SULZER

AquaWeb

81307051H

EN

User Guide

www.sulzer.com

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Contents

Introduction 5
System requirements 6
Login 7
The main screen 8
Alarm overview 8
Logged on user 8
Contract levels 9
Start screen 9
Alarm list 9
Alarm source 9
Severity class 9
Alarm status 10
Alarm events 10
Alarm notifications 11
Overview 12
The header 12
The list part 12
Filtering 13
Commands 14
Event list 15
Operator log 15
Map 16
Toolbar 16
Navigation 16
Legend 17
Popup menu 17
Alarm list 18
Remote control & alarms 19
Overview 19
Listing 19
Online status 19
Cache 19
Toolbar 20
Process mimic 21
Signal lists 22
Maneuver 22
Log lists 23
On screen diary 24
Asset management 25
Overview 25
Equipment details 25

Energy calculation report ... 26
Optimization ... 27
Charts ... 28
Filter panel ... 29
Support for multiple axes ... 31
Chart areas ... 32
Reports ... 33
Filter panel ... 33
Toolbar ... 34
Zoom ... 34
Alarm list ... 35
Export to Excel ... 35
Print or export to pdf ... 36
Data collection ... 36
Setup ... 37
Configuration change dialog ... 37
Alarm management ... 38
Alarm groups ... 39
Areas ... 42
Time settings ... 42
Alarm causes ... 44
Users ... 47
Add new user ... 47
Add user to area ... 48
Enter vacation for user ... 48
Edit user permissions ... 49
Stations ... 50
Edit station ... 50
Configuration ... 52
Chart templates ... 55
Edit chart template ... 56
Report templates ... 60
Edit report template ... 60
Automatic maneuvers ... 66
Trigger Formula Settings ... 67
Target ... 71
Multi Mimic ... 73
Edit multi mimic templates ... 73
Formulas and signals ... 74
Formula limitations ... 74
Displaying a multi mimic ... 75

Introduction

AquaWeb is a control and monitoring system with a web interface to controllers anywhere in the world. It can manage alarms and send them out to different receivers such as push notifications, e-mail and SMS. It can collect log data for later analysis in graphical charts and alpha numeric reports. It can remotely control different functions in the controller.

This manual will focus on the web interface, both showing current application status and managing settings.

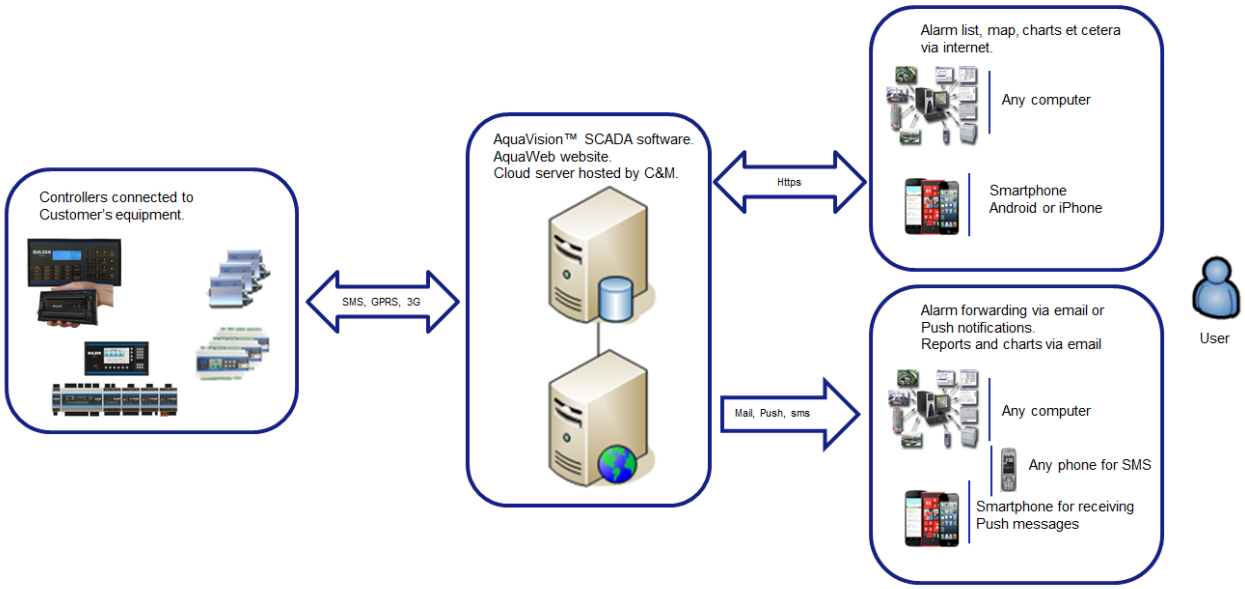

Figure 1: Service overview

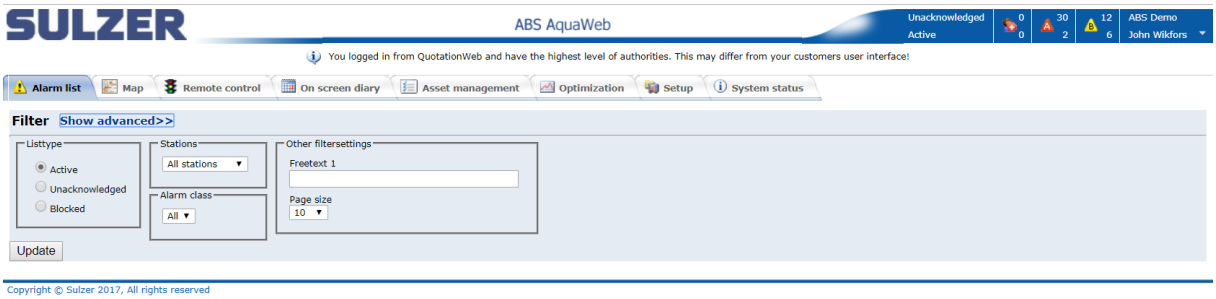

Figure 2: AquaWeb overview

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System requirements

Since AquaWeb is a web based system, it’s of course a necessity to have a working internet connection and a web browser such as Chrome, Safari, Firefox or Internet Explorer.

Login

Since the AquaWeb service requires authentication, the first thing you'll see is the login page. Use the username and password supplied to you in the welcome mail.

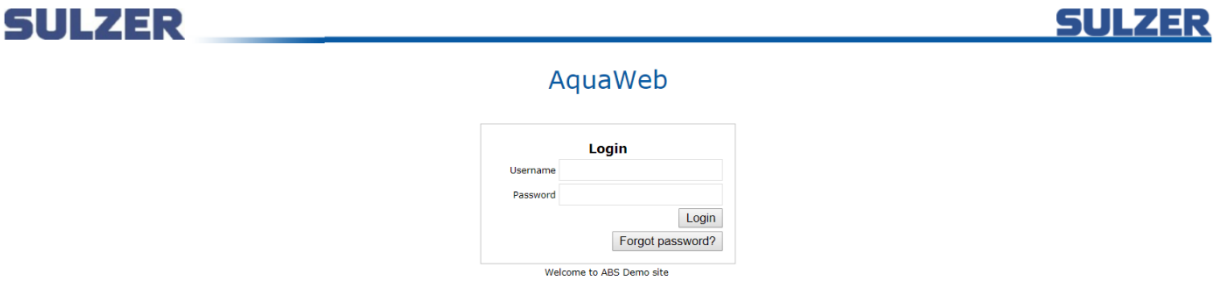


Figure 3: Login page

If you, at any time, forget your password you can always push the "Forgot password" button. Then you get to enter your mail address and a new password is generated and sent to your mailbox. This password can be changed when logged in.

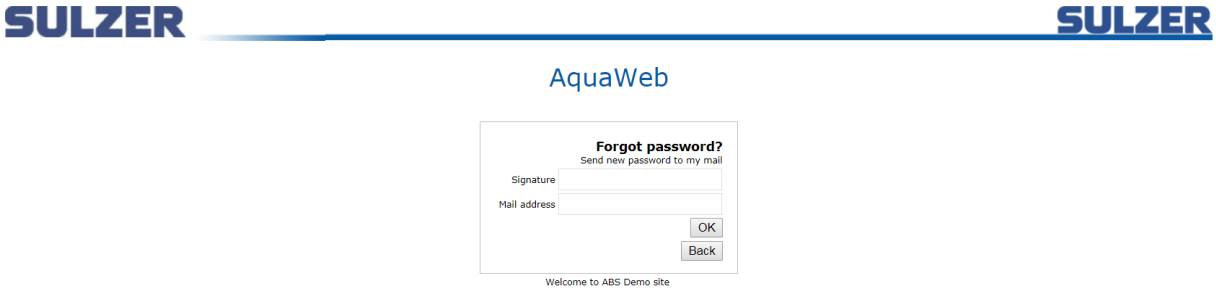


Figure 4: Request new password

When you have logged in you have access to the parts of AquaWeb you need to do your work. Some parts of AquaWeb, e.g. configuration functions, may not be available for you.

