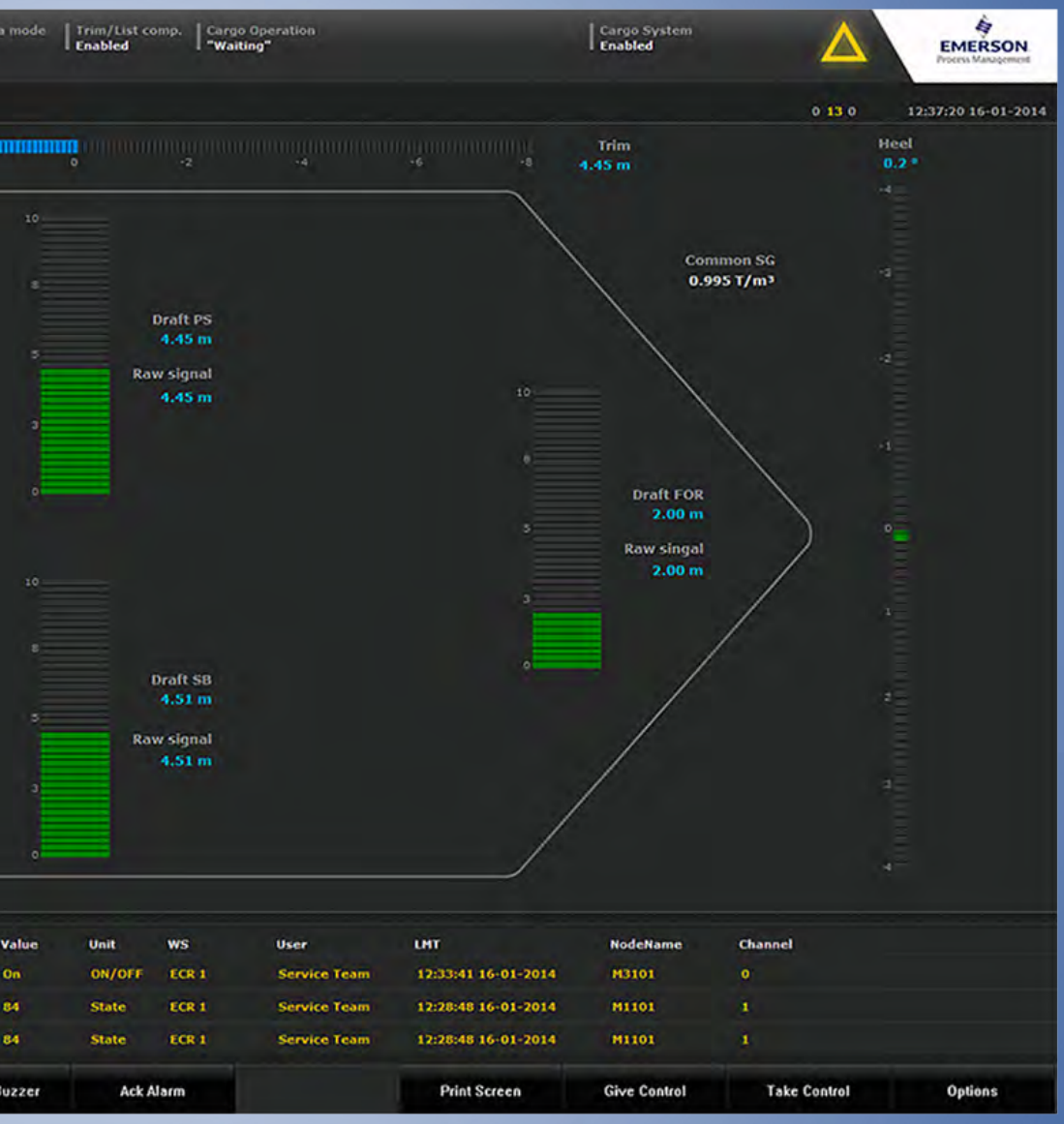
TRIM
The longitudinal angle/position of the vessel in the water. Positive trim is trim aft.

HEEL
The transverse angle/position of the vessel in the water. Positive heel is heel starboard.

COMMON SG
The keyed in Specific Gravity (SG) for the actual sea water.

The Draft, Heel and Trim information can also be located on other displays such as ballast.




Trim/List comp.
Enabled
Cargo Operation
"Waiting"
Cargo System
Enabled
EMERSON
Process Management
0 13 0
12:37:20 16-01-2014
Trim
4.45 m
Heel
0.2 °
Common SG
0.995 T/m³
Draft PS
4.45 m
Raw signal
4.45 m
Draft FOR
2.00 m
Raw singal
2.00 m
Draft SB
4.51 m
Raw signal
4.51 m
Value
Unit
WS
User
LMT
NodeName
Channel
On
ON/OFF
ECR 1
Service Team
12:33:41 16-01-2014
M3101
0
84
State
ECR 1
Service Team
12:28:48 16-01-2014
M1101
1
84
State
ECR 1
Service Team
12:28:48 16-01-2014
M1101
1
Ack Alarm
Print Screen
Give Control
Take Control
Options

Common SG Dialog

How to open window

Click on the Common SG icon to open the dialog.

How to change density

1. Click on the density parameter and key in the value
   or
   Use the slider to change the parameter.
2. Click on the **Apply** button.
3. Click on the **OK** button to close and save changes.

Note! The Specific Gravity is a very important setting for the draft measurement to provide the correct indication. Therefore make sure this setting is done correctly.

The normal SG for sea water is 1.025 T/m^3 but depending of the vessel location this can change.

Fuel Oil Consumption

How to Setup and Use the

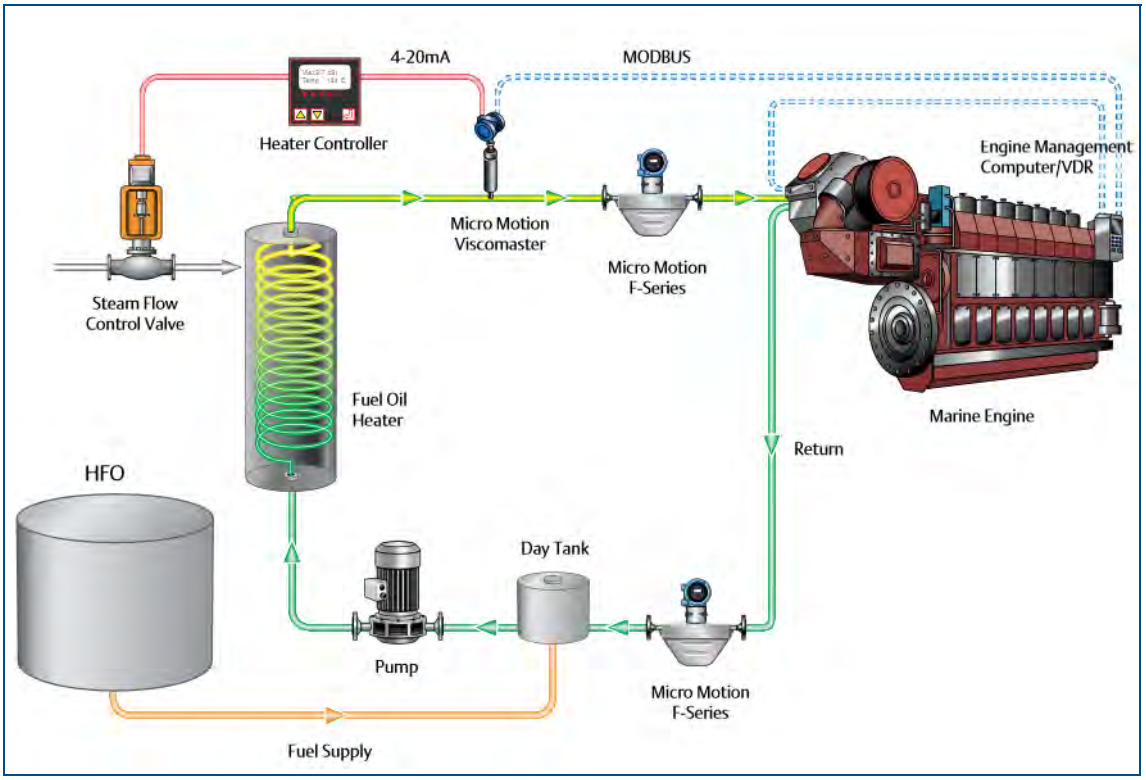
Fuel Oil Consumption System

Fuel Efficiency Measurement

Description

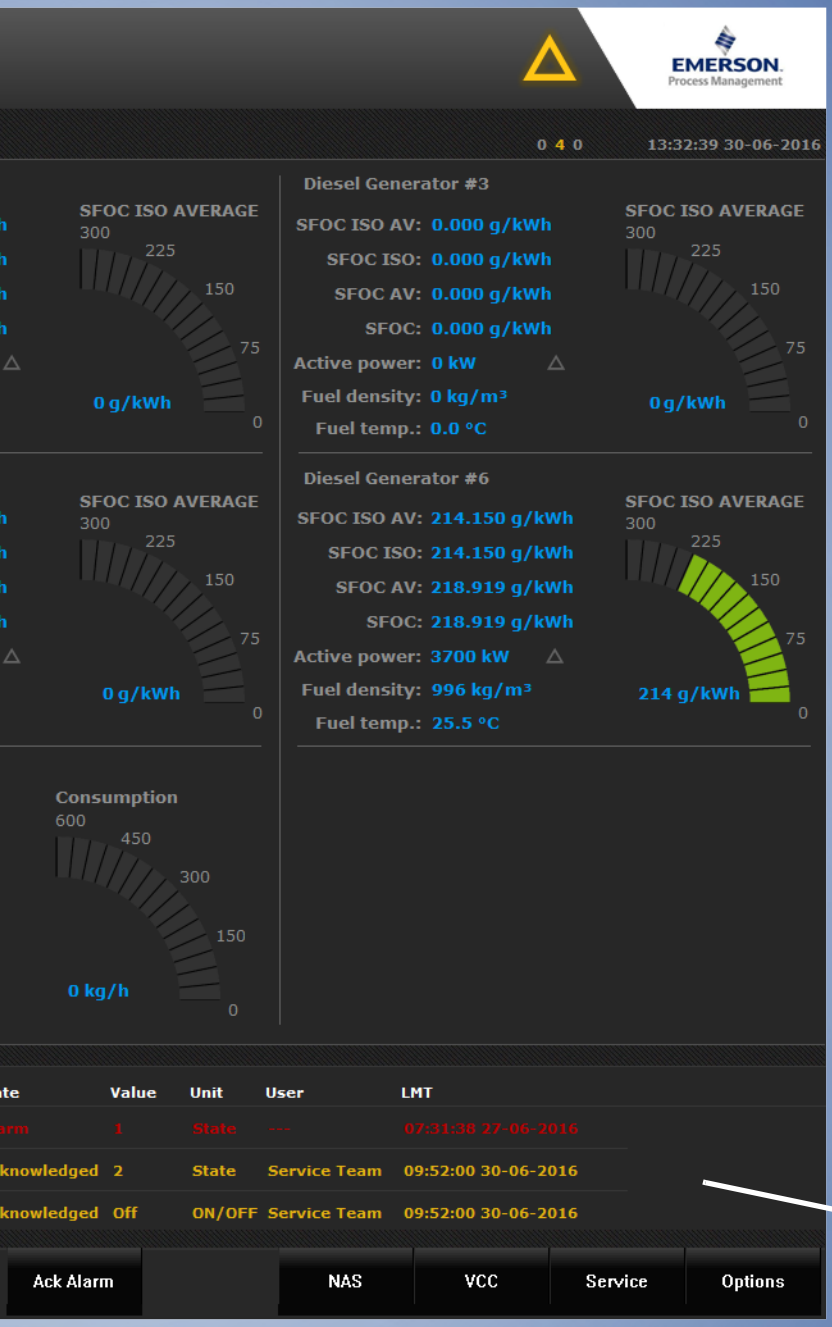
Specific Fuel Oil Consumption (SFOC) provides a baseline for engine or vessel fuel efficiency. SFOC is a calculated value (g/kWh) based upon direct measurements of fuel consumption and power generated. SFOC can be calculated to ISO 3046-1 standard in order to normalize for effects of ambient operating conditions of fuel efficiency. Measurements used to calculate SFOC to ISO 3046-1 standard include ambient temperature, ambient pressure, and charge air inlet temperature.

Meter Confidence is comprised of three individual software features: System Verification, Calibration Verification, and Zero Verification. These three features allow customers to assess the overall reliability of a Coriolis mass flow meter's measurement capabilities. System Verification compares two flow meters in series to verify overall measurement accuracy tolerances. Calibration Verification ensures each flow meter's calibration data is the same as the day it was commissioned. Zero Verification allows customers to assess the flow meter's current zero and the need for a new zero procedure. Meter Confidence features should be utilized periodically to assess meter performance and suggest possible maintenance procedures.



Typical system layout for Engine Fuel Oil Efficiency Measurement.

FO Overview Display



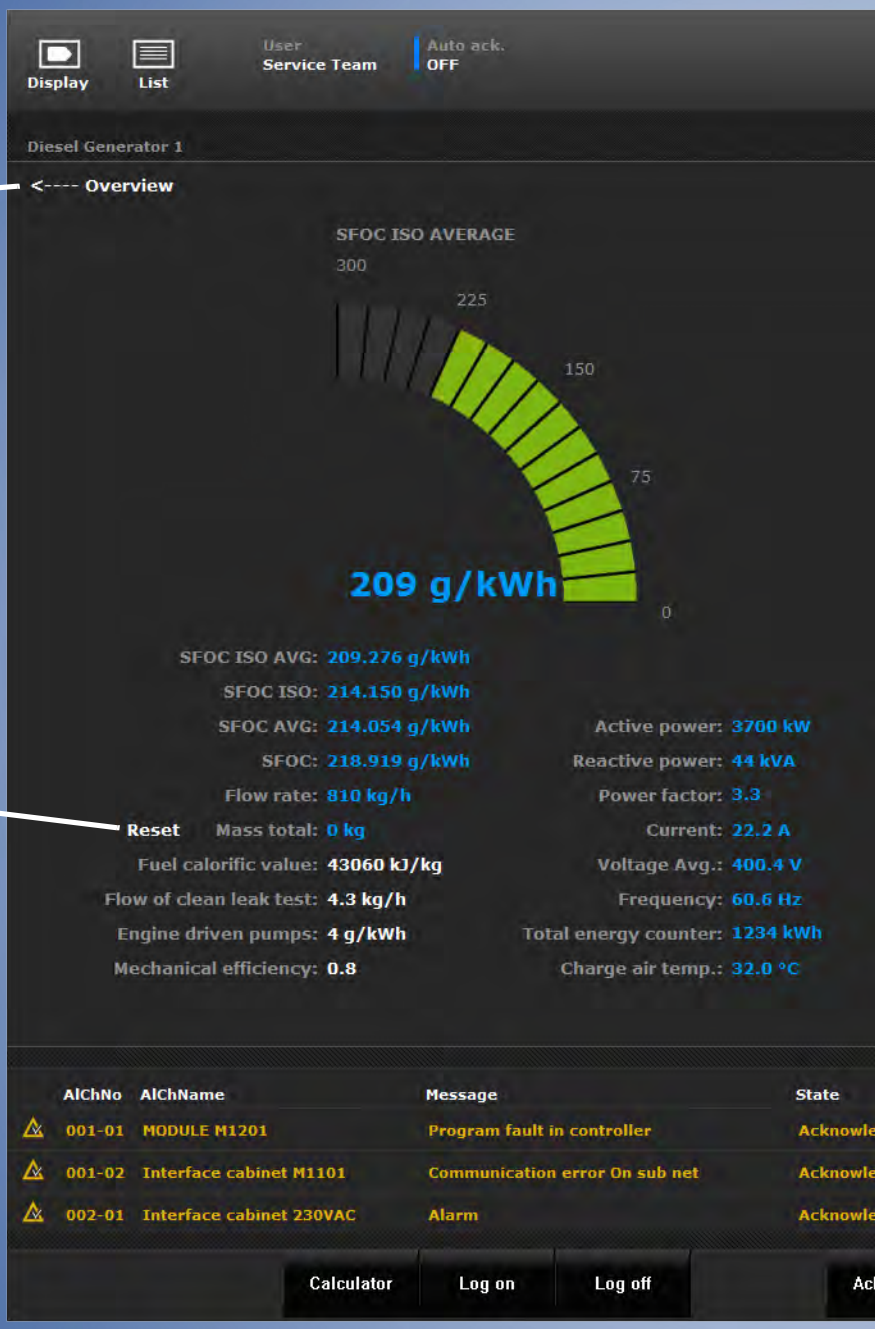
LATEST ACTIVE ALARM LIST

Diesel Generator Display

This window is opened
by clicking an engine
in the FO Overview Display
or selected from the Display menu