All the commands, alarm acknowledgments and so forth that you perform will be tagged by your signature and saved by AquaWeb and it is therefore possible to view a list of all user activity to see what has been done with your equipment.

The main screen

Some parts of the AquaWeb site are common to all pages. The header contains the organization logo, the info bar, the alarm row and the navigation tabs. The information shown below the navigation tabs is changing depending on what page you're visiting.

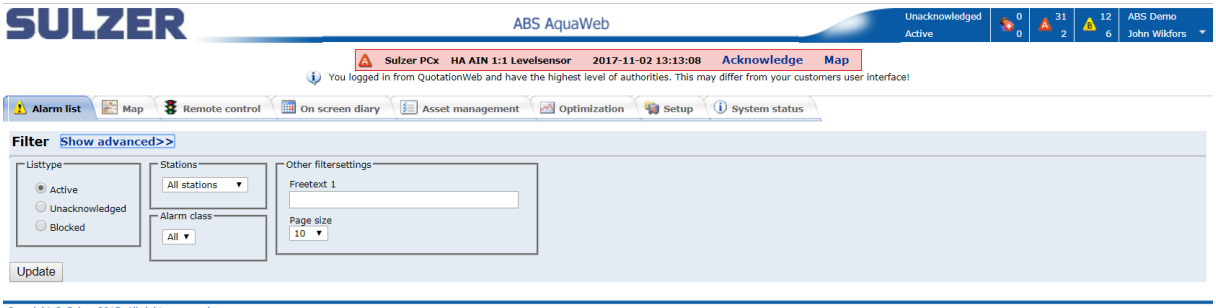


Figure 5: AquaWeb overview

Alarm overview

In the info bar you get an overview of the alarms in your organization. The information is displayed in a matrix with rows showing status and columns showing severity. The first column shows personnel alarms, the second A-alarms and the third B-alarms. In the screen shot below we can see that there are 1 unacknowledged, inactive, B-alarm, 4 active A-alarms and 10 active B-alarms.

Figure 6: Info bar

The alarm row is displaying the oldest unacknowledged active alarm of the highest severity class. Next to the alarm text is an "Acknowledge" button you can use for acknowledging the displayed alarm. If you have entered the coordinates for the station you can also click on the "Map" button to show the station on the map page.

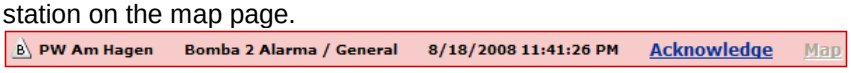


Figure 7: Alarm row

Logged on user

The info bar also shows the organization name and the logged on user. Finally there are three buttons. Starting from the right there is the logout button, the password button and the help button. The logout button obviously explicitly logs you out of AquaWeb. If you leave the browser running you'll be automatically logged out after 24 hours. The password button gives you a chance to select your own password and the help button leads to the document you're looking at right now.

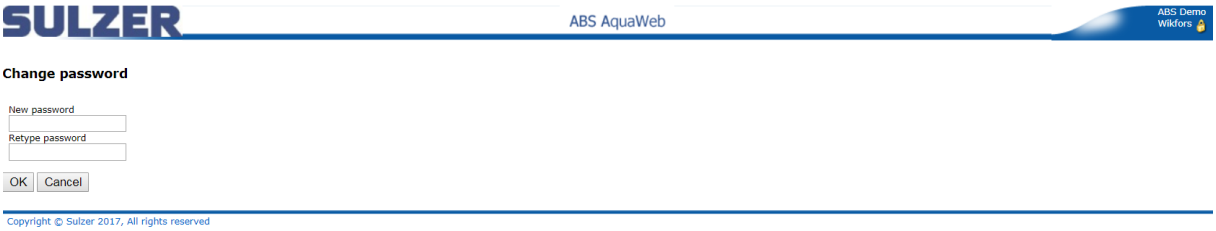


Figure 8 Change password

Contract levels

AquaWeb offers two contract levels; Monitoring and Remote control & alarms. The monitoring contract level offers functionality such as viewing stations and receives log data. Automatic and manual data collection and visualization by charts and reports makes it possible to analyze the status and trends of the stations.
The second level also includes remote control and alarm handling. It makes it possible to look at the current status of the station and attempt a remote reset of motor protection devices before sending an engineer to site.

The basic version CMS 241 "Monitoring & Reporting" includes:

- Remote on-line Monitoring with support for Historical Report & Trending with basic Alarm indication.
  Part number: 62007041

The upper level CMS 251 "Remote Control & Alarms" includes:

- The basic version functionality plus Remote Control support as well for advanced Alarm handling including Alarm Dispatch and Routing.
  Part number: 62007042

Included in both above:

Advanced survey and calculation tool to map and report possible upgrade possibilities tied to a pay-back calculation. This part of the software is for internal use. The result is posted and can be accessed by end customer.

The Asset Management tool is an important tool for helping to achieve a proper Asset Management and to help out pinpointing problems and quick wins!

Figure 9: Contract overview.

Start screen

The main menu in the start screen is normally the map.

Alarm list

First a few words about the alarm system since an understanding of the workings of the alarm system is essential for understanding how to use and interpret the alarm list.

All alarms share some common characteristics. They have an alarm source, a severity class and a status. Their status is changed by alarm events and they generate notifications sent to different receivers.

Alarm source

All alarms have an alarm source. The source can be a signal from the external equipment, e.g. a motor protection that has tripped. Another type of alarm source is internal, e.g. from communication activities.

Severity class

All alarms are classified and given a severity class from "A" to "C" with severity class "A" as the highest class. The oldest active alarm of highest severity class is always displayed in the alarm row, and an alarm with severity class "A" will remain in the alarm row even if new alarms are indicated, if the new alarms are of severity class "B" or "C". The severity class is also used for determining what type of alarm notifications to send from AquaWeb.

Alarm status

An alarm can have one of these alarm statuses. Change of status for an alarm is carried out by alarm events, trigged either by the user or by the alarm source.

Alarm status	Description
Normal (Off)	The alarm is in the normal, i.e. deactivated state.
Activated (On)	The alarm source has indicated there is some problem in your equipment.
Acknowledged	The alarm source has indicated there is some problem in your equipment. A user has acknowledged the alarm condition and is hopefully taking care of fixing the problem.
Blocked	The alarm is blocked and will not be activated.

Alarm events

An alarm event can be a status change caused by the alarm source, a system action or a user command. All events are time stamped and put in an event log. The list below describes the different events.

Event	Event source	Description
Activation	The alarm source	The alarm is activated. If the alarm is blocked, the activation event is ignored. If the alarm status is "Normal", the status is changed to "Activated".
Deactivation	The alarm source	The alarm is deactivated, i.e. the alarm source is no longer indicating any problem in your equipment. If the alarm status is "Acknowledged", the alarm status is changed to "Normal" otherwise the alarm status remains "Activated".
Acknowledgment	A command from a user	The alarm is acknowledged by the user. If the alarm source is still indicating there is a problem in your equipment the alarm status is changed to "Acknowledged" otherwise the alarm status is changed to "Normal".
Reset in station	A command from a user	The alarm is acknowledged by personnel locally at the station.
Block	A command from a user	The alarm status is changed to "Blocked". Use the Block command with caution since all alarm events are ignored for blocked alarms.
Unblock	A command from a user	If the alarm source is indicating there is a problem in your equipment the alarm status is changed to "Activated" otherwise the alarm status is changed to "Normal".
Push snd	The system	Push notification to user's smartphone. Android or iPhone
Mail sent	The system	Mail sent to a user's mailbox.
Push dlv	The phone	Shows that the push has arrived to the user's smartphone.
Cause given	A command from a user	The user has entered what caused the alarm.
Push Read	The phone	Push notification has been read by user.

Alarm notifications

When an alarm is activated, alarm notifications are sent to different receivers. Which receivers will get a notification depends on how the alarm system is configured but some receivers are mandatory.

Notification receiver	Description
Alarm list	This is a mandatory receiver.
Alarm row	This is a mandatory receiver - the alarm row displays the latest alarm of the highest severity class.
Mobile phone	Notifications to mobile phones are optional. This function is widely used for sending notifications to on duty personnel so they can take action when an alarm condition is indicated. The notifications can be configured in such a way that different persons receive notifications from different parts of your equipment and also based on your duty schedule. Works with both SMS and Push for smartphones (Android and iOS)
Mailbox	Notifications can be sent to mailboxes as well. Works in the same way as those to mobile phones.

Overview

The alarm list consists of four major parts: the header, the list itself, the command buttons and the filter parameters.

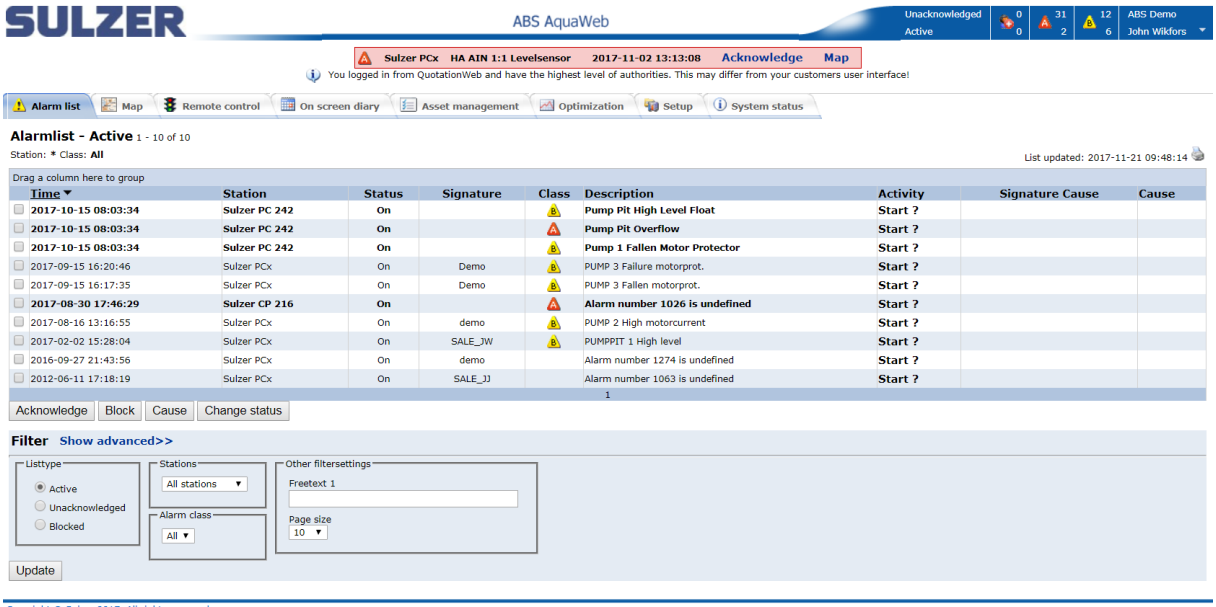


Figure 10: Alarm list overview

The header

The header above the list shows the name of the view, number of alarms shown, current filter, list creation time and a print button.

Figure 11: List mode, number of alarms shown, filter description, creation time and print button

The list part

The alarm list displays alarms from your stations. The list has two display modes - the status mode and the log (history) mode. You select the display mode (status or log) in the **List type** box. More about the different list types is described in the filter section below.

Sometimes you want to group information by a certain part of the information. You can do this by dragging the column header to the area that says “Drag column here to group”. In the examples below the list is being grouped by station name.

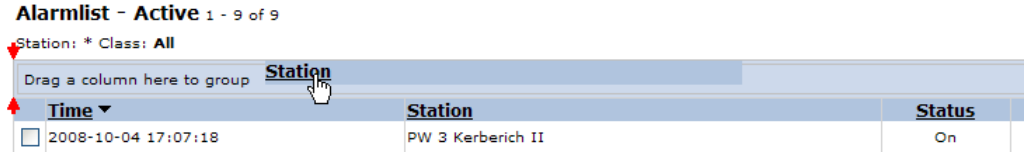


Figure 12: Drag column header to group

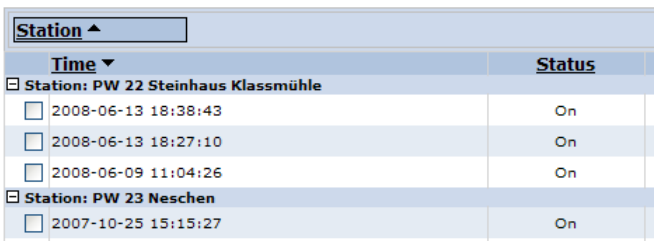


Figure 13: List grouped by station name

You can change sort order by clicking on the column header. The arrow shows the current sort order. Arrow down means descending order.

Figure 14: List sort order

The alarm list displays every alarm on one row. You select an alarm by clicking the checkbox to the left. By selecting an alarm you make this alarm the target for the alarm commands described below.

Filtering

In the filter panel you can select the type of list and enter a filter when you want to limit the number of alarms to display and thus make it easier for you to find specific alarms. The filter section has two modes: simple and advanced. The simple one contains the most common options.

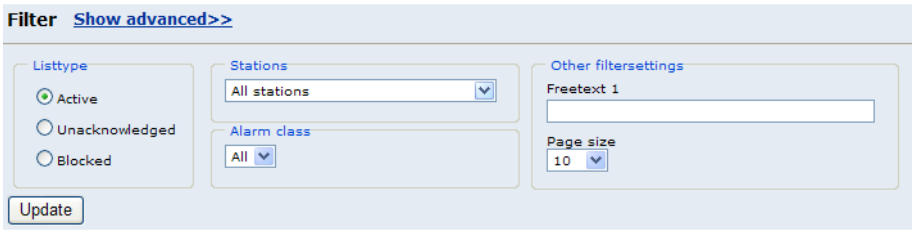


Figure 15: Simple filter

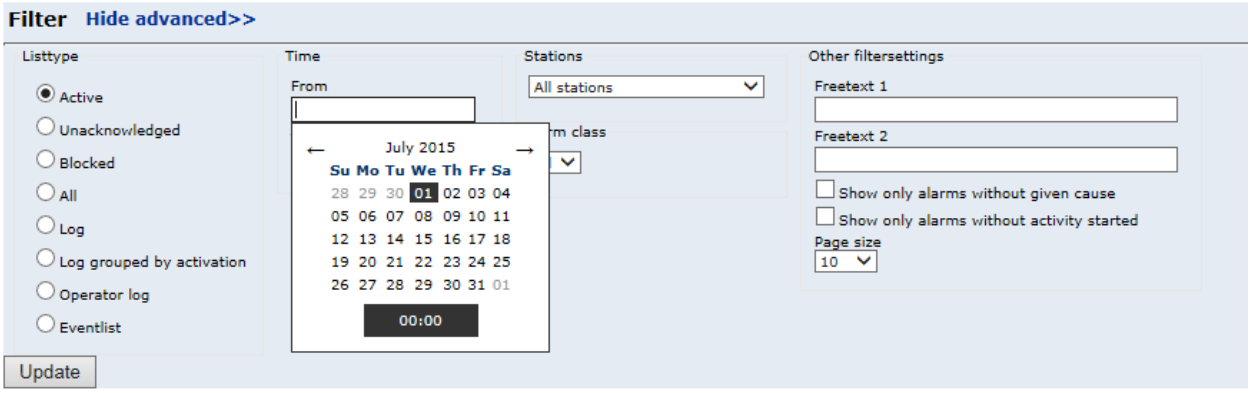


Figure 16: Advanced filter

In the table below the different filter options are described.

Filter type	How to use it
List type	This filtering option has two main purposes. You use it for selecting the type of alarm list you want, i.e. Status list or Log (history) list. When you choose to display a status list you also select if you want to display all alarms regardless of their status or if you want to filter the list and only display alarms of a specific status. In the same way you select if you want to display the alarm log in plain format or in a format where the alarm events are grouped together.
Time	Select the time frame you want to display.
Station	Display alarms from all stations or from a specific station.
Alarm class	Display alarms of all severity classes or of a specific severity class.
Free text search	Enter any text in the search boxes. This will filter your alarm list to display only those alarms where both texts entered in the search boxes are in the alarm display text.
Only alarm without cause	You can enter a cause for any alarm activation to facilitate the follow-up work for your alarms. By clicking this check box you get an alarm list displaying only those alarm activations where you have not yet entered an alarm cause.