Click to return to the
Overview display

Click to reset all totalizers
for this engine



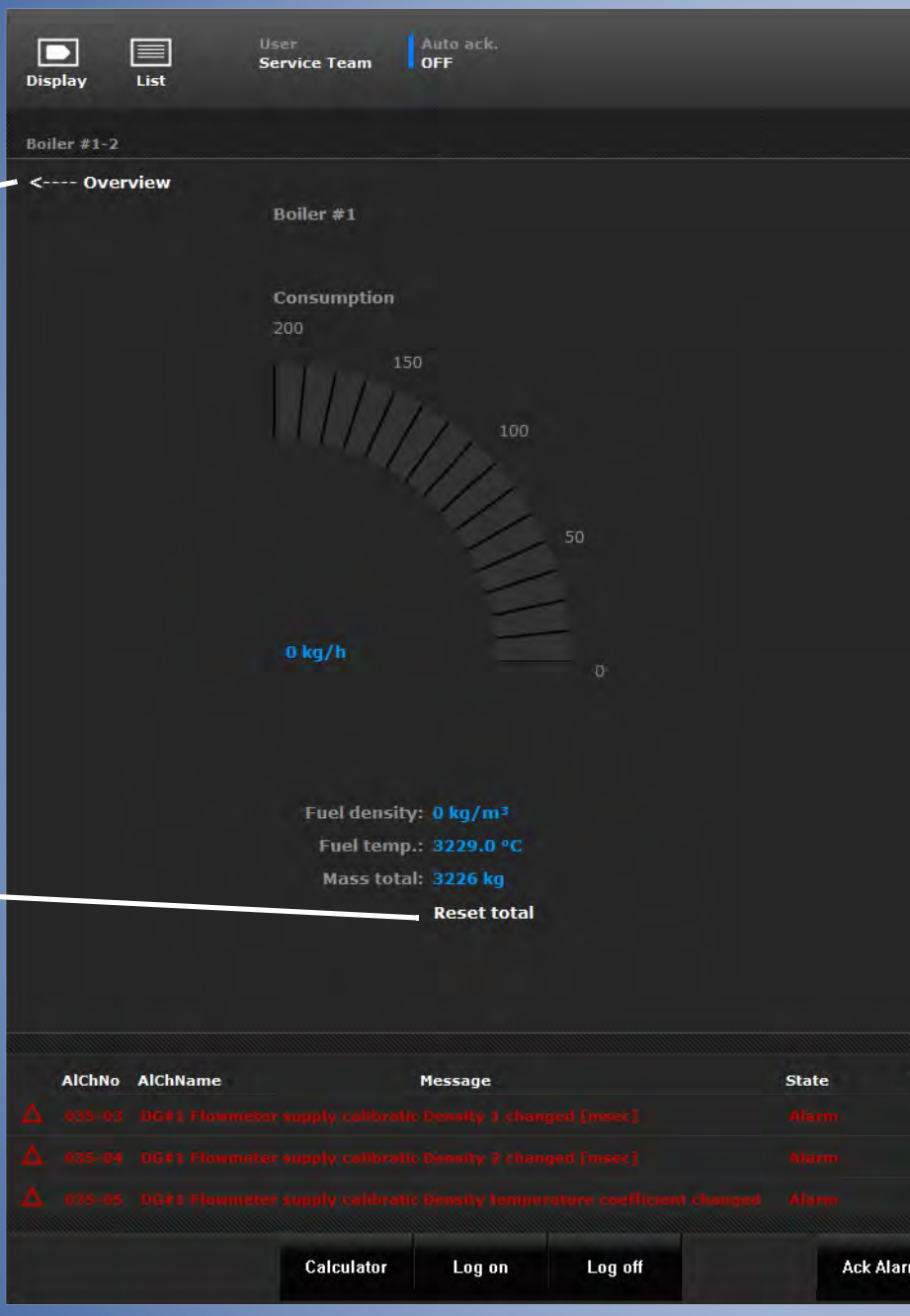

EMERSON
Process Management
0 4 0
13:33:09 30-06-2016
Engine room 1: Ambient condition
Air temp: 31.0 °C
Air pressure: 1 mbar
Humidity: 45.3 RH%
Supply flow
Flow rate
2500
1875
1250
625
0
Fuel density: 0 kg/m³
Fuel temp.: 3229.0 °C
0 kg/h
Return flow
Flow rate
2500
1875
1250
625
0
Fuel density: 0 kg/m³
Fuel temp.: 3229.0 °C
0 kg/h
State Value Unit User LMT
Acknowledged 1 State Service Team 09:53:15 30-06-2016
Acknowledged 2 State Service Team 09:52:00 30-06-2016
Acknowledged Off ON/OFF Service Team 09:52:00 30-06-2016
Ack Alarm
NAS
VCC
Service
Options

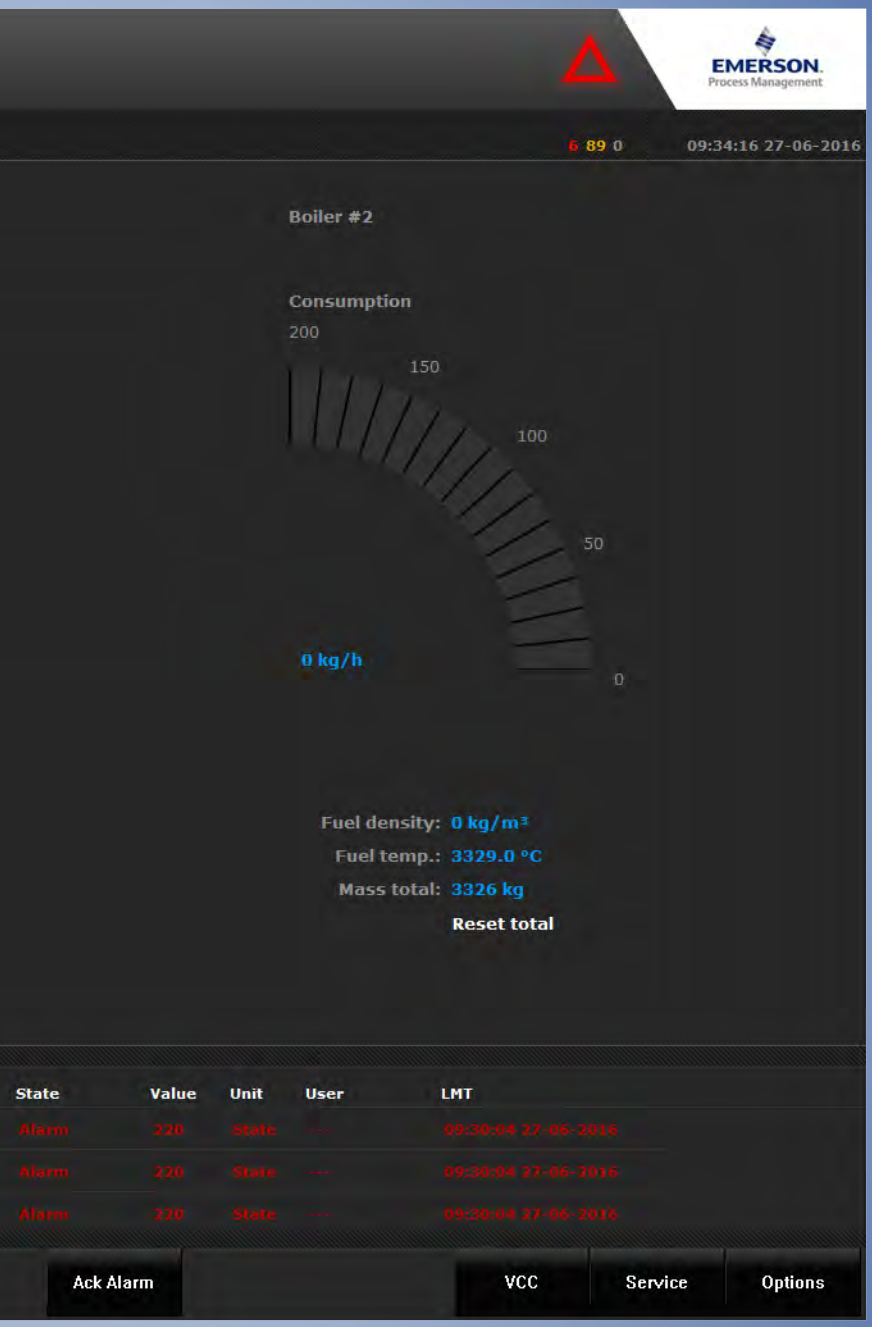
Boiler and Emulsion Display

This window is opened
by clicking a boiler or emulsion
in the FO Overview Display
or selected from the Display menu

Click to return to the
Overview display

Click to reset all totalizers
for this boiler




EMERSON.
Process Management
6 89 0
09:34:16 27-06-2016
Boiler #2
Consumption
200
150
100
50
0
0 kg/h
Fuel density: 0 kg/m³
Fuel temp.: 3329.0 °C
Mass total: 3326 kg
Reset total
State
Value
Unit
User
LMT
Alarm
220
State

09:30:04 27-06-2016
Alarm
220
State

09:30:04 27-06-2016
Alarm
220
State

09:30:04 27-06-2016
Ack Alarm
VCC
Service
Options

Diesel Generators

By selecting a separate engine from the FO Overview display, more details and functions are displayed for that specific engine. See “Diesel Generator Display” on page 132.

E.g. for the Engines where the resulting fuel consumption is based on the difference between the supply and return flow meters, those values are also displayed.

If Weather stations and Power Management System readings are included those readings will be displayed here as well. With those data together with few user input engine constants, it will be possible to calculate the engines SFOC and ISO compensated SFOC. Furthermore, a SFOC running average can be calculated over e.g. the last three minutes.

The Reset of totalizers will reset both the supply, return and differential totalizers. The reset is password protected and a safeguard making sure this do not happen unintended.

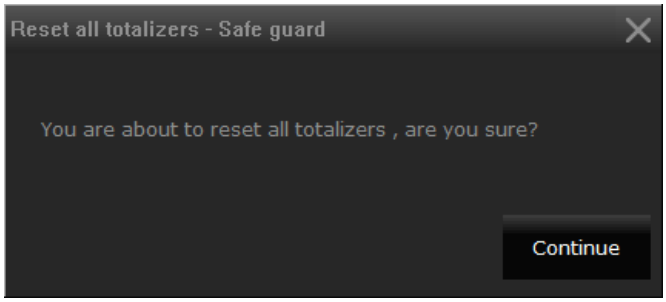
Boilers and Emulsions

By selecting a separate boiler or emulsion from the FO Overview display, more details and functions are displayed for that specific boiler or emulsion. See “Boiler and Emulsion Display” on page 134.

The Reset total will reset all the totalizers in the current window. The reset is password protected and a safeguard making sure this does not happen unintended.

Reset Total

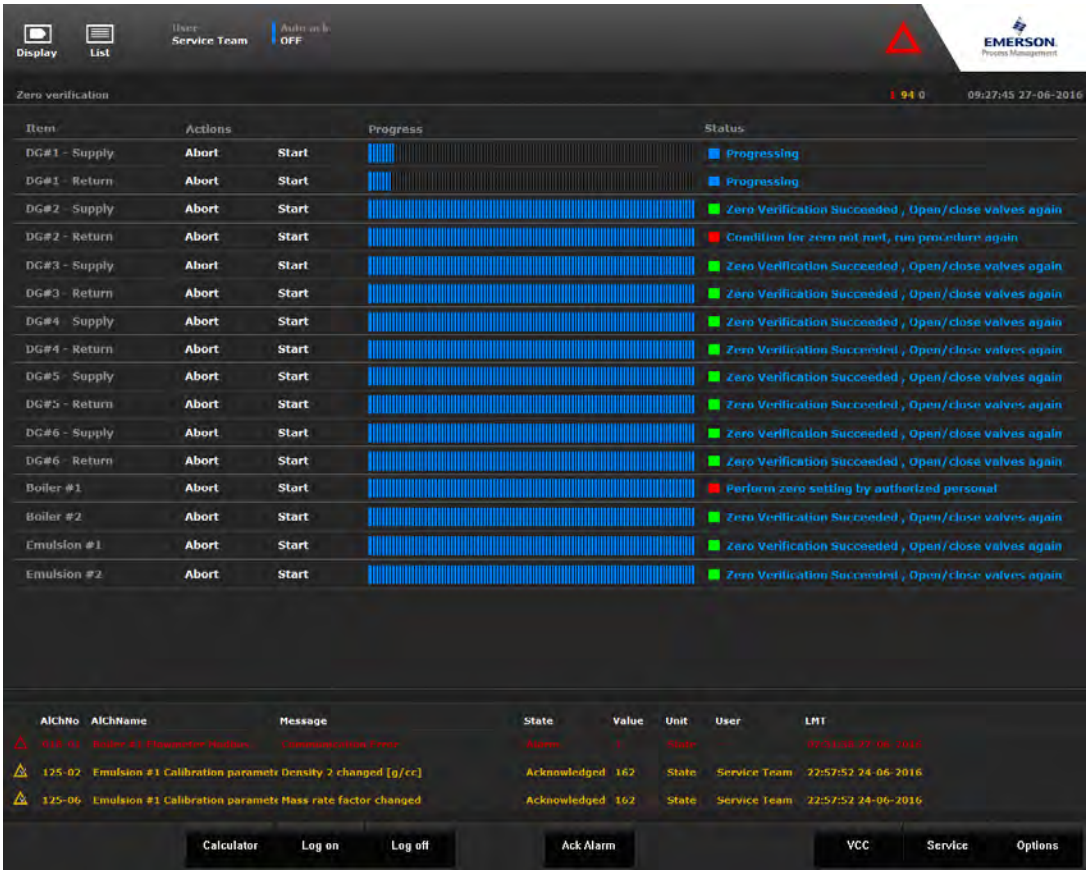
The *Reset total* will reset the totalizers for the selected engine or boiler. The reset is password protected and a safeguard making sure this do not happen unintended.



Zero Verification

How to open window

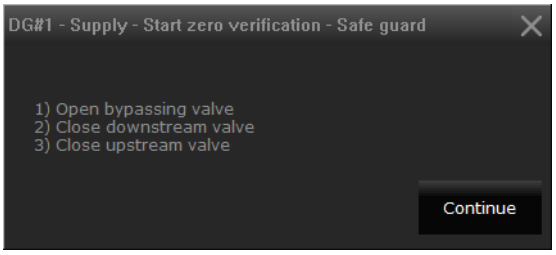
In the Display menu select Zero Verification to open this window.



Window description

Zero verification is a check that the flow meters “Flow verification zero” value is within a certain limit (depends on the flow meter size) when there is no flow in the flow meter.

Each meter in the setup has the possibility to use the zero verification. Before the zero verification is executed, it is important that there is fuel in the flow meter and that the fuel is not in flux (i.e. not in flow). This is secured by the below safeguard telling what should be done prior to the verification.