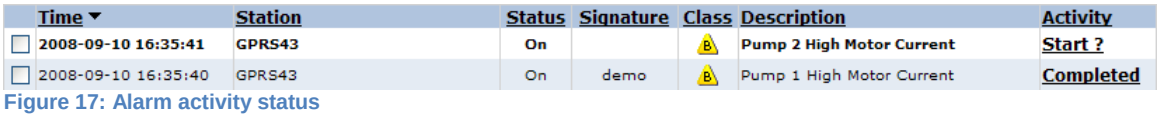
Only alarms without activity started	You can connect activities, for example a pump repair, to an alarm event. By clicking this check box you get an alarm list displaying only those alarm activations where you have not yet entered an alarm activity.
Page size	Number of alarms to show in one page. If more alarms are shown, the paging appears below the list.

Commands

You can perform a couple of commands for your alarms

Command	Use the command when you want to:
Acknowledge	Acknowledge the selected alarm. Paging calls for the alarm will stop when the alarm is acknowledged.
Block	Block the selected alarm. Use this command when you want to block activations for alarms where the equipment is not working correctly and therefore sends a lot of false alarm activations.
Unblock	Unblock a previously blocked alarm. The alarm returns to its previous status when it is unblocked.
Cause	Enter a cause for alarm activation.
Start activity	To keep track on actions taken, you can enter the different activities that follow an alarm activation.

To start a new alarm activity click on the “Start ?” link in the Activity column. An activity can have three different states: Not started, Started and Completed.



	Time	Station	Status	Signature	Class	Description	Activity
☐	2008-09-10 16:35:41	GPRS43	On		B	Pump 2 High Motor Current	Start ?
☐	2008-09-10 16:35:40	GPRS43	On	demo	B	Pump 1 High Motor Current	Completed

Figure 17: Alarm activity status

When you click the activity link you can view and enter activities.

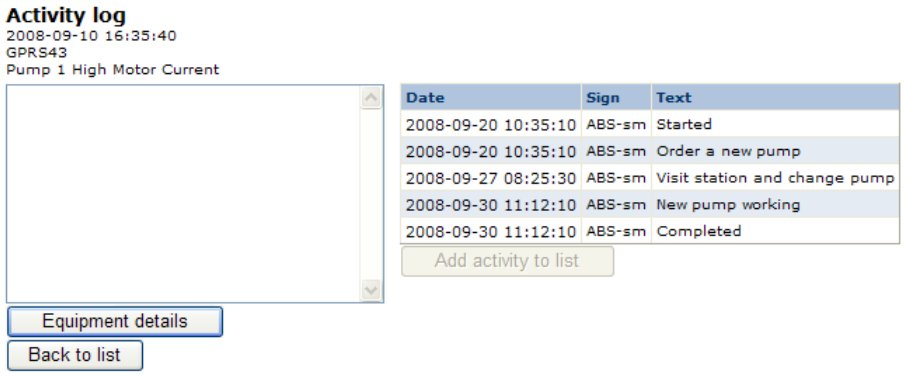
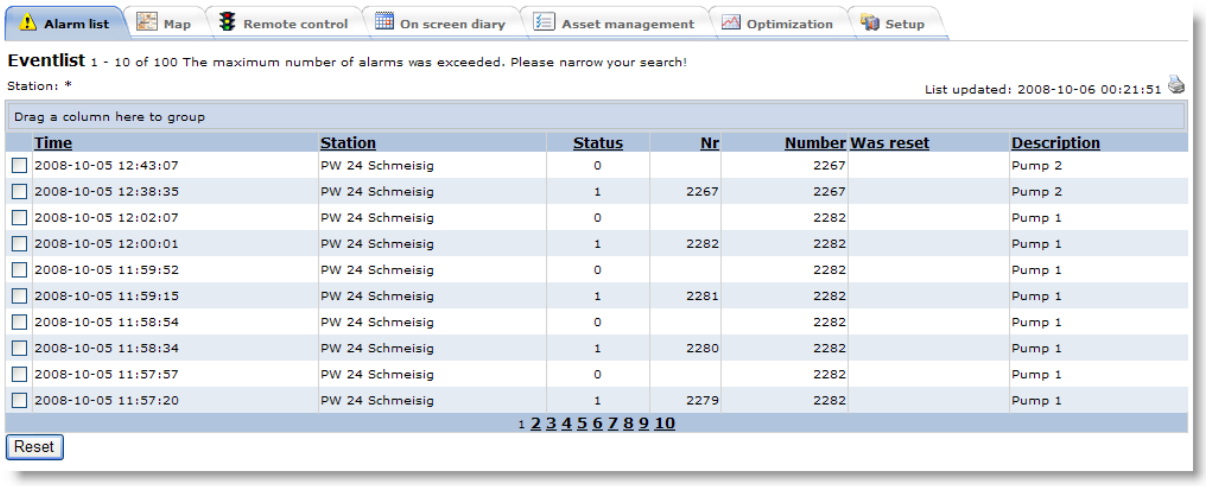


Figure 18: Activity log

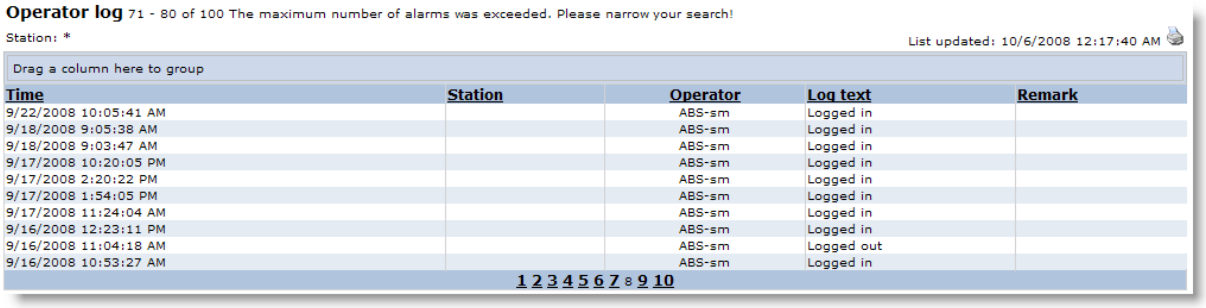
Event list

The event list shows all event counters activated in the stations. You can see the number of activations and you can reset the counter when needed, for example when a maintenance work is done.



Operator log

All the commands, alarm acknowledgments, configuration changes and so forth that you perform will be tagged by your signature and saved by AquaWeb. These activities can be viewed in the operator log list. After changing a setting in the system, the user gets to enter a remark about what was done. This makes it possible to track who did what and why. The remark is then shown in the list.



Map

The map page shows a geographic overview of all your stations and their current alarm status. The page consists of three parts: the toolbar, the map and the alarm list. Everything is tied together so if you change the map position, the alarm list is automatically updated to show the alarms for the selected region.