How to perform the verification

Clicking **Continue** will start the verification. It takes about four minutes to make the verification. During the whole process the verification can be aborted at any time. The test have the following status:

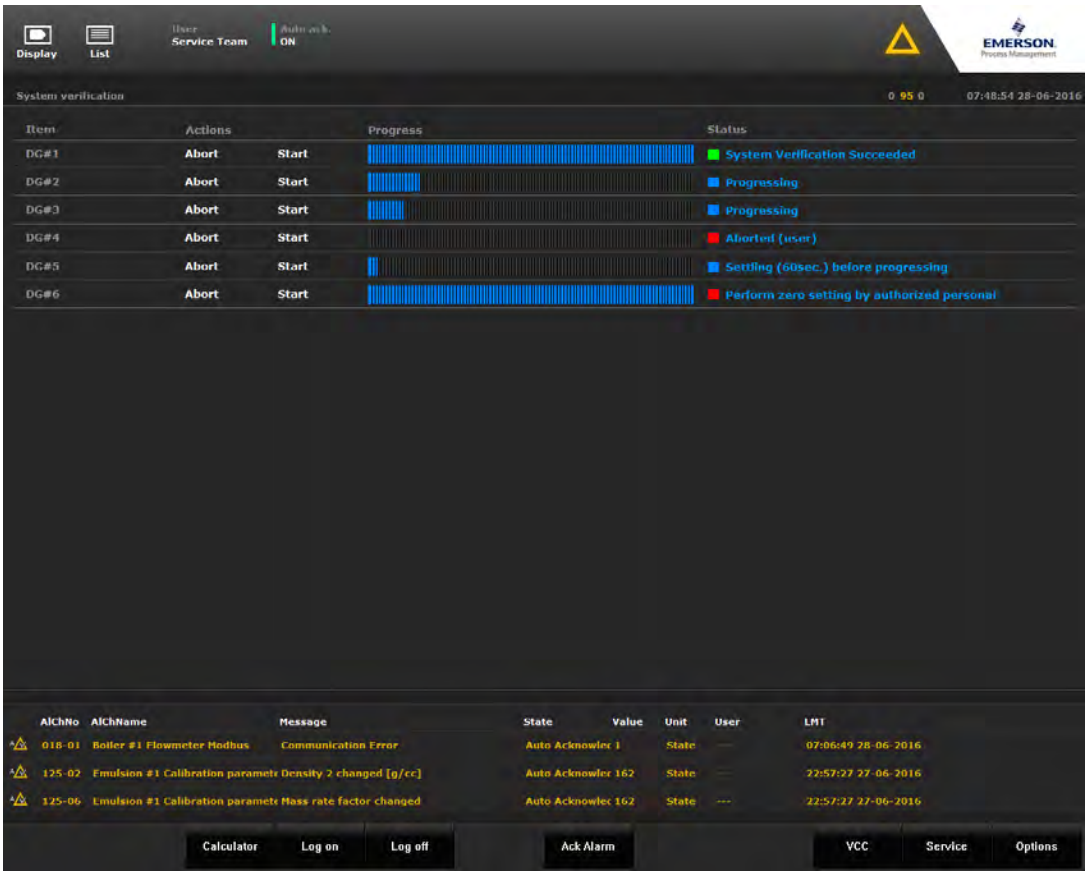
- Progressing
- Aborted (User)
- Aborted (Register 1 error)
- Perform zero setting
- Bad meter condition
- Zero verification succeeded
- Aborted (Comm. Error)
- Aborted (Configuration error)

If the verification fails, an alarm is generated and the status will be marked with red. Otherwise the status will be green.

System Verification

How to open window

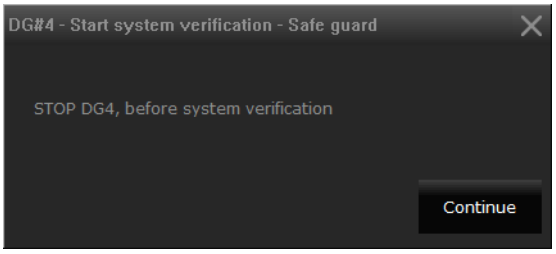
In the Display menu select System Verification to open this window..



Window description

System verification is a check that the flow meter measurements are within a certain limit when the fuel is circulated over a stopped engine, and the flow of the supply and return meters is expected to be the same.

Each engine in the setup have the possibility to use the system verification. Before the system verification is executed it is important the engine is stopped and the fuel is circulating over the engine. This is secured by the below safeguard telling what should be done prior to the verification.



How to perform the system verification

Clicking **Continue** will start the verification. It takes about 60 seconds for the system to settle and another 15 minutes to perform the verification. During the whole process the verification can be aborted. The test can have the following status:

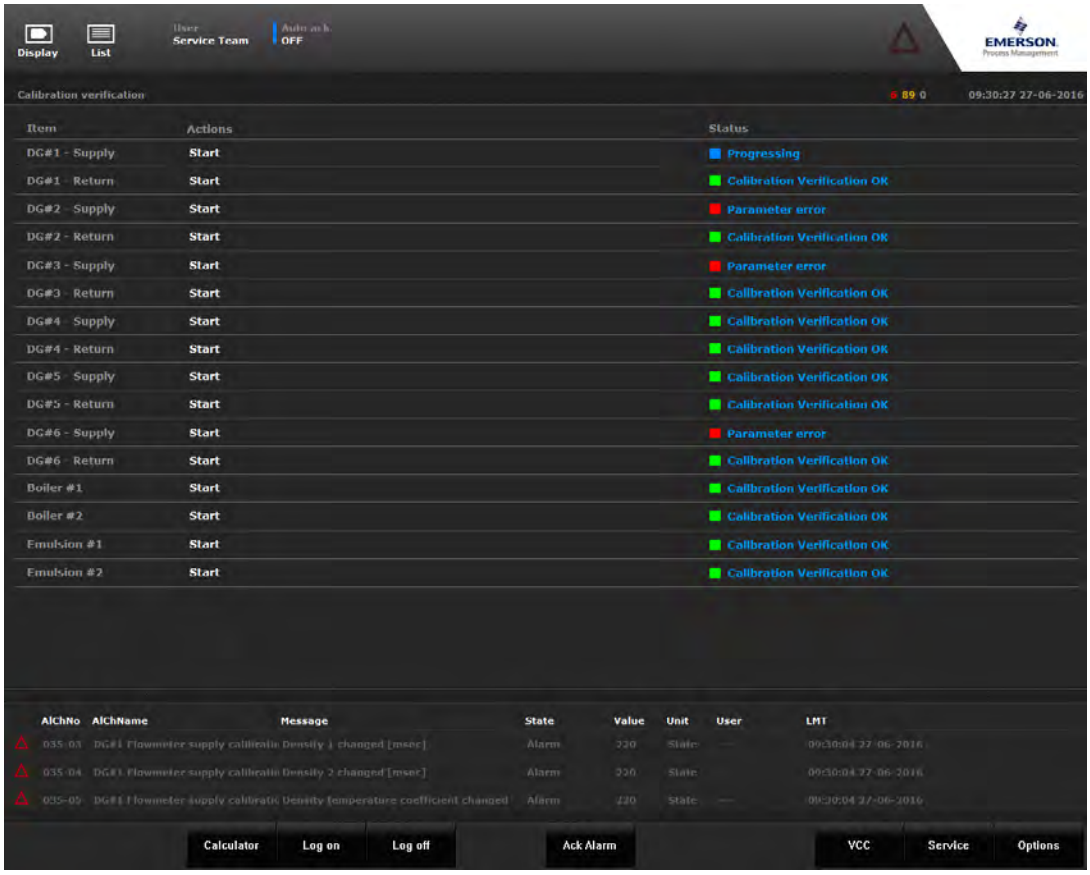
- Progressing
- Aborted (User)
- Aborted (Register 1 error)
- Perform zero verification
- Settling (60sec) before progressing
- System verification succeeded
- Aborted (Comm. error)
- Aborted (Configuration error)

If the verification fails, an alarm is generated and the status will be marked with red. Otherwise the status will be green.

Calibration Verification

How to open window

In the Display menu select Calibration Verification to open this window..



Window description

Calibration verification is a check that none of the eight different calibration constants in the meter have been changed during operation.

It is possible to perform the calibration verification to each meter in the setup. The calibration verification can be executed whenever necessary, it is not dependent on stopping of engines nor flows etc. The verification takes less than 30 seconds.

How to perform the calibration verification

The calibration verification can be executed manually and furthermore it will be executed once every 24 hours automatically.

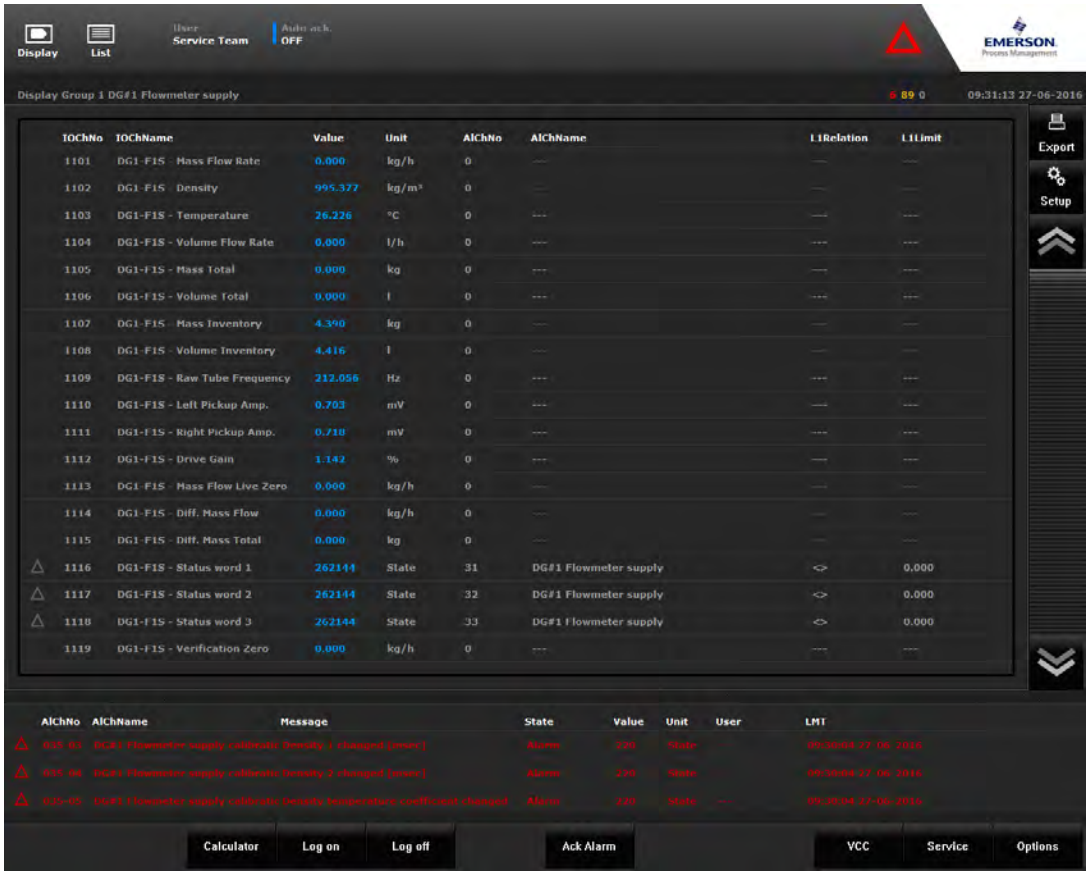
The test can have the following status:

- Progressing
- Calibration verification succeeded
- Aborted (Comm. error)
- Parameter error

If the verification fails, an alarm is generated and the status will be marked with red. Otherwise the status will be green.

Diagnostics Values

Each flowmeter have all readings displayed in the list “Display groups”.



The readings in the “Display groups” include diagnostic reading as well such as: Raw Tube Frequency, Left/Right pickup amplitude, drive gain etc.

Quick User Guide

To reset all totalizers

The “Reset total” will reset the totalizers for the selected engine or boiler. The reset command is password protected and a safeguard prevents the reset to be performed unintentionally.

Zero verification

Zero verification is a check that the flow meters “Flow verification zero” value is within a certain limit (depends on the flow meter size) when there is no flow in the flow meter.
In the Zero Verification display click **Start** and then select **Continue** in the appearing dialogue box.
This function is password protected.

System verification

System verification is a check that the flow meter measurements are within a certain limit when the fuel is circulated over a stopped engine, and the flow of the supply and return meters is expected to be the same.
In the System Verification display click **Start** and then select **Continue** in the appearing dialogue box.
This function is password protected.

Calibration verification

Calibration verification is a check that none of the eight different calibration constants in the meter have been changed during operation.
In the Calibration Verification display click **Start** and then select **Continue** in the appearing dialogue box.
This function is password protected.

Vessel Emission Report

How to Setup and Use the

Aperio VER System

Vessel Emission Report (VER)

This chapter describes how to setup and create reports for Fuel Consumption systems to be used for MRV and IMO DCS regulation, based on Micro Motion mass flow meters and the Aperio software package.

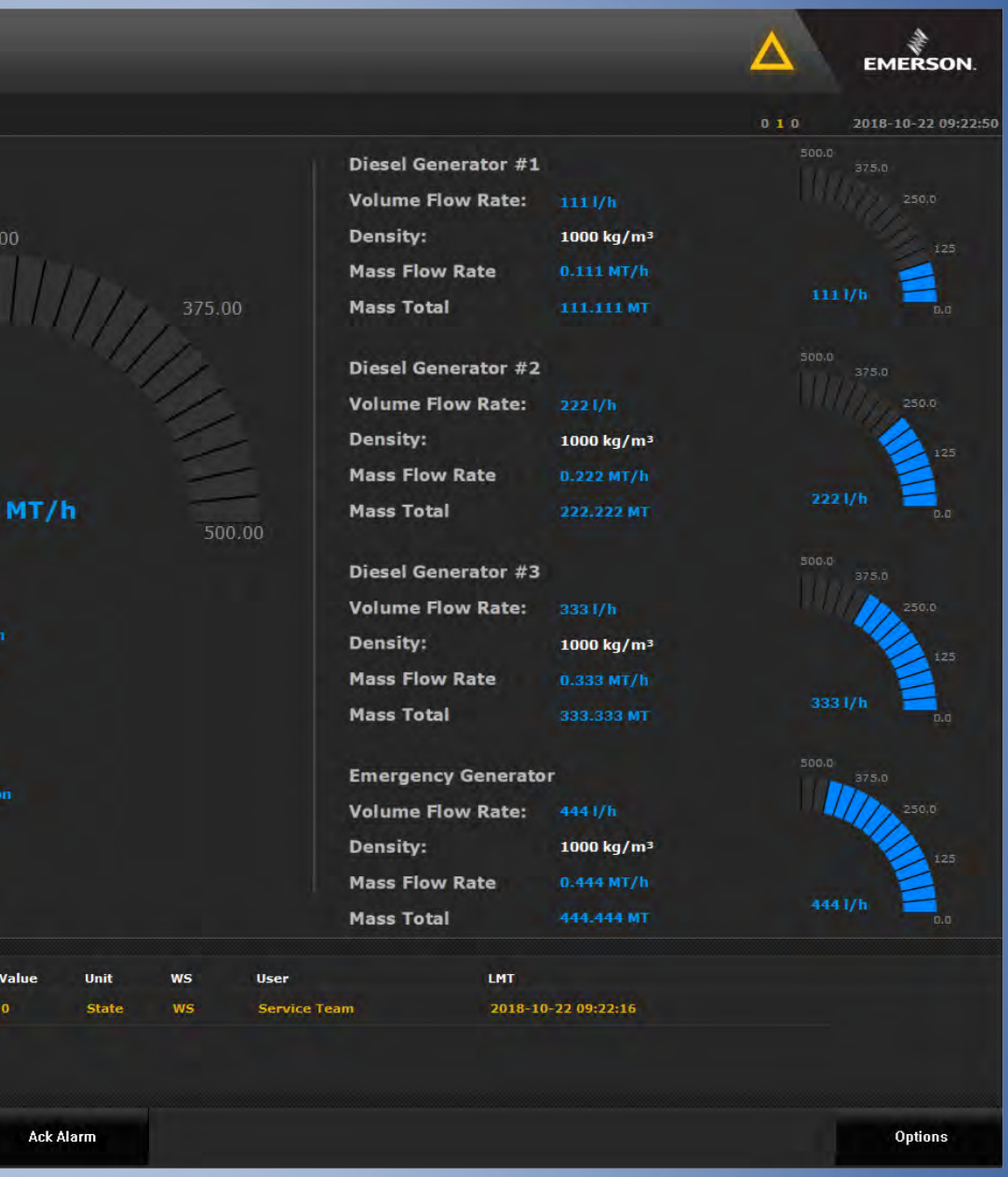
The Aperio VER system complies with the Amendments to MARPOL Annex VI on Data collection system for fuel oil consumption of ships, adopted by resolution MEPC.278(70), entered into force on 1 March 2018. Please refer to this regulation for more information and validation regarding your ship requirements and statements.