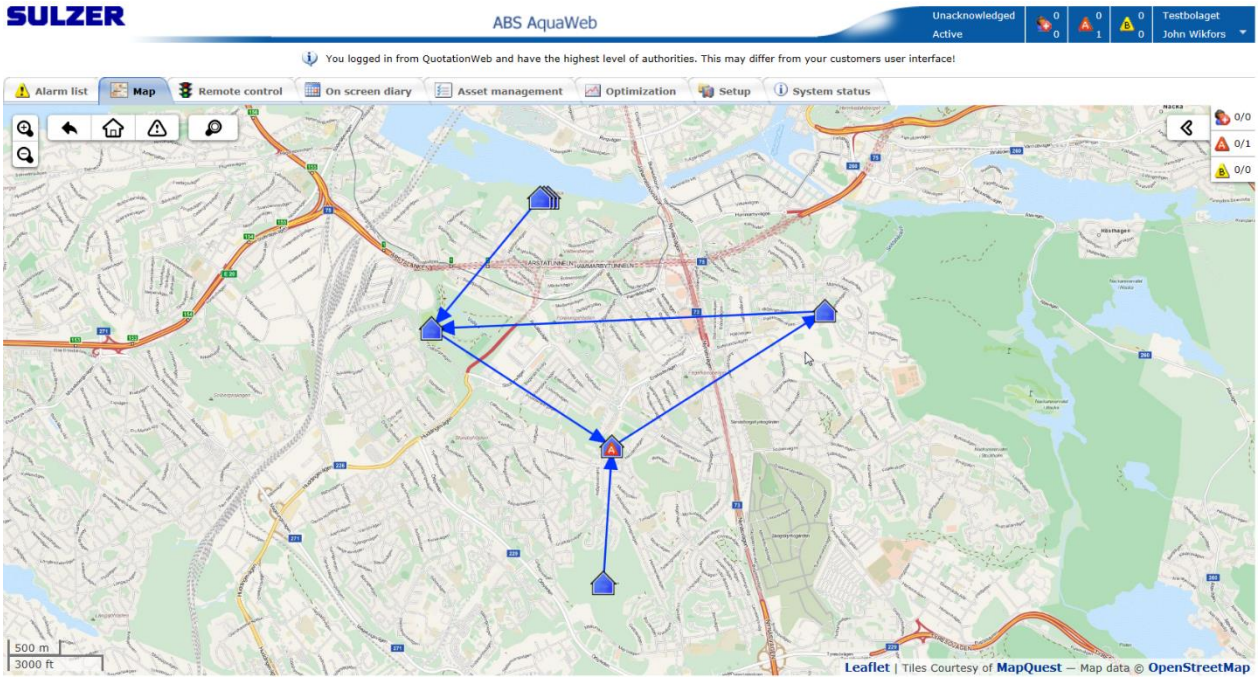


Figure 19: Map overview

Toolbar

The toolbar simplifies navigating the map to common views. There are zoom buttons to the left. The back button takes you back to the previous position. The home button zooms and pans the map to show all stations in your organization. The warning button zooms and pans the map to show all stations with alarm. The search button lets you fill in search criteria's with autocompleting, to find a specific station.

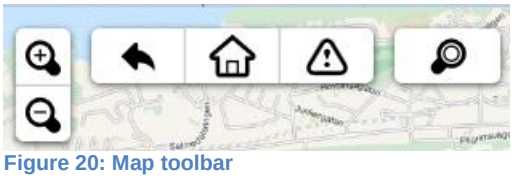


Figure 20: Map toolbar

Navigation

Besides going to the shortcut positions via the toolbar there are many different ways you can change the map's current position. To pan the map, drag it with the mouse in any direction or push the arrows on the keyboard. To zoom, push + - on keyboard or use scroll wheel or double click with the mouse. You can also click on the + - buttons on the map.

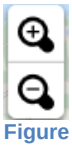


Figure 21: Zoom buttons

Legend

The stations are symbolized with different icons depending on the alarm status. If two or more stations are too close to show they are grouped together as a cluster in the map. In the table below the different symbols are explained.

Symbol	Description
	Station with normal status, no alarms.
	Station with personnel alarm, unacknowledged. This symbol is blinking.
	Station with personnel alarm, acknowledged but active.
	Station with A-alarm, unacknowledged. This symbol is blinking.
	Station with A-alarm, acknowledged but active.
	Station with B-alarm, unacknowledged. This symbol is blinking.
	Station with B-alarm, acknowledged but active.
	Station setup without communication.
	Cluster with normal status, no alarms.
	One or more stations with personnel alarm, unacknowledged. This symbol is blinking.
	One or more stations with personnel alarm, acknowledged but active.
	One or more stations with A-alarm, unacknowledged. This symbol is blinking.
	One or more stations with A-alarm, acknowledged but active.
	One or more stations with B-alarm, unacknowledged. This symbol is blinking.
	One or more stations with B-alarm, acknowledged but active.
	Cluster setup without communication.
	Arrow showing pumping direction.

Popup menu

If you click on a cluster, the map zooms in to show all stations in the cluster. If you click on station a popup menu appears. This menu contains shortcuts to pages showing different aspects of the station.

Figure 22: Popup menu

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Alarm list

To view the alarm list click on the left pointing arrow to expand the list view:

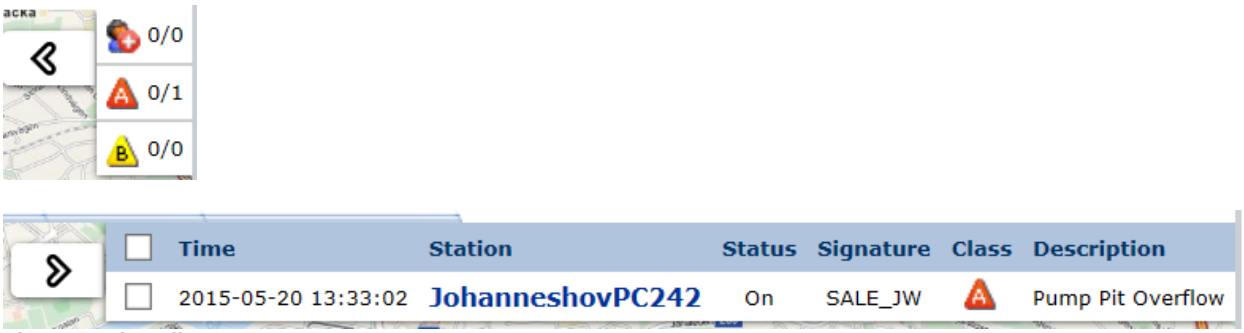


Figure 23 Alarm list

Remote control & alarms

Overview

Sometimes it's necessary to get a snapshot of the current status of the station. To view the current status of a station or to make a maneuver, click on the remote control-tab.

Listing

In the list you can get an overview of all your stations having "Remote control & alarms"-contract level. You can see online status and find out when the station cache was last updated. From the list you can also navigate to the process mimic of the station by clicking on the name.

Figure 24 List of stations having remote control enabled

Online status

The symbol in the left column is showing the current online status. For GPRS/3G-connected stations the online symbol indicates that the system has watchdog communication established with the station. This means that alarms can be received and that a manual connection can be done. For GSM-stations the online symbol is shown when the station has been in contact with the system within the last 24 hours. The watchdog functionality in AquaWeb sends wakeup messages to stations that are near the limit.

Symbol	Description
	Always offline due to missing or bad configuration
	Offline
	Online
	Watchdog = False or Setup complete = False

Figure 25 Legend for online status

Cache

Whenever the system is in contact with the station, all signals marked with the cache parameter in the configuration are updated.

Process mimics and signals list

The remote control & alarms page shows the cached values for the station. If the station is currently connected the values shown are “live”. A while after the station is disconnected, the process mimic and the values in the lists are grayed out, marked as old, to remind you that they’re not the actual values any more, just a snapshot of the last known status.

The page consists of three parts:

1. The toolbar
2. The process mimic
3. The list section.

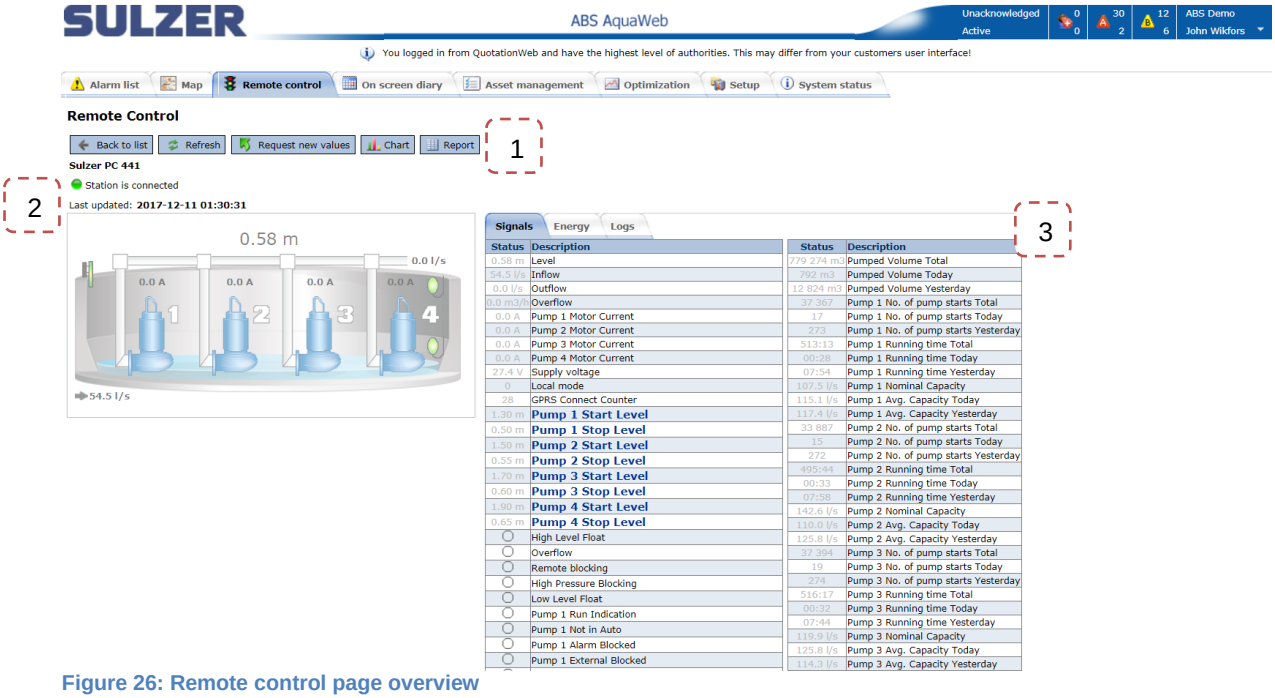


Figure 26: Remote control page overview

Toolbar

The toolbar enables you to perform commands tied to the station, and to navigate to other sections of the site with the station as a filter.