The Aperio VER system will enable the ships to measure, report and value the emission of CO_2 and other consumption data which ultimately will assist in following EU's regulation and policy for reducing domestic greenhouse gas emissions.

Diesel Generator (FO) Display with VER Function

This window is opened by clicking an engine in the FO Overview Display

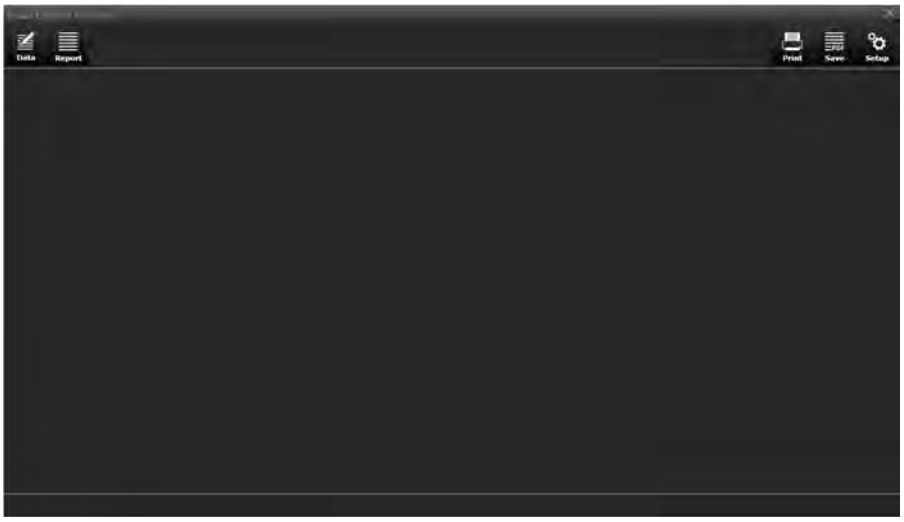
VER Function Button


EMERSON.
0 1 0
2018-10-22 09:22:50
Diesel Generator #1
Volume Flow Rate: 111 l/h
Density: 1000 kg/m³
Mass Flow Rate 0.111 MT/h
Mass Total 111.111 MT
Diesel Generator #2
Volume Flow Rate: 222 l/h
Density: 1000 kg/m³
Mass Flow Rate 0.222 MT/h
Mass Total 222.222 MT
Diesel Generator #3
Volume Flow Rate: 333 l/h
Density: 1000 kg/m³
Mass Flow Rate 0.333 MT/h
Mass Total 333.333 MT
Emergency Generator
Volume Flow Rate: 444 l/h
Density: 1000 kg/m³
Mass Flow Rate 0.444 MT/h
Mass Total 444.444 MT
500.0
375.0
250.0
125
0.0
111 l/h
222 l/h
333 l/h
444 l/h
375.00
500.00
MT/h
Value
Unit
WS
User
LMT
0
State
WS
Service Team
2018-10-22 09:22:16
Ack Alarm
Options

VER Dialog Window

How to open window

In the FO Overview display select the function button **VER** at the bottom of the display.
The VER Dialog window will open.



Window description

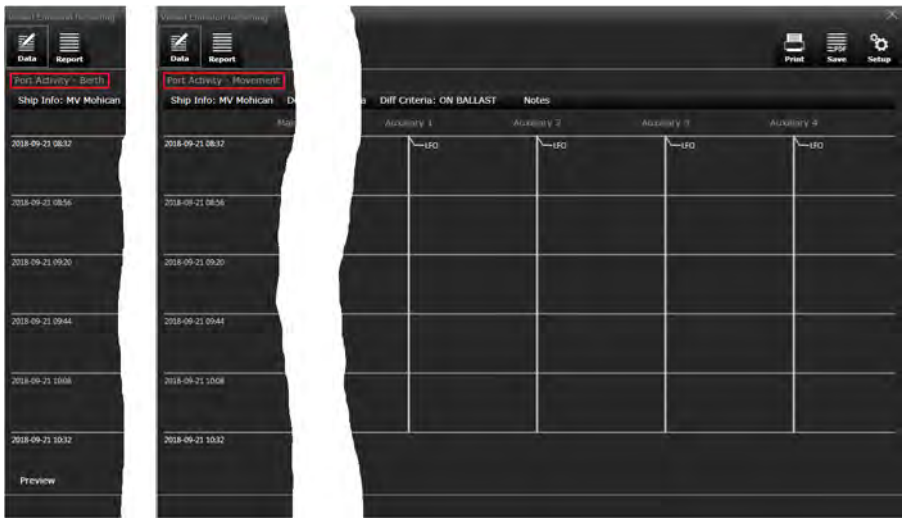
First time opening and if there are no voyages or port activities in progress the dialog is blank.
If a voyage or port activity is in progress it will open with the actual progress.

Item	Description	
Data	Port Activity Berth	Will open the current Port Activity containing Berth data. See page 151.
	Port Activity Movement	Will open the current Port Activity containing Movement data. See page 151.
	Voyage	Will open the current Voyage. See page 152.
Report	MRV Reports	Opens the Report window. See page 157.
	IMO Year Reports	Opens the IMO Year Reports window. See page 158.
Print	Select this command to print reports and other data. For printout examples see page 159 and forward.	
Save	Save is used to save the preview reports to generate complete reports.	
Setup	The Setup is used by the service engineers at system setup.	
Preview	The **Preview** button is used to build the report.	
Status Bar (bottom line)	Shows the status of the activity.	

Data - Port Activity Berth/Movement

How to open window

Selecting Data - Port Activity Berth or Data - Port Activity Movement will open the current Port Activity with respective information.



Window description

The following data can be found:

- Port
  Port can be selected from a list of countries and ports when in EU and list of countries with free text for port when outside EU.
- Differential criteria
  Varies with the configured vessel type.
- Notes

The Port Activity do not hold a Mode, only fuel type and changes over time.

The Port Activity will be shown as a vertical time line starting from the top and then all fuel changes during the Port Activity will be indicated relative to each other with the end at the bottom.

Note! When fuel type changes are entered, date and time is automatically set by the system. The fuel type changes can however be entered at any time, but then the date and time have to be changed when it actually occurs.

Switch between Activities

If you during an Activity/Voyage select another Activity/Voyage you will get an Activity Change Warning.

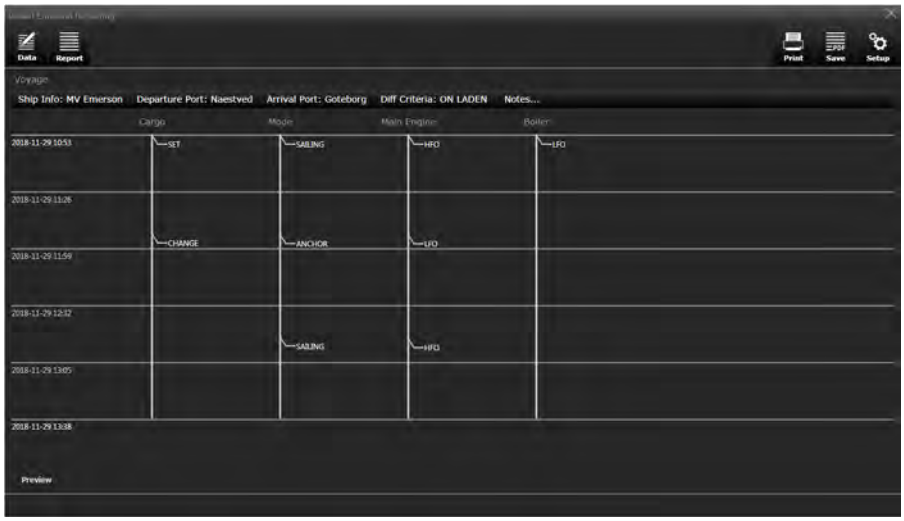
Selecting **OK** in the Warning Dialog will open a new Activity/Voyage and delete the current one that were in progress. It is important to notice that the raw logged data still will be kept.

Selecting **Cancel** in the Warning Dialog will get you back to the current Activity/Voyage without any change.

Data - Voyage

How to open window

Selecting Data - Voyage will open the current Voyage with data.



Window description

The following data can be found:

- Departure Port(1
- Arrival Port(1
- Differential criteria
  Varies with the configured vessel type.
- Notes

1) Departure port and Arrival port are selected from a list of countries and ports when in EU and only Country with free text for port when outside EU.

A voyage will always contain a start time and end time. In between the start and end time the fuel types changes and voyage modes can be added.

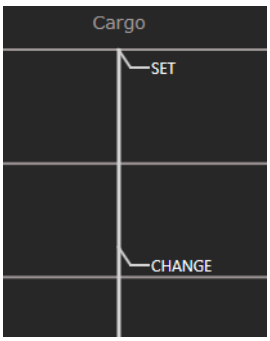
A voyage will be shown as a vertical time line starting from the top and then all cargo, mode and fuel changes during the voyage will be indicated relative to each other with the voyage end at the bottom.

Note! When voyage cargo, mode and fuel type changes are entered, date and time is automatically set by the system. The voyage cargo, mode and fuel type changes can however be entered at any time, but then the date and time have to be changed when the actually change occurs!

Edit or Add Data to Port Activity or Voyage

To edit or add Cargo tons, voyage mode or fuel type right click on the vertical time line under the mode or the specific consumer.

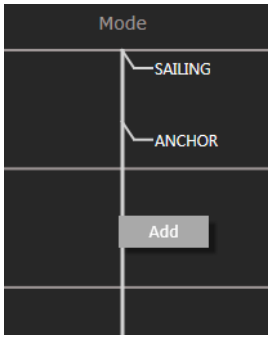
Set and Change Cargo (Voyage)

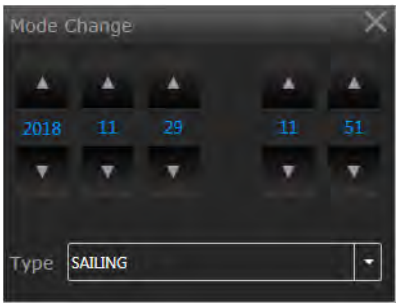


1. Right click on the vertical time line under the Cargo heading.
2. There will be a Cargo Change dialog opened.
3. Type in the Cargo Tonnes at beginning of a Voyage or change if there been a ship to ship transfer.
4. Time is set to current date, it can be change by clicking the up or down arrows.
5. The changes applies immediately.

Note! The cargo keyed in here is used for calculating the transport work.

Add new Mode or Fuel Type





1. Right click on the vertical time line under Mode.
2. Select the **Add** button.
3. Add new Mode Type (Voyage only) or Fuel Type by selecting from the drop-down list.
   Mode Type can be Sailing, Anchor or Ice (if the Vessel is configured with Ice Class).
   Fuel types can be what have been pre-selected in the setup.
4. Time is set to current date, but can be changed by clicking the up or down arrows.
5. The changes applies immediately.

Note! Ice can only be selected if the Vessel is configured with an ice class.

Edit or Remove an Existing Mode or Fuel Type

1. Right click on the item you want to edit on the vertical time line under Mode.
2. Select the **Remove or Edit** button.
   Remove will delete the selected item.
   Edit will open one of the dialogs above depending on if the item is mode or fuel.
3. Change mode type (Voyage only)
   Mode Type can be Sailing, Anchor or Ice (if the Vessel is configured with Ice Class).
4. Change fuel type by selecting from the drop-down list.
   Fuel types are pre-selected in the setup.
5. Time is set to current date, but can be changed by clicking the up or down arrows.
6. The changes applies immediately.

Edit Voyage Start Time and End Time

The Voyage start time and end time can be changed by right-clicking on the time in the Data - Voyage window and then change in the Time Change dialog.

Note! It is important that the date and time through the voyage is in a consecutive order. If invalid date and time is selected the input will not be accepted by the system.

VER Voyage Reports

Preview Reports

During the Voyage or Port Activity the progress of the report data can be viewed from the Preview Report window. This window is reached by clicking on the **Preview** button.

From this window certain changes can be done before the finished report is saved and completed.

It is possible to go back and forth using the **Preview**/**Back** button.

See “Preview Report” on page 156 for more information.

MRV Reports

To create a final report the **Save** button has to be activated in the Preview Report window. This will create a report with following process:

- A Report is created in the folder: G:\Aperio\MRV\Voyage_Reports\.
- The Report is named in the format: “YYYY-MM-DD-HH-MM_SS MRV-Voyage IMO-xxxxxxxxx”.
- The Report is created in a PDF and a XML format for upload to Thetis.

For more information on these see “Report - MRV Report” on page 157.

IMO Reports

The year reports that is used for the IMO DCS system are created in the Report - IMO Year Report window. The following process is used when clicking on the **Create Year Report** button:

- A Report is created in the folder: G:\Aperio\MRV\Year Reports\.
- The Report is named in the format: “YYYY-01-01 YYYY-12-31 MRV_Year IMO-xxxxxxxxx”.

For more information see “Report - IMO Year Report” on page 158.

Y2D Reports

The Year to Date reports can also be obtained from the Report - IMO Year Report window. The following process is started when the **Create YtD** button is selected:

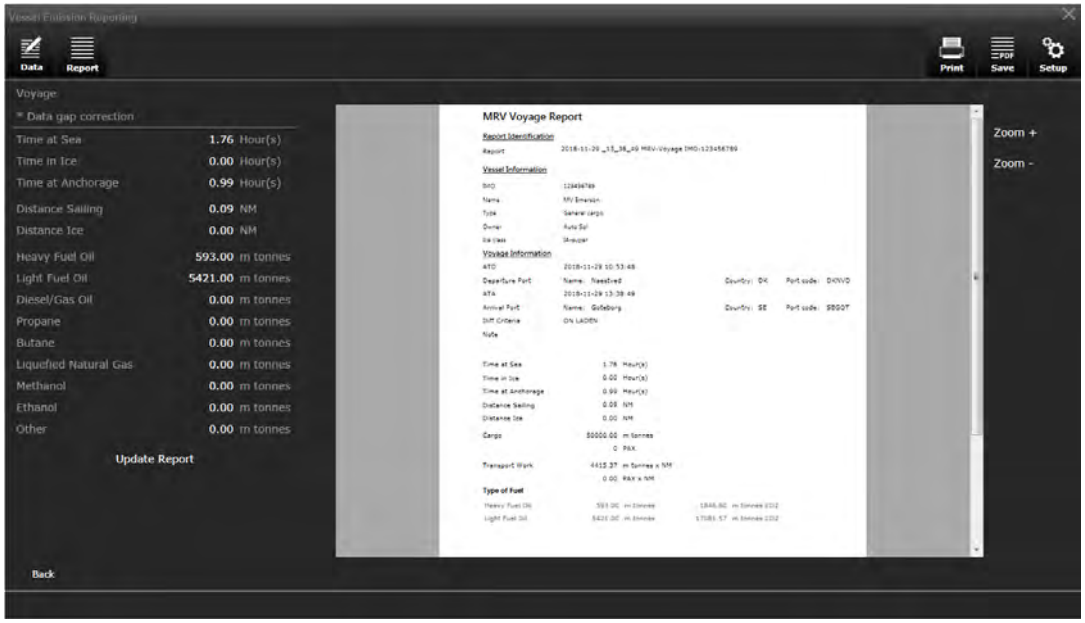
- A Report is created in the folder: G:\Aperio\MRV\Year Reports\.
- The Report is named in the format: “YYYY-01-01 YYYY-MM-DD MRV_Year IMO-xxxxxxxxx” (Where the MM-DD is the end date for the last included voyage).

For more information see “Report - IMO Year Report” on page 158.

Preview Report

How to open window

Selecting the **Preview** button in the MRV Data - Activity/Voyage window will open the Preview Report.



Description

From this window the current data for the report is shown. As long as the Voyage or Port Activity is ongoing the data will be updated each time the **Preview** button is selected. To go back to the previous window click on the **Back** button.

Note! The Preview Report window will only open when all the report master data is filled in, such as the departure- and arrival port and differential criteria.

Save and Edit Reports

When the Voyage/Port Activity is completed the final Report is saved by selecting the **Save** function at the top of the window.

After saving the final report the application is ready to start a new voyage/port activity. A finished report can always be opened from the **Report** menu.

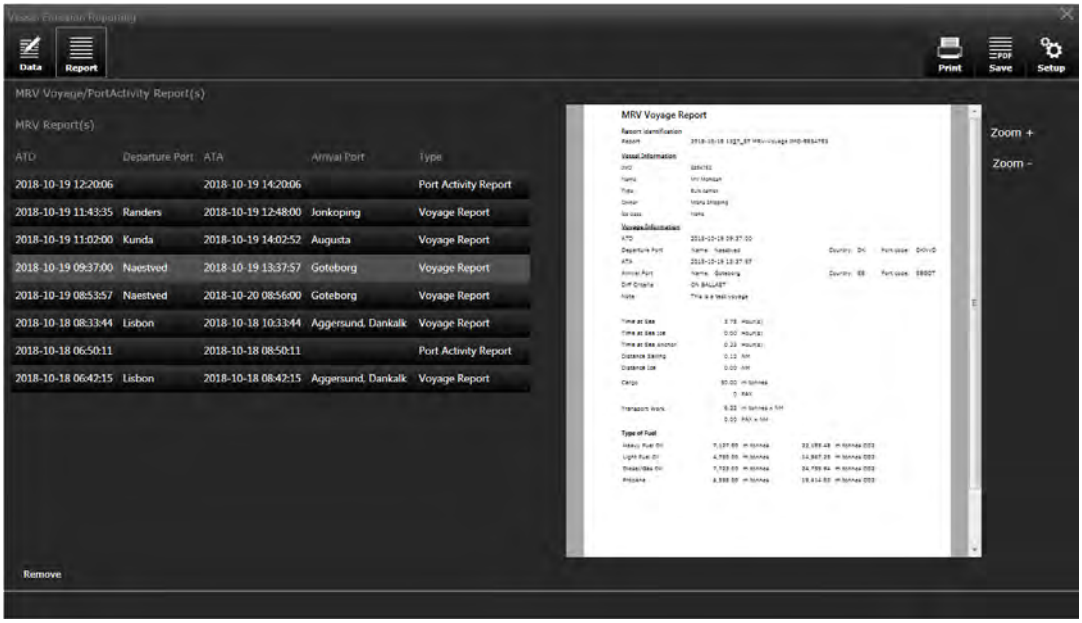
Note! The report data is cleared after the **Save** button is selected. Make sure that all data is correct before saving it.

It is possible to overwrite the measured values, if they are suspected to be wrong or missing, via the "* Data Gap Correction". They will then be marked in the report with a "*" indicating manual correction. To update the report with the change, select the **Update Report** button.

Report - MRV Report

How to open window

Select the Report - MRV Report in the MRV window. Then click on one of the Voyages/Activities in the left pane. The selected Report will be previewed on the right side in the window.



Description

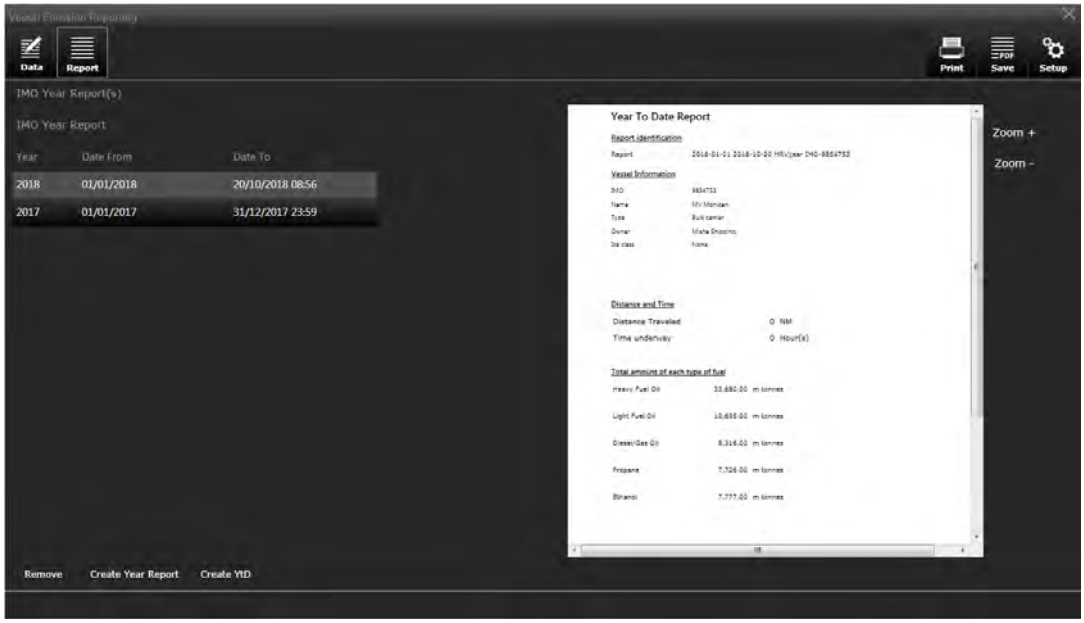
A voyage can be removed from the list, the raw data will though be kept in the database for later, for example if another voyage must be created from the data logged during this period.

Note! Raw data is kept in the database for 2 years. Older data will automatically be deleted. It is expected that after two years the data is used, and the necessary reports generated.

Report - IMO Year Report

How to open window

Select the Report - IMO Year Report in the MRV window. This window contains the year to date reports for the IMO DCS system.



Description

From this window the Year reports can be created and saved.

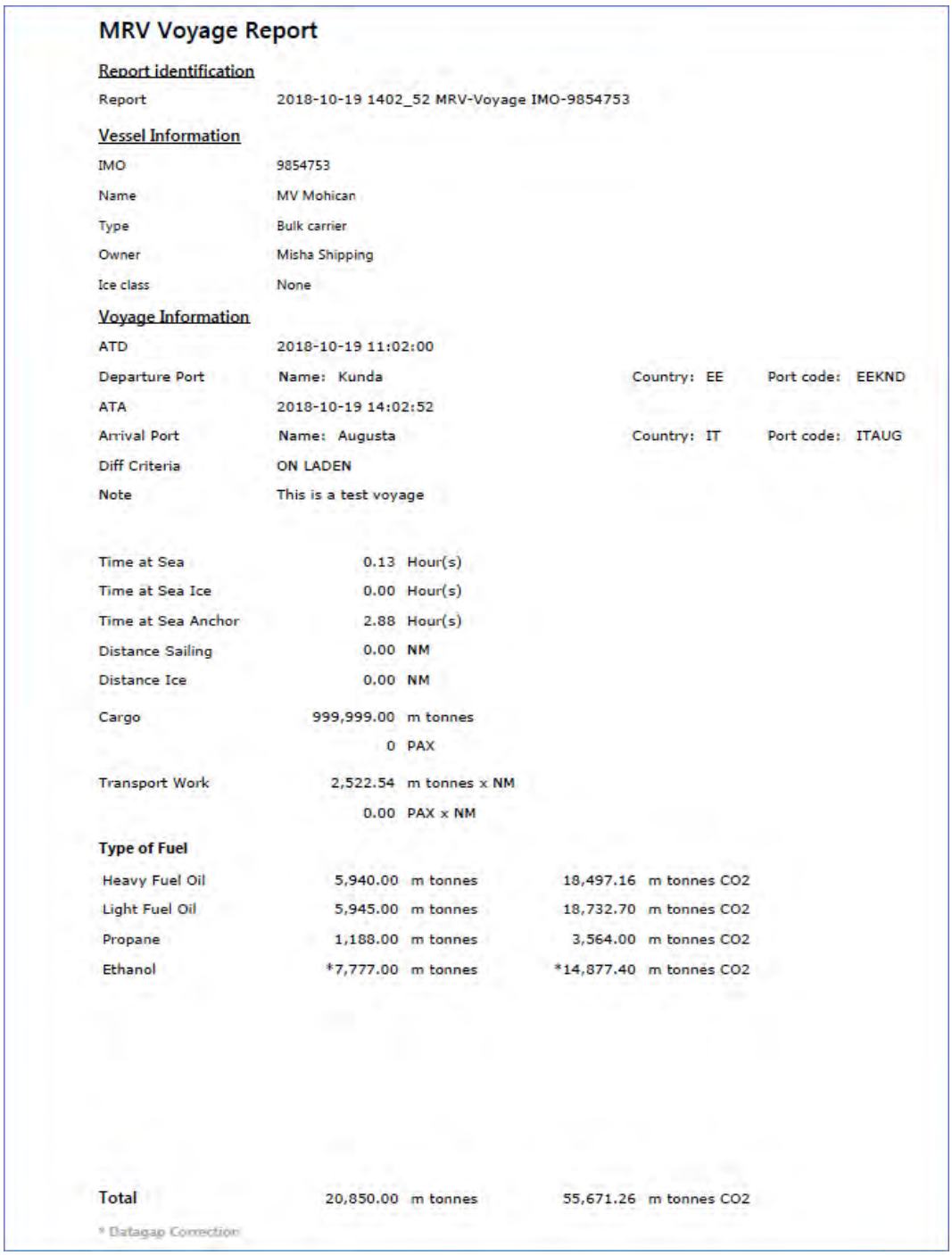
Selecting the **Create Year Report** will generate the report from the last whole year. This is the source for what must be reported into the IMO DCS system. The **Create Year Report** can be repeated, if a report already exists it will be overwritten.

Selecting the **Create YtD** will generate the Year To Date reports. This is the consumption since the last year change and up till the given date when the button is activated for the finished activities/voyages. If an activity/voyage is in progress when the Year To Date is selected the data from this activity/voyage is not included.

Note! At the same time the Year Report and Y2D reports are created a daily consumption csv file is created in the same folder as the reports.

Reports can be removed from the list in the left pane by clicking the report and then selecting the **Remove** button.

Voyage Report Printout Sample



MRV Voyage Report

Report identification

Report	2018-10-19 1402_52 MRV-Voyage IMO-9854753

Vessel Information

IMO	9854753
Name	MV Mohican
Type	Bulk carrier
Owner	Misha Shipping
Ice class	None

Voyage Information

ATD	2018-10-19 11:02:00		
Departure Port	Name: Kunda	Country: EE	Port code: EEKND
ATA	2018-10-19 14:02:52		
Arrival Port	Name: Augusta	Country: IT	Port code: ITAUG
Diff Criteria	ON LADEN		
Note	This is a test voyage		

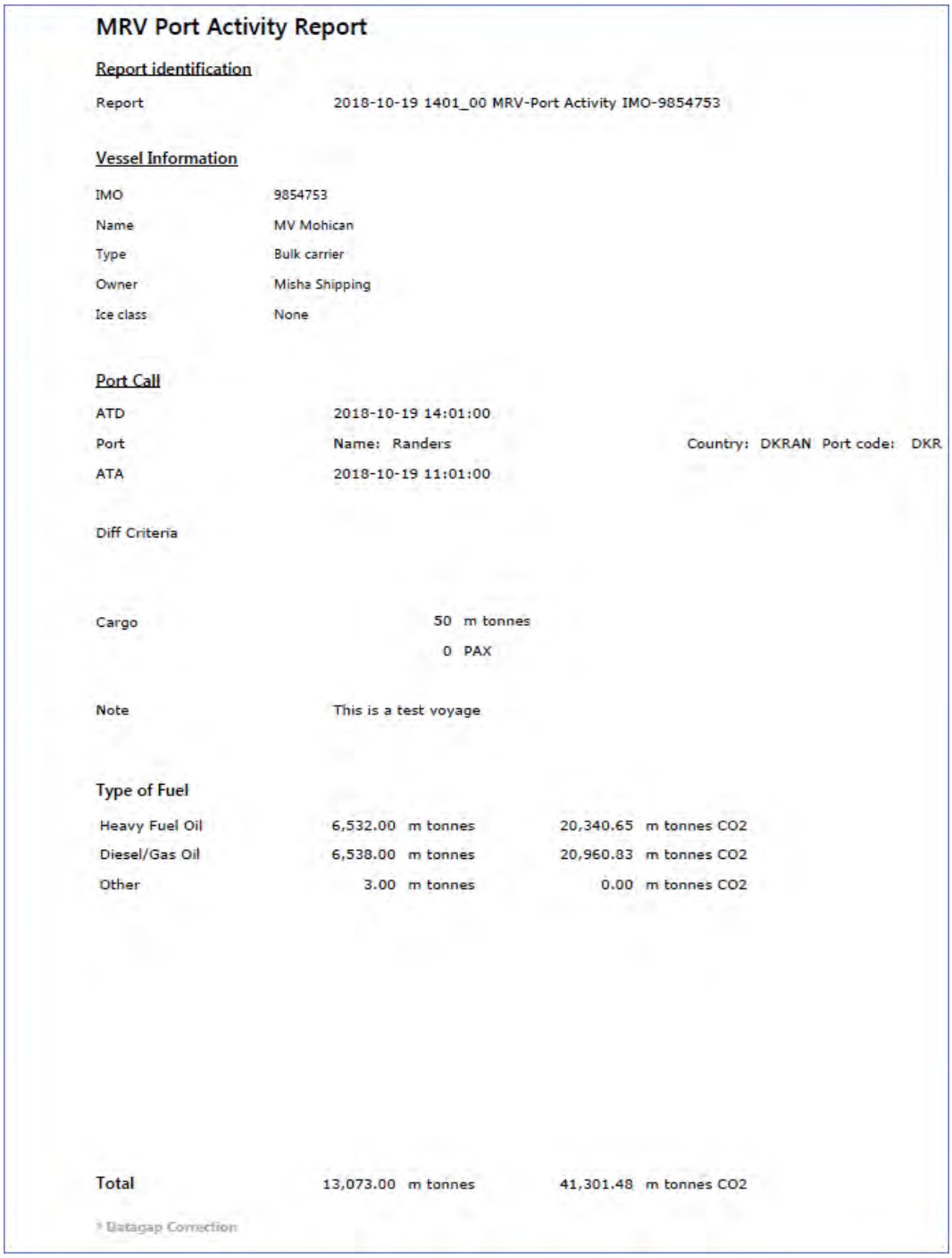
Time at Sea	0.13	Hour(s)
Time at Sea Ice	0.00	Hour(s)
Time at Sea Anchor	2.88	Hour(s)
Distance Sailing	0.00	NM
Distance Ice	0.00	NM
Cargo	999,999.00	m tonnes
	0	PAX
Transport Work	2,522.54	m tonnes x NM
	0.00	PAX x NM

Type of Fuel

Heavy Fuel Oil	5,940.00	m tonnes	18,497.16	m tonnes CO2
Light Fuel Oil	5,945.00	m tonnes	18,732.70	m tonnes CO2
Propane	1,188.00	m tonnes	3,564.00	m tonnes CO2
Ethanol	*7,777.00	m tonnes	*14,877.40	m tonnes CO2
Total	20,850.00	m tonnes	55,671.26	m tonnes CO2

* Datagap Correction

Port Activity Report Printout Sample



MRV Port Activity Report

Report identification

Report	2018-10-19 1401_00 MRV-Port Activity IMO-9854753

Vessel Information

IMO	9854753
Name	MV Mohican
Type	Bulk carrier
Owner	Misha Shipping
Ice class	None

Port Call

ATD	2018-10-19 14:01:00	
Port	Name: Randers	Country: DKRAN Port code: DKR
ATA	2018-10-19 11:01:00	

Diff Criteria

Cargo	50 m tonnes
	0 PAX

Note: This is a test voyage

Type of Fuel

Heavy Fuel Oil	6,532.00 m tonnes	20,340.65 m tonnes CO2
Diesel/Gas Oil	6,538.00 m tonnes	20,960.83 m tonnes CO2
Other	3.00 m tonnes	0.00 m tonnes CO2

Total	13,073.00 m tonnes	41,301.48 m tonnes CO2

* Datagap Correction

Quick User Guide

Create an Activity/Voyage

In the FO Display click on the **VER** function button at the bottom of the display. If there is an Activity/Voyage ongoing this will be displayed in the appearing MRV window. Select *Data - Voyage* or *Data - Port Activity Berth/Movement* to open or change the view.
Note that if there is an ongoing Activity/Voyage this will be overwritten if *Data - Activity/Voyage* is selected again.