Figure 27: Remote control toolbar

The toolbar has the following set of commands:

Command	Description
Back to list	Takes you back to the list of stations
Refresh	Refreshes the display of the current station. This could be useful if the station has been connected by either another user or by an alarm since your last update.
Request new values	Contacts the station and updates the cache values. If it's a GSM station, the server sends a request via sms and the stations responds with the current signal status. If it's a GPRS station, the server connects to the station and shows "live" values for 2 minutes and then disconnects again.
Chart	Opens a new browser window showing the default chart for the station.
Report	Opens a new browser window showing the default report for the station.

Process mimic

The process mimic shows the status of the station in a graphical view. Inflow, outflow, level and pump statuses, for example, are illustrated with texts and animations. In the station setup you can define which of the predefined system templates suits your station best.

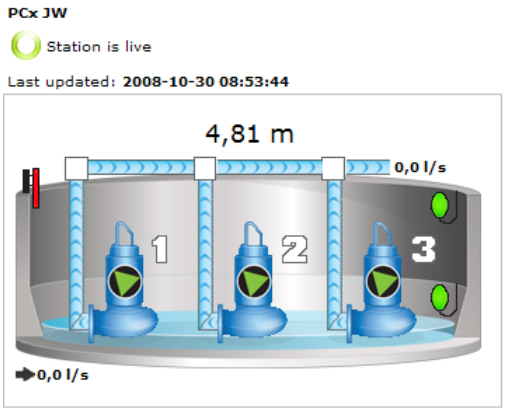


Figure 28: 3-pump, currently connected PCx station

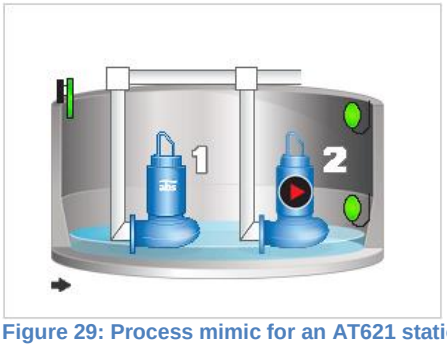


Figure 29: Process mimic for an AT621 station

Figure 30: Marked as old

Signal lists

The signal lists show the current value for the cache signals. Depending on station type and configuration there may be one or two lists. The value column is shown in gray when marked as old.

Signals | Logs

Status	Description
4,81 m	PP1 Level
0,0 l/s	PP1 Inflow
0,0 l/s	PP1 Outflow
2352,497 l/s	PP1 Overflow
8468,971 m3/h	PP1 Overflow
4,81 m	AIN 1:1 Nivågivare PG 1
3,34 A	AIN 1:2 Strömtrafo P1
0,14 A	AIN 1:3 Strömtrafo P2
1,1 m	AIN 1:4 Bräddflöde
24	
0	0=Remote
1,20 m	**Start level P1**
0,70 m	**Stop level P1**
1,30 m	**Start level P2**
0,80 m	**Stop level P2**
3,00 m	**Start level P3**
0,90 m	**Stop level P3**
○	DIN 1:5 HÖGVIPPA PUMPGROP
●	DIN 1:4 BRÄDDNING PG:
●	P1 Running check
○	Pump 1 Alarm blocked
○	Pump 1 blocked
●	P2 Running check
○	Pump 2 Alarm blocked
○	Pump 2 blocked
●	P3 Running check
○	Pump 3 Alarm blocked
○	Pump 3 blocked
●	**P1 Relay contact**
●	**P2 Relay contact**
●	**P3 Relay contact**

Status	Description
0,0 m3	PP1 Pumped vol. Tot.
0,0 m3	PP1 Pumped vol. Today
0,0 m3	PP1 Pumped vol. Day 1
9	P1 Starts total
0	P1 Starts today
0	P1 Starts day 1
423:00 hhh.mm	P1 Running time total
05:06 hh.mm	P1 Running time today
24:00 hh.mm	P1 Running time day 1
0,0 l/s	P1 Calc.(nominal) pump cap. for height 1
0,0 l/s	P1 Pump capacity today
0,0 l/s	P1 Pump capacity day 1
9	P2 Starts total
0	P2 Starts today
0	P2 Starts day 1
423:00 hhh.mm	P2 Running time total
05:06 hh.mm	P2 Running time today
24:00 hh.mm	P2 Running time day 1
0,0 l/s	P2 Calc.(nominal) pump cap. for height 1
0,0 l/s	P2 Pump capacity today
0,0 l/s	P2 Pump capacity day 1
3582558,7 m3	PP1 Overfl. vol. Tot.
447:34 hh.mm	PP1 Overfl. time Total
1	PP1 No overflows Total
43232,2 m3	PP1 Overfl. vol. Today
05:06 hh.mm	PP1 Overfl. time Today
0	PP1 No overflows Today
203234,2 m3	PP1 Overfl. vol. Day 1
24:00 hh.mm	PP1 Overfl. time Day 1
0	PP1 No overflows Day 1
0	P3 Starts today
0	P3 Starts day 1
26	P3 Starts total
05:06 hh.mm	P3 Running time today
24:00 hh.mm	P3 Running time day 1
426:29 hhh.mm	P3 Running time total
0,0 l/s	P3 Pump capacity today
0,0 l/s	P3 Pump capacity day 1
0,0 l/s	P3 Calc.(nominal) pump cap. for height 1

Figure 31: Signal lists (example from a PCx station)

Maneuver

Signals with name shown as hyperlinks are maneuverable. Depending on type of signal the dialogue looks a bit different. For GPRS stations, like PC242 or PCx, a signal is either analogue or digital and the corresponding dialogue is used. For an AT621 you can set ON, OFF or other value (pulse). By sending 3 to station, the signal will be activated for 3 seconds.

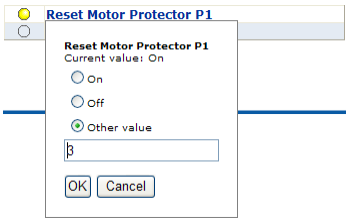


Figure 32: AT621 maneuver

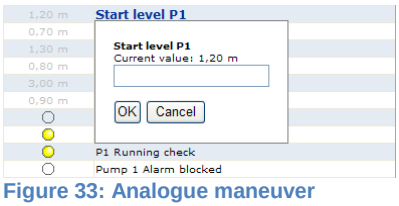


Figure 33: Analogue maneuver

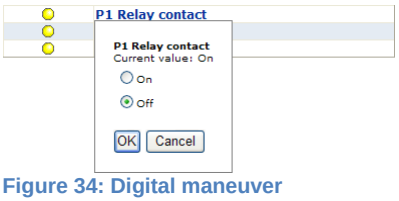


Figure 34: Digital maneuver

81307051H

Log lists

The log lists gives a filtered overview of what has happened recently.