Edit or Add Data to an Port Activity or Voyage

To edit or add Cargo tons, voyage mode or fuel type right click on the vertical time line under the mode or the specific consumer.
A voyage will always contain a start time and end time. In between the start and end time the fuel types changes and voyage modes can be added.
Keep data and time in a consecutive order otherwise the system will not save the Activity/Voyage.

Create MRV Reports

From the Activity/Voyage windows the reports can be previewed during an activity progress.
When final reports are to be created the **Save** button is used.
The saved reports can then be reached from the MRV window by selecting *Report - MRV Report*. A list of the saved reports will be displayed and can be selected by clicking on a report.

Create IMO DCS Reports

From the MRV window select the *Report - IMO Year Report* and the window with IMO Year to Date reports will be displayed in the left pane.
Select the report you want by simply clicking on it and it will be viewed to the right. From here you can print it.
To create a new IMO report select **Create Year Report** and a new report will be generated based on the Activity and Voyage reports from the last whole year.
Note that if such a report already exists this one will be overwritten.

Bunkering System

How to Setup and Use the

Bunkering System

Bunkering System

The Bunkering Display window (see next page) shows the most important values for the mass flow meter and the bunkering. Bunkering loggings are automatically started and displayed in the upper part of the window. The logs can be printed and saved by using the **Report Viewer** window (page 168).

Bunker Logging

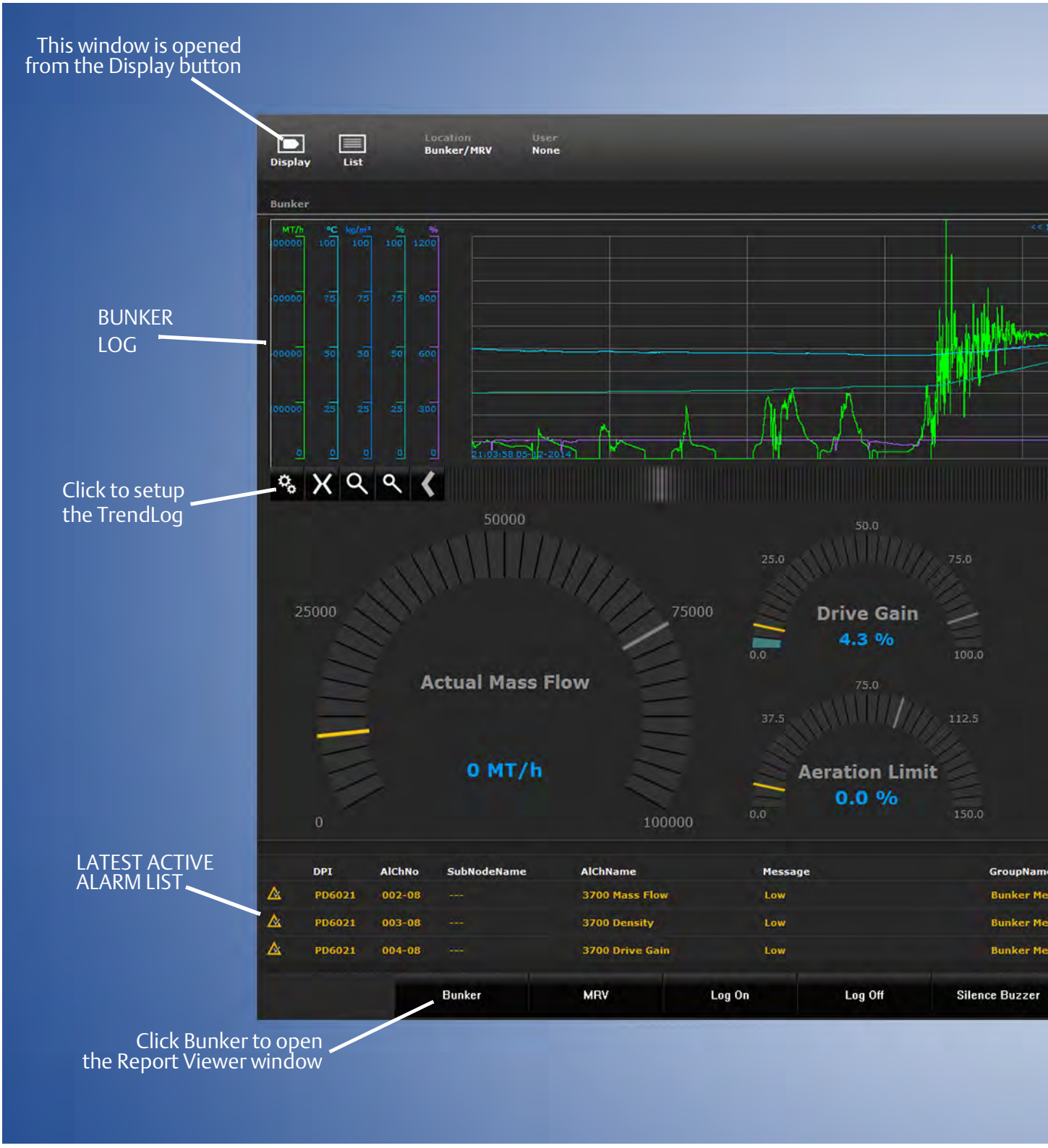
To start value logging when the bunkering state is showing “Stopped” click the **Start** button. As soon as the system detects a mass flow the value logging will start and the bunkering state will change from “Stopped” to “Running”. During the bunkering the actual mass flow can be zero without the bunkering state changing to “Stopped”.

Only when the actual mass flow is zero and the **Stop** button is activated the bunkering will change to “Stopped” and the data logging will stop for the current bunkering.

Up to 5 different bunker sessions can run simultaneously.

For more information about logging see “Setup Trend Logging” on page 34.

Bunker Display



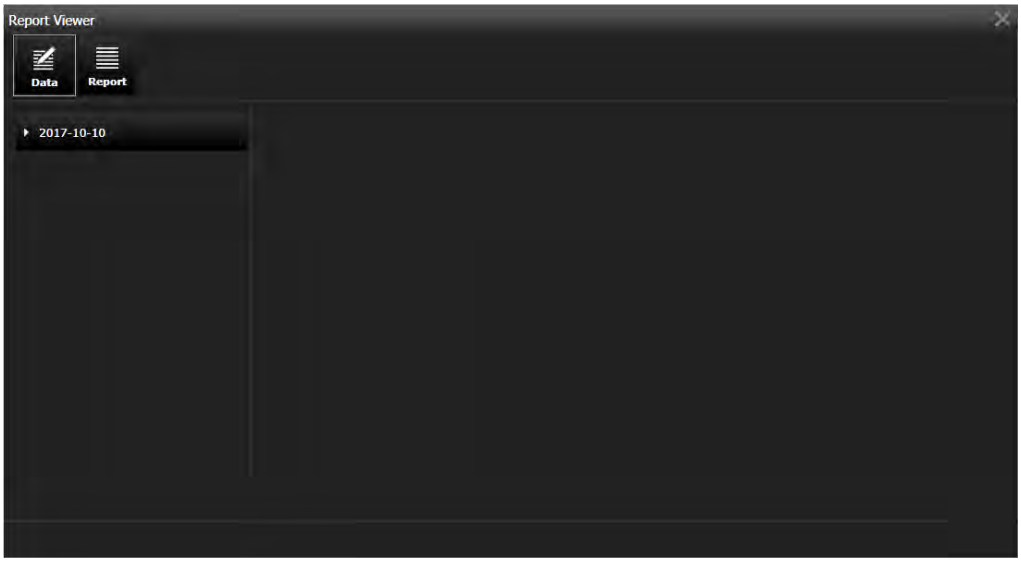

EMERSON.
2018-01-29 11:21:43
Time: 21:37:56 05-12-2014
Mass Flow Rate HFO: 491350.03 MT/h
Temperature HFO: 53.96 °C
Density HFO: 1008.35 kg/m³
% Max Aeration Limit HFO: 47.82 %
Drive Gain % HFO: 71.12 %
Toggles between log and trend data
Temperature
24.2 °C
Density
8 kg/m³
State: Stopped
Product: HFO
Port: Rotterdam
Mass Inventory: 55703.305 MT
Mass total: 0.000 MT
STATUS OF THE BUNKERING
Start
Stop
Click to start/stop bunkering logging
About View...
User
Interaction
Print... Ctrl+P
Setup
Application
Alarm Columns
Display Group Columns
Time
Change Theme
File Maintenance
Options
Ack Alarm
Click here to remove old reports and files

Report Viewer

How to open window

The Report Viewer window is automatically opened when a bunkering has been performed.

The report viewer can also be opened manually by means of the function key **Bunker** found in the lower part of the **Bunker Display** window.

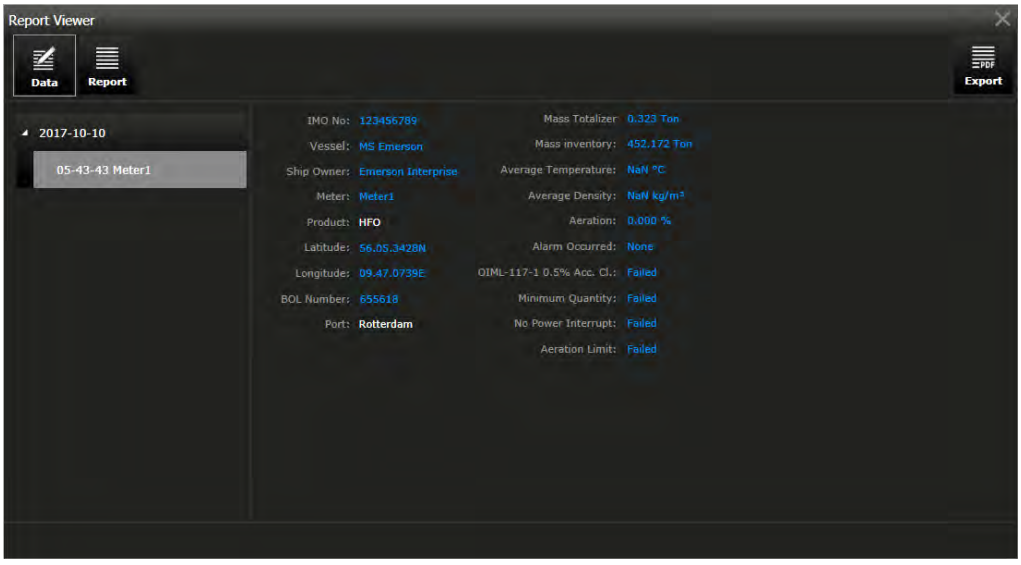


Window description

The **Report Viewer** window consists of two areas; Data area and Report area.

The Data area is where all raw data is located for further processing. The data is sorted in date folders.

Data Area



Each bunkering session can be selected by highlighting the actual session in the left side of the dialog (each session is named with time and meter). In the right side of the dialog the details for the session

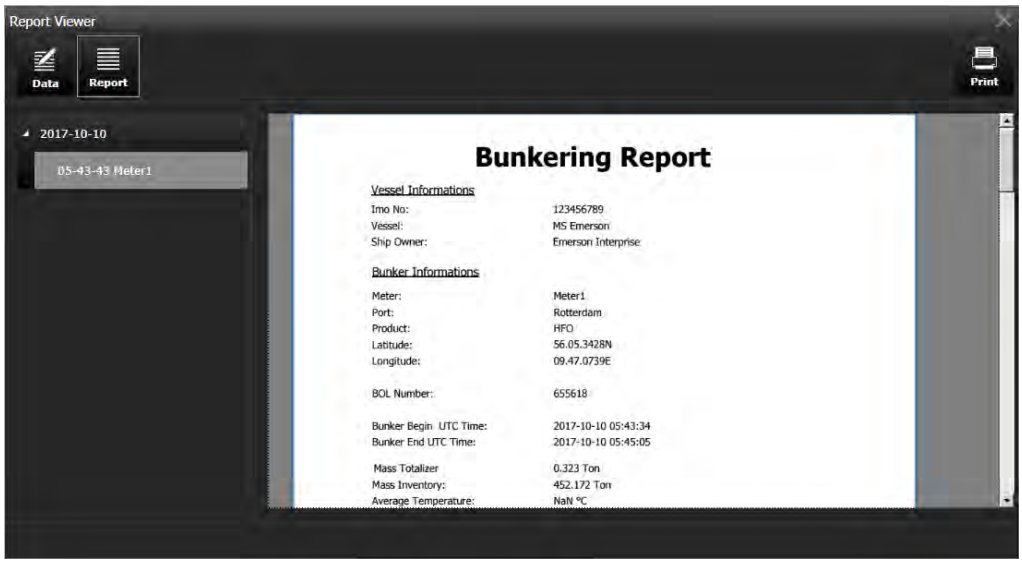
is indicated: Vessel details and measurements from the bunkering. Editable text fields are indicated with white text. Only Product and Port can be edited. The edited text will be used when a report is generated.

By activating the **Export** button in the upper right corner of the dialog the highlighted bunker session will be exported to the report area with the given values and following the session will be removed from the Data area.

Note! Editing of Product and Port can only be done before the export is carried out. When exported, there is no way back for editing.

Status for the export is indicated in the lower left corner of the dialog. Depending on how long the bunker session have been the export can take up to 1-2 minutes.

Report Area



The Report area is where all processed data is located.

Generated reports are presented in pdf format. Each report can be selected by highlighting the actual session in the left side of the dialog (each session is named with product and date/time). In the right side of the dialog the actual report can be pre-viewed.

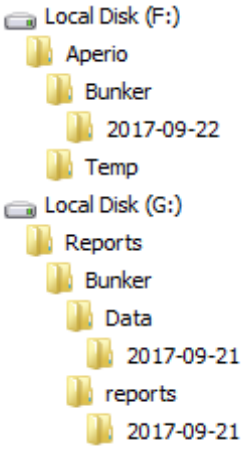
By activating the **Print** button in the upper right corner of the dialog the highlighted report will be printed on the configured printer. If no printer is connected the button will be disabled.

The raw data used for the report is in an CSV file format that later can be used for data mining.