Signals | Logs

Operatorlog

Time	Signature	Description
2008-10-27 13:40:04	SALE_jw	Request update for station
2008-10-13 13:48:10	demo	Command: Reset Motor Protector P1 (Do1)=On. Previous value=Off
2008-10-10 10:20:09	SALE_jw	Request update for station
2008-10-10 10:20:04	SALE_jw	Request update for station
2008-10-10 10:18:48	SALE_jw	Sending configuration to station
2008-10-10 10:18:42	SALE_jw	Config for station updated (JW AT621)
2008-10-10 10:16:06	SALE_jw	Acknowledge of alarm (2008-10-10 10:15:35 B JW AT621 Pump 2 Tripped / General)
2008-10-10 10:15:38	SALE_jw	Acknowledge of alarm (2008-10-10 10:11:10 B JW AT621 Pump 1 Tripped / General)
2008-10-10 10:14:04	SALE_jw	Command: Reset Motor Protector P1 (Do1)=Off. Previous value=Off
2008-10-10 10:12:40	SALE_jw	Command: Reset Motor Protector P1 (Do1)=Off. Previous value=Off

Alarm log

Time	Signature	Status	Class	Description
2008-10-10 10:19:35		Off	B	Pump 1 Tripped / General
2008-10-10 10:16:06	SALE_jw	Ackn.	B	Pump 2 Tripped / General
2008-10-10 10:15:38	SALE_jw	Ackn.	B	Pump 1 Tripped / General
2008-10-10 10:15:35		On	B	Pump 2 Tripped / General
2008-10-10 10:12:27		Off	B	Pump 2 Tripped / General
2008-10-10 10:11:10		On	B	Pump 2 Tripped / General
2008-10-10 10:11:10		On	B	Pump 1 Tripped / General
2008-10-10 10:10:59		Off	B	Pump 2 Tripped / General
2008-10-10 10:10:59		Off	B	Pump 1 Tripped / General
2008-10-10 10:10:43		On	B	Pump 1 Tripped / General

Figure 35: Operator log and alarm log for station

On screen diary

On screen diary is a tool to get an overview of the current personnel allocation and responsibilities. Select the period of interest in the date boxes either by entering the date directly or by clicking on the calendar and picking the date.

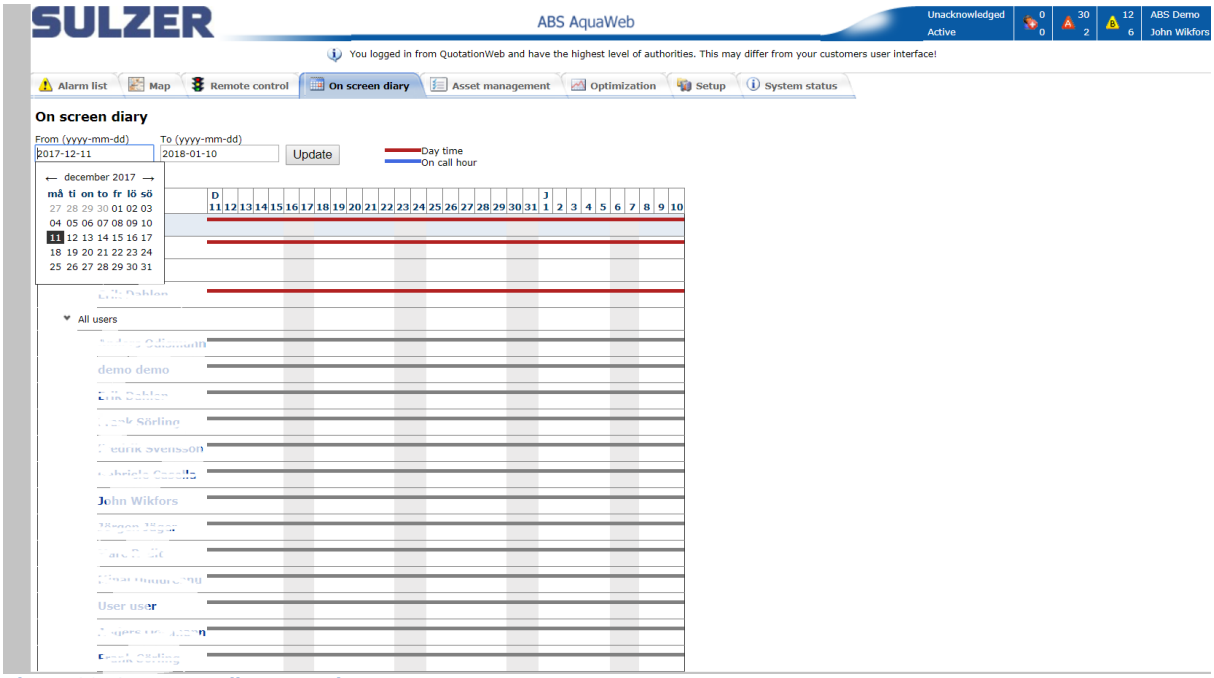


Figure 36: On screen diary overview

The tree to the left is grouped by areas, alarm groups and shift, which are all configurable under the setup tab. Areas could for example be categories, like electrical and mechanical, or geographical, like south municipality or north. When all branches are collapsed it's possible to see if the different areas are covered with on duty personnel by looking at the lines. The red line represents day time hours and the blue line on call hours.

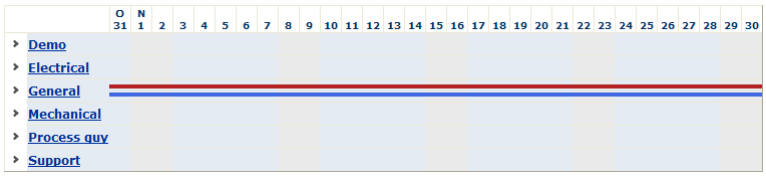


Figure 37: Collapsed areas

If there's a gap in the line, it means no personnel are on duty on that day. To solve the coverage you can click on the arrow to expand it. All personnel tied to the area in question are listed at the end. Changes can be made by clicking on the hyperlinks for each item. This makes it possible to easily adjust the working schedules and to find replacements when someone is home on sick leave or on vacation.

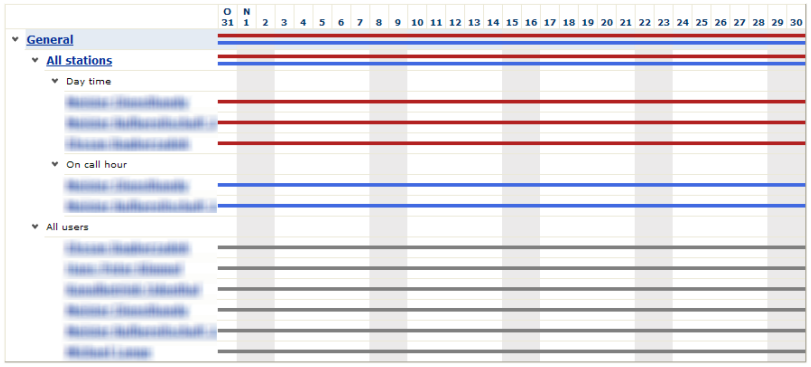


Figure 38: All branches expanded

Asset management

Overview

On the “Asset Management” page you can view equipment details. If an Sulzer energy survey has been done in the station, you can also view station images and ABS energy calculation reports.

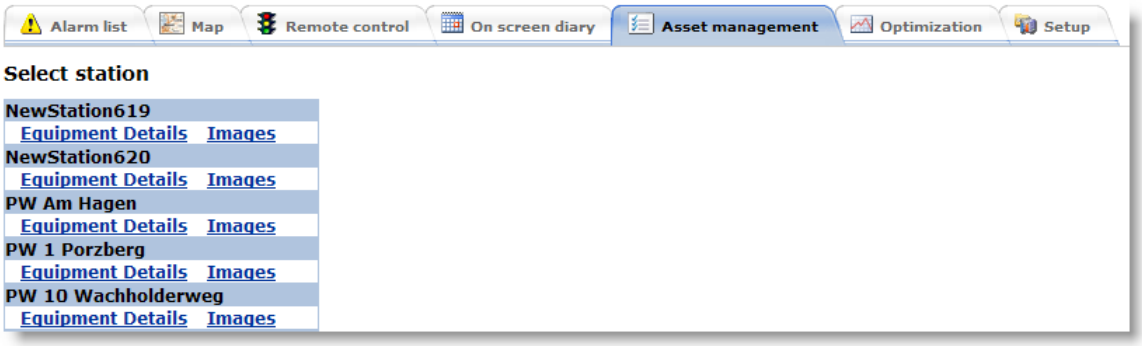


Figure 39: Station list showing links to Equipment details and Images

Equipment details

In the “Equipment details” page you can view and register all the details about the pumps and the application environment. If a pumping station survey is made by Sulzer, this type of information is automatically supplied.