Sample of a CSV file content:

```
sep=;
TIME;Mass Totalizer;Mass Inventory;Average Density;Average Temperature;Aeration;Mass Flow Rate;API Density;Temperature;Drive Gain
UNIT;Ton;Ton;kg/m3;degC;%;T/h;kg/m3;degC;%;;;;
INFO;123456789;MT Vitta Theresa;Herning Shipping;-;Diesel;Meter3
GPS;56.05.3445N 09.47.0787E
2017-09-18-09-56-57;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-56-58;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-56-59;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-00;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-01;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-02;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-03;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-04;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-05;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-06;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-07;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-08;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-10;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-11;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-12;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-13;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-14;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-15;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-16;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-17;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-18;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-19;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-20;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-21;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-22;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-23;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
2017-09-18-09-57-24;0.000;0.000;0.000;0.000;50.000;50.000;1000.000;0.000;50.000;0.0;0.0;0.0;0.0;0.0;0.0;
```

The Data and Report files are stored in a folder structure like of the below:



Disk “F” drive is referring to the Data area in the Report Viewer. When a report is generated the raw data in the “F” drive is moved to the “G” drive, and following deleted in the “F” drive.

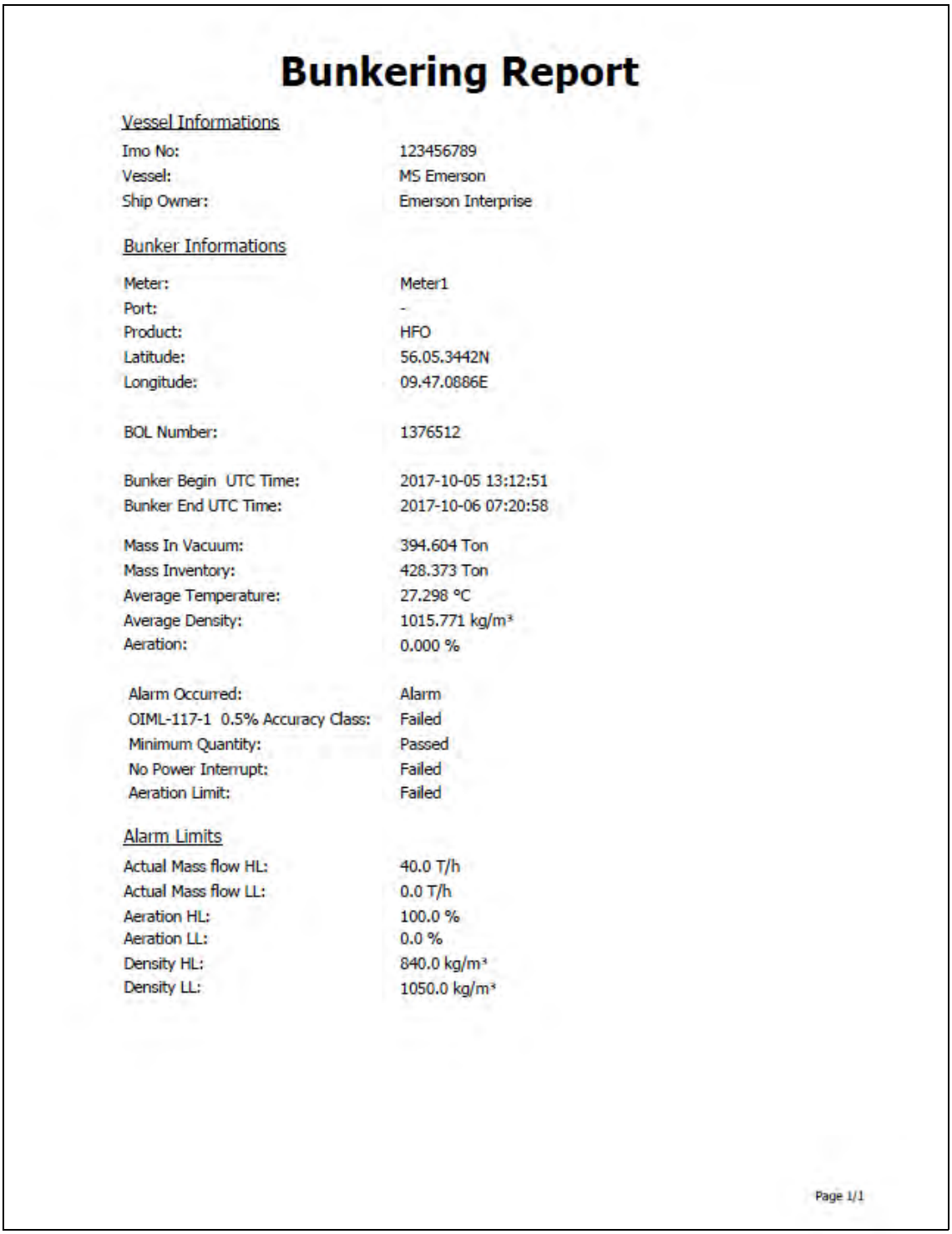
The “G” drive holds the generated reports (pdf format) in the reports folder under the given date. The corresponding data file (CSV format) is in the data folder also under the given date.

Typically, the “F” drive will be located locally on the Bunker station and data here will only be present here until the report is generated. Where the “G” drive typically will be a shared drive or server for easy access from outside to the final data and reports.

For managing the files on the disk please refer to separate description for the **Options - Setup - File Maintenance** function button on page 28.

Report print samples

Front page:



Bunkering Report

Vessel Informations

Imo No:	123456789
Vessel:	MS Emerson
Ship Owner:	Emerson Interprise

Bunker Informations

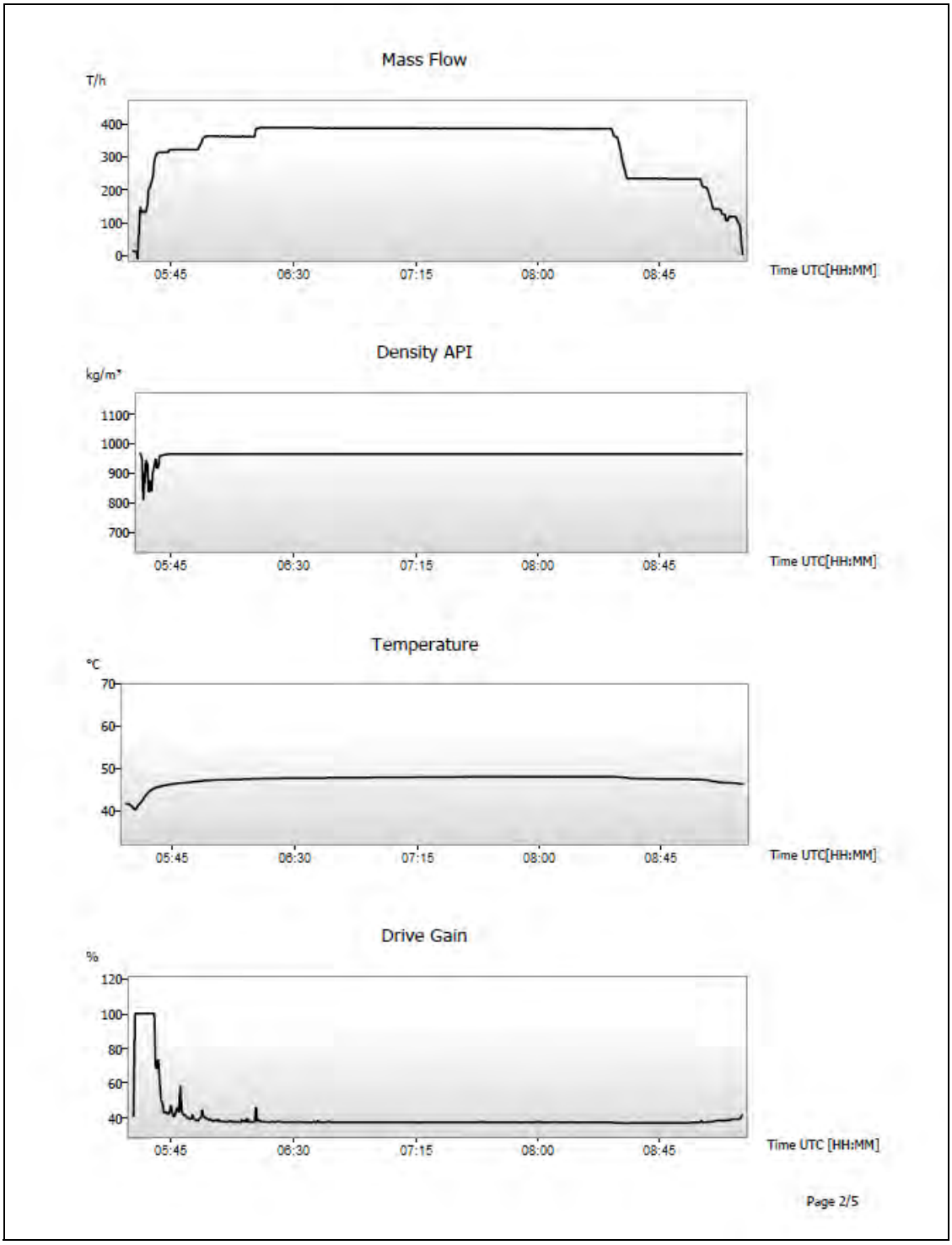
Meter:	Meter1
Port:	-
Product:	HFO
Latitude:	56.05.3442N
Longitude:	09.47.0886E
BOL Number:	1376512
Bunker Begin UTC Time:	2017-10-05 13:12:51
Bunker End UTC Time:	2017-10-06 07:20:58
Mass In Vacuum:	394.604 Ton
Mass Inventory:	428.373 Ton
Average Temperature:	27.298 °C
Average Density:	1015.771 kg/m³
Aeration:	0.000 %
Alarm Occurred:	Alarm
OIML-117-1 0.5% Accuracy Class:	Failed
Minimum Quantity:	Passed
No Power Interrupt:	Failed
Aeration Limit:	Failed

Alarm Limits

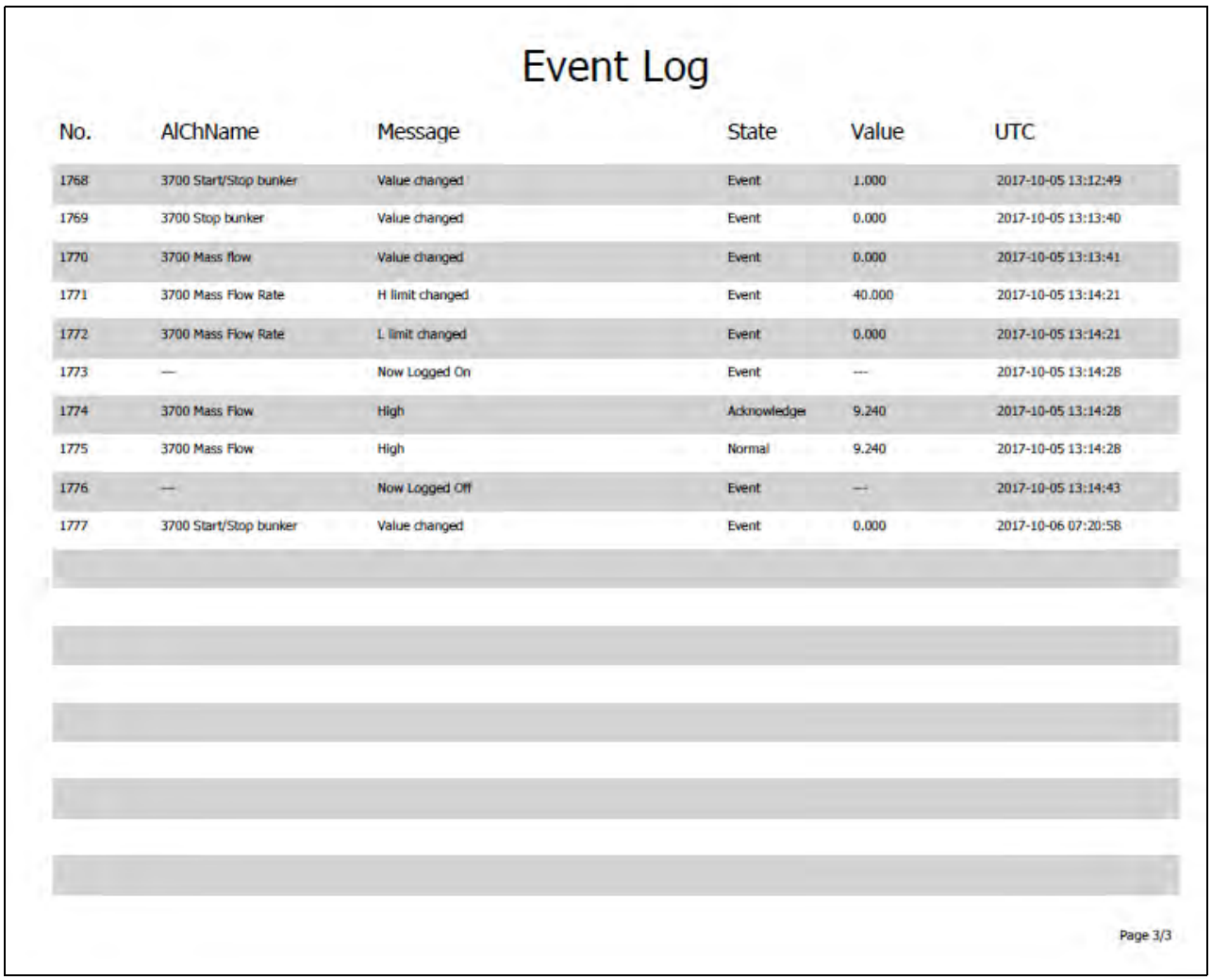
Actual Mass flow HL:	40.0 T/h
Actual Mass flow LL:	0.0 T/h
Aeration HL:	100.0 %
Aeration LL:	0.0 %
Density HL:	840.0 kg/m³
Density LL:	1050.0 kg/m³

Page 1/1

Flow profile:



Event log, during Bunkering:



Event Log

No.	AlChName	Message	State	Value	UTC
1768	3700 Start/Stop bunker	Value changed	Event	1.000	2017-10-05 13:12:49
1769	3700 Stop bunker	Value changed	Event	0.000	2017-10-05 13:13:40
1770	3700 Mass flow	Value changed	Event	0.000	2017-10-05 13:13:41
1771	3700 Mass Flow Rate	H limit changed	Event	40.000	2017-10-05 13:14:21
1772	3700 Mass Flow Rate	L limit changed	Event	0.000	2017-10-05 13:14:21
1773	—	Now Logged On	Event	---	2017-10-05 13:14:28
1774	3700 Mass Flow	High	Acknowledge	9.240	2017-10-05 13:14:28
1775	3700 Mass Flow	High	Normal	9.240	2017-10-05 13:14:28
1776	—	Now Logged Off	Event	---	2017-10-05 13:14:43
1777	3700 Start/Stop bunker	Value changed	Event	0.000	2017-10-06 07:20:58

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Quick User Guide

Setup Bunker Log

See chapter “Setup Trend Logging” on page 34.

Log Bunkering

The log is started automatically when the **Start** button is activated and an actual mass flow is detected. The log is stopped when actual mass flow is zero and the **Stop** button is activated. Note that mass flow can be zero during logging without the log automatically stops.

View Report

The Report viewer window is automatically opened when a bunkering is done.
The window can also be opened by clicking the **Bunker** function key in the lower area of the Bunker display window.

Print Report

In the Report Area of the Report Viewer window you can find the reports ready to be printed. Data still in the Data Area has to be exported before printed. Note that exported raw data will remove the data from the Data area to the Report area and cannot be edited after that. See page 168 for further information.

Machinery and Service System

How to Setup and Use the

Machinery and Service System

Machinery and Service Systems

Description

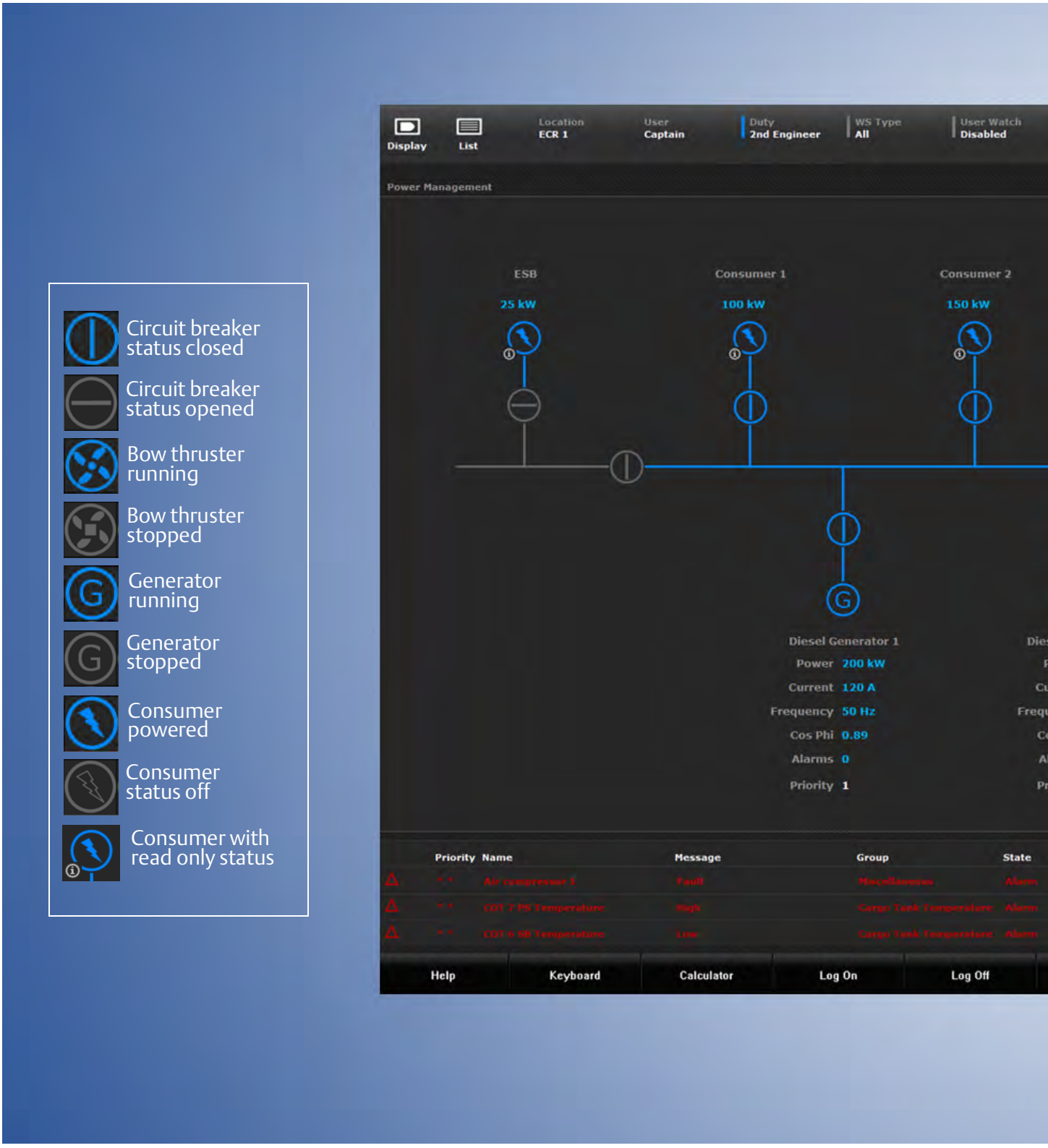
The marine automation system supervises and controls all types of sub systems on-board. Listed below are some of the systems:

- Main engines - for an example see page 178
- Auxiliary engines (exhaust, cooling, heating, lubricating etc.) - for an example see page 182
- Separators
- Boilers
- Power management - for an example see page 180
- Stand-by pump control
- Propulsion
- Ventilation
- Air condition
- Doors
- Fire fighting
- Inert gas
- Light

Main Engine Display


Port/Sea mode
Port
Trim/List comp.
Enabled
Cargo Operation
"Waiting"
Cargo System
Enabled
EMERSON
Process Management
0 22 0
11:35:24 03-10-2013
2
3
4
5
6
7
8
0 °C
65 °C
Avg. temp
65 °C
400
300
200
100
0
COOLING WATER
LT Inlet press. 0.10 bar
HT inlet press. 0.1 °C
HT inlet temp. 18.0 °C
CHARGING AIR
Air pressure 1.00 bar
Air temperature 0.0 °C
TURBO CHARGER
Speed 0 Rpm
Inlet temp. 26.0 °C
Outlet temp. 26.0 °C
SEA WATER
Pressure 0.00 bar
START AIR
Air pressure 8.80 bar
Unit
WS
User
LMT
NodeName
Ch/Lv
ECR 1
Captain
12:59:29 30-09-2013
M2101
169-02
12:56:52 30-09-2013
165-01
165-02
Silence Buzzer
Ack Alarm
Print Screen
Give Control
Take Control
Options

Power Management System (PMS)




Port/Sea mode
Port
Trim/List comp.
Enabled
Cargo Operation
"Waiting"
Cargo System
Enabled
EMERSON
Process Management
7 22 2
11:49:40 21-08-2013
Shore Connection
Consumer 3
125 kW
Bow Thruster
50 kW
Main Busbar
Total 500 kW
Available 600 kW
Frequency 50 Hz
L1-L2 400 V
L2-L3 400 V
L1-L3 400 V
sel Generator 2
Power 200 kW
urrent 120 A
uency 50 Hz
os Phi 0.89
larms 0
riority 2
Diesel Generator 3
Power 200 kW
Current 120 A
Frequency 50 Hz
Cos Phi 0.89
Alarms 0
Priority 3
Value
Unit
WS
User
LMT
NodeName
Ch/Lv
Silence Buzzer
Ack Alarm
Print Screen
Release Control
Take Control
Options

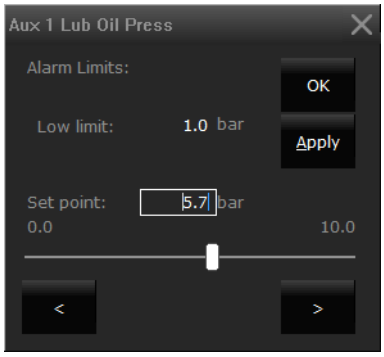
Auxiliary Engine Display


Trim/List comp.
Enabled
Cargo Operation
"Waiting"
Cargo System
Enabled
EMERSON
Process Management
11:01:12 29-01-2014
Auxilary Engine #3:
CW Press:
CW Temp:
Luboil Press:
CW Press:
CW Temp:
2.0 bar
12.0 °C
5.7 bar
2.5 bar
2.0 bar
12.0 °C
Low alarm limit
High alarm limit
Scale
Cylinder #1
225 °C
Cylinder #2
227 °C
Cylinder #3
226 °C
Cylinder #4
225 °C
Cylinder #5
225 °C
Cylinder #6
230 °C
Cylinder #7
229 °C
Cylinder #8
226 °C
Value
Unit
WS
User
LMT
NodeName
Channel
On
ON/OFF
ECR 1
Service Team
08:53:36 29-01-2014
M3101
0
Buzzer
Ack Alarm
Print Screen
Give Control
Take Control
Options

Meter

How to open window

In the Auxiliary Engine display click on the **Meter** icon to open the dialog.



Window description

Depending on the project there can be access to high alarm limit, low alarm limit and setpoint.

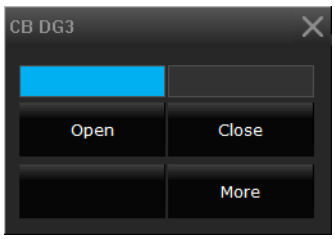
How set alarm limits and setpoint value in Meter dialog window

1. Click on the parameter and change the value
   or
   for setpoint use the slider to select the value.
2. Click on the **Apply** button.
3. Click on the **OK** button to close and save changes.

Circuit Breaker

How to open window

In the Power Management System display click on the **Circuit breaker** icon to open the **Circuit breaker** dialog.



Window description

The blue bar indicates the status of the Circuit Breaker. Click **Open** or **Close** to change the status. The **More** button will reveal more information about the Circuit Breaker.

Trouble Shooting

How to Trouble-Shoot and Fault Finding

the Aperio System

Trouble Shooting

The following hints and guidelines are given to solve unexpected situations that could occur in the system.

Problem solving

- Check that connections and power support are OK.
- If error remains then check that application is running as described in “Taskbar” on page 189.
- Check “Workstation Loss of Communication” on page 190.

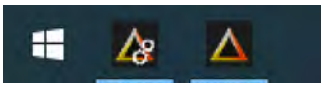
Depending on your system setup and fault check also:

- “Tank Monitoring - All Tanks Shows Wrong Indication” on page 191
- “Tank Monitoring - One Tank Shows Wrong Indication” on page 191
- “Tank Monitoring - All Cargo Tanks Shows Wrong Indication” on page 191

In the appendix (page 193) you will find a list of possible error codes.

Taskbar

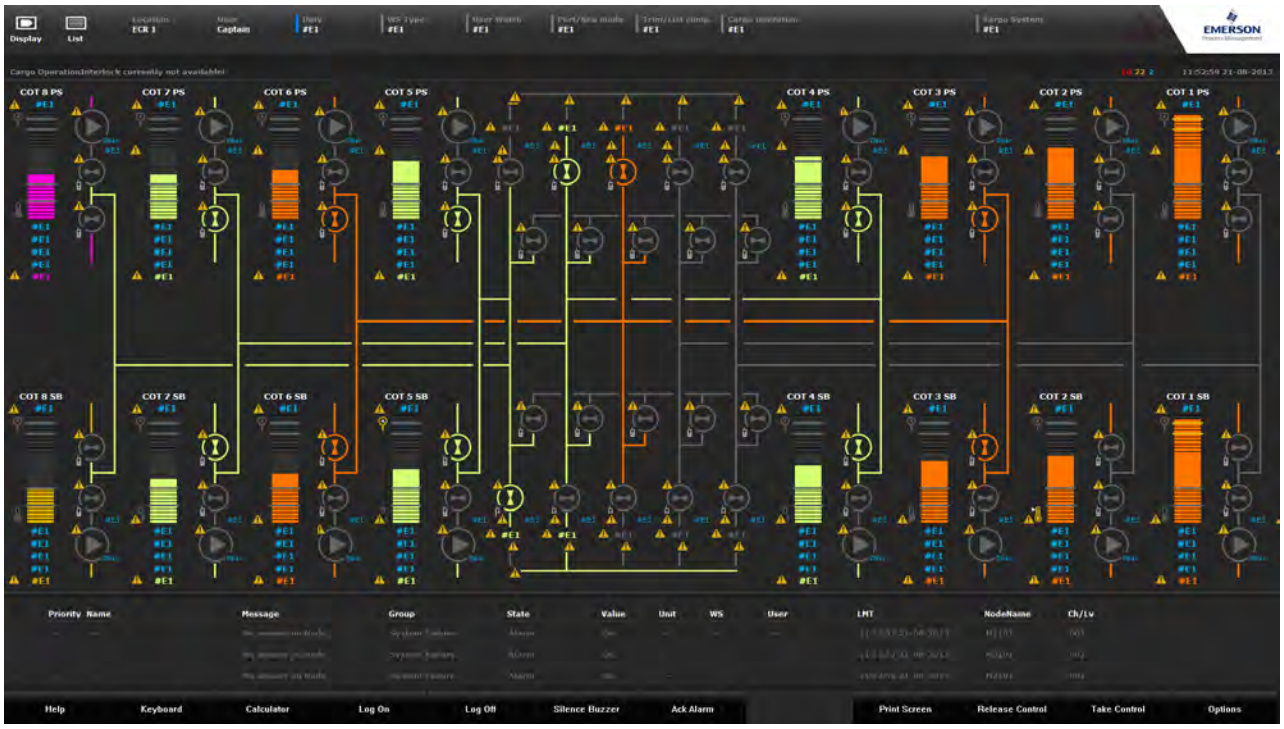
When running Aperio, the following three programs has to be up and running.



	The Aperio application is used for visualizing and operating the system. The operator will use this program in the daily operations.
	The Project configuration tool, used for setup of the complete system. The tool is password protected. The program cannot be used by the operator.

The function auto-hide the taskbar is normally enabled.

Workstation Loss of Communication



In case the workstation loses the communication with the attached controllers and modules the Aperio will change to look like the above display, where the yellow warning triangles indicates that something is wrong.

Each component with the warning triangle indicates that this particular component have communication problems.

Cause

The loss of communication can be caused of several different things, but is mainly caused by either “net fail” or “power failure”.

Therefore check the status display if there are any more detailed information on what might cause the fault. Also check all the interface panels around the vessel if the power supply is sufficient and that no fuses are blown. Furthermore check each module for the green power LED indicating that the supply is up and running.

Message	Group	State	Value	Unit	WS	User
No answer on Node	System Failure	Alarm	On	---	---	---

Note! In case of loss of communication, alarms will be generated in the alarm system. In group “0”, this is system fault alarms. Two different alarms can occur:
- Failed to connect to the system is when the workstation have no connection to any of the hardware.
- No answer on the node is when the workstation has lost connection to a single controller. Or if connection is lost to more controllers a system alarm will occur for each controller.

Component Error Indication

If there is an error on a component, it is indicated by a yellow triangle on top of the component.

Tank Monitoring - All Tanks Shows Wrong Indication

Since all tanks shows wrong indication it could be a common error. Therefore look for the fault at the trim/heel compensation. It could be one or both inclinometers that are out of range/calibration causing the compensation to be wrong.

Disable the trim/heel compensation, and see of the tank monitoring indicates correct.

Tank Monitoring - One Tank Shows Wrong Indication

It is properly a sensor problem. Find the sensor and check the mA signal in the current loop.

If the signal is wrong check the power supply. For the bubble type sensors also check that there is sufficient air supply.

For further details please also refer to the technical documentation for the sensor.

Tank Monitoring - All Cargo Tanks Shows Wrong Indication

If the cargo tanks indication is wrong please check that the modbus communication is OK between the tank monitoring system and the Rosemount radar system.

An alarm is generated in the tank monitoring system if the modbus communication becomes faulty.

If nothing above helps try resetting the modbus gateway in the IO panel and the Rosemount radar system by switching the power off and hereafter on again.

If still error try to clean the antenna according to Service manual for tank radars.

Draft, Trim and Heel - Sensor Fault

If a sensor is defective on the Draft, Trim and Heel measurement, the tanks Trim/List component should be disabled (when disabled the Trim and List is used as 0 degrees). When the sensor fault is corrected and the reading is OK the Trim/List component can be enabled again.

Appendix

Appendix

Status code explanation.

Aperio Status Code (Byte)	Error Description (Communication)	Note
0	OK	
1	No Response	Transaction Error
30	Unknown Comm. Error	

Aperio Status Code (Byte)	Error Description (Module/App)	Note
37	Channel error	IO Modules
38	Module error	IO Modules
39	Overload	IO Modules
40	Under load	IO Modules
41	External short circuit	IO Modules
44	Signal high	IO Modules
45	Signal low	IO Modules
46	High alarm	IO Modules
49	No load	IO Modules
88	Time out MB request	Modbus
89	Read register error	Modbus
90	Modbus connection error	Modbus
93	Over temperature	HW IO
94	Parameter error	HW IO
100	Data uncertain or not updated	SCC Sensor
101	Calc / Comm failure	SCC Sensor
102	Manual data value	SCC Sensor
103	Sensor failure	SCC Sensor
104	Sensor disconnected	SCC Sensor
105	TX error	SCC Sensor
250	NaN / Infinity	All
255	Unknown	All

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