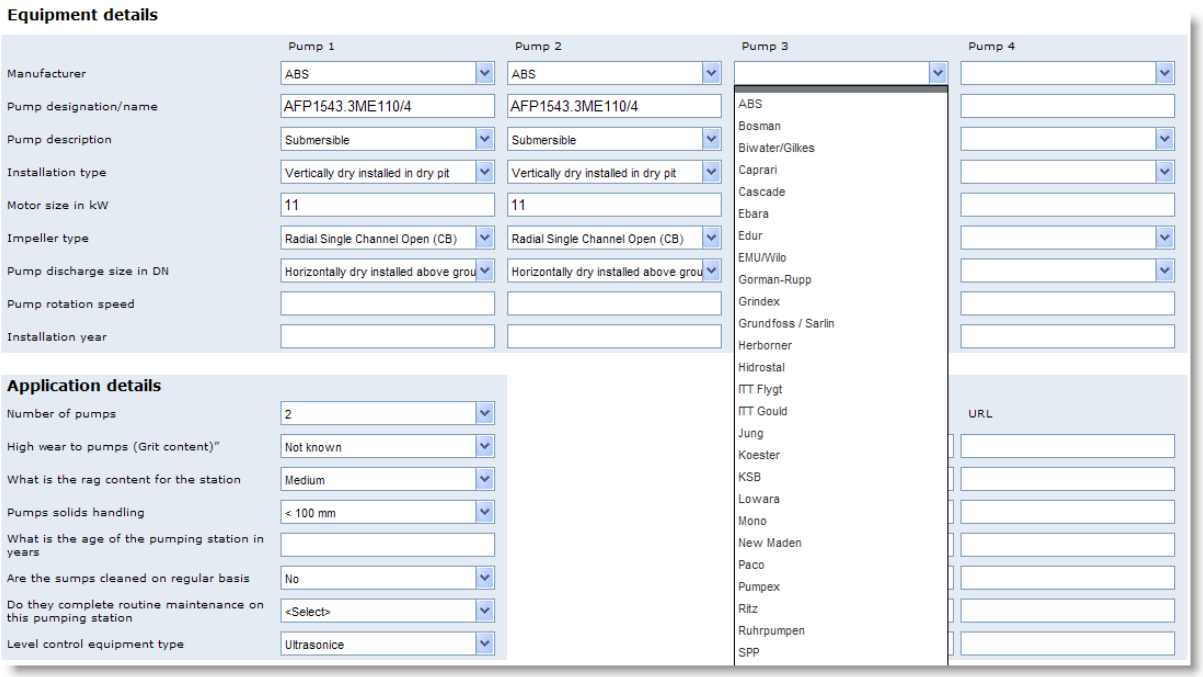
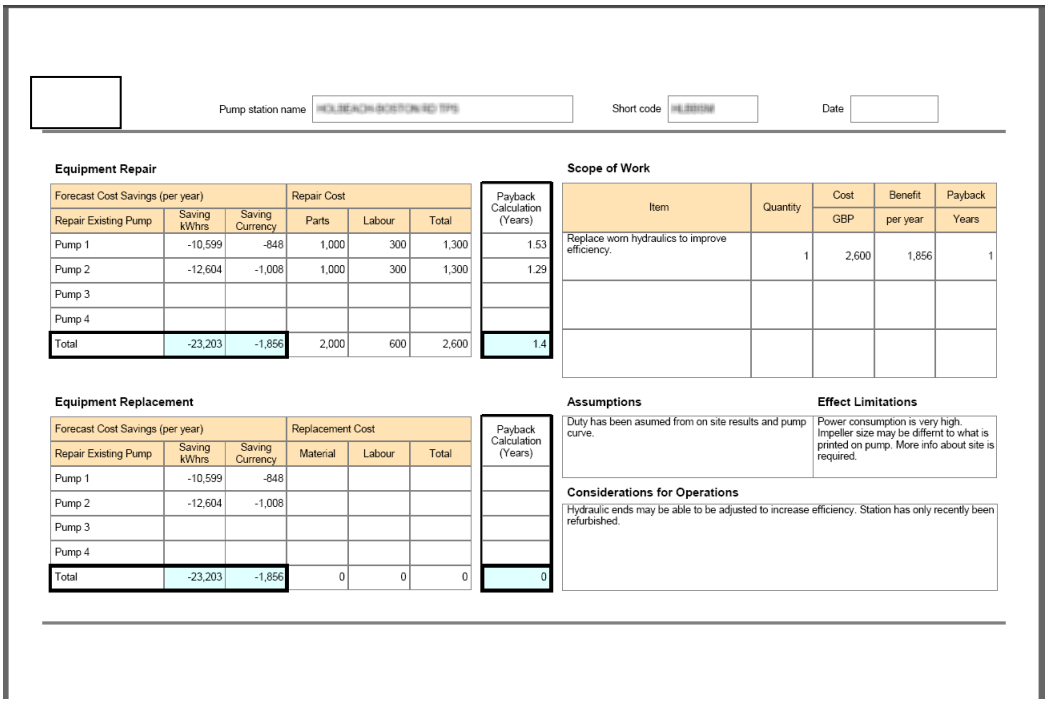


Figure 40: Equipment details

81307051H

Energy calculation report

The conclusions in the report are based on the pumping station survey combined with many years of experience and know-how. It contains payback time for suggested actions, either repair or replace.



Pump station name [redacted] Short code [redacted] Date

Equipment Repair

Forecast Cost Savings (per year)			Repair Cost			Payback Calculation (Years)
Repair Existing Pump	Saving kWhrs	Saving Currency	Parts	Labour	Total	
Pump 1	-10,599	-848	1,000	300	1,300	1.53
Pump 2	-12,604	-1,008	1,000	300	1,300	1.29
Pump 3						
Pump 4						
Total	-23,203	-1,856	2,000	600	2,600	1.4

Scope of Work

Item	Quantity	Cost	Benefit	Payback
		GBP	per year	Years
Replace worn hydraulics to improve efficiency.	1	2,600	1,856	1

Equipment Replacement

Forecast Cost Savings (per year)			Replacement Cost			Payback Calculation (Years)
Repair Existing Pump	Saving kWhrs	Saving Currency	Material	Labour	Total	
Pump 1	-10,599	-848				
Pump 2	-12,604	-1,008				
Pump 3						
Pump 4						
Total	-23,203	-1,856	0	0	0	0

Assumptions

Duty has been asumed from on site results and pump curve.

Effect Limitations

Power consumption is very high. Impeller size may be differnt to what is printed on pump. More info about site is required.

Considerations for Operations

Hydraulic ends may be able to be adjusted to increase efficiency. Station has only recently been refurbished.

Figure 41: Energy calculation Pdf-report.

The photos taken during the survey can be uploaded and viewed in AquaWeb.

Figure 42: List of photos

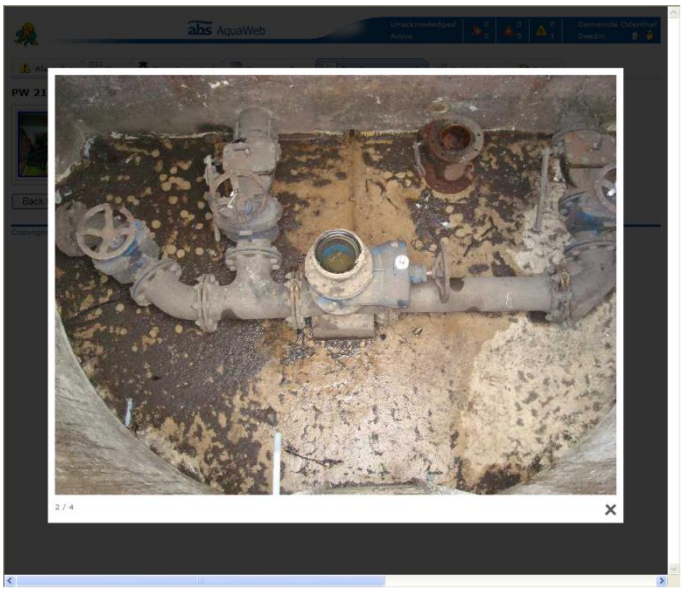


Figure 43: Photo from a station

81307051H

Optimization

Log data is collected once a day from GPRS/3G-connected stations. This data can be analyzed in two different ways in AquaWeb: charts with graphical view or reports with tabular data. The system includes preconfigured templates that work with standard pumping stations. A default template can be tied to each station. The templates contain visualization of values of general interest, like level, inflow, outflow, number of starts etcetera. To look at a chart or report, go to the optimization tab and click on the corresponding image. It opens up in a separate browser window. If you'd like to look at two charts at one time, just press the Ctrl-button on your keyboard when clicking the icon and it will open up yet another browser window.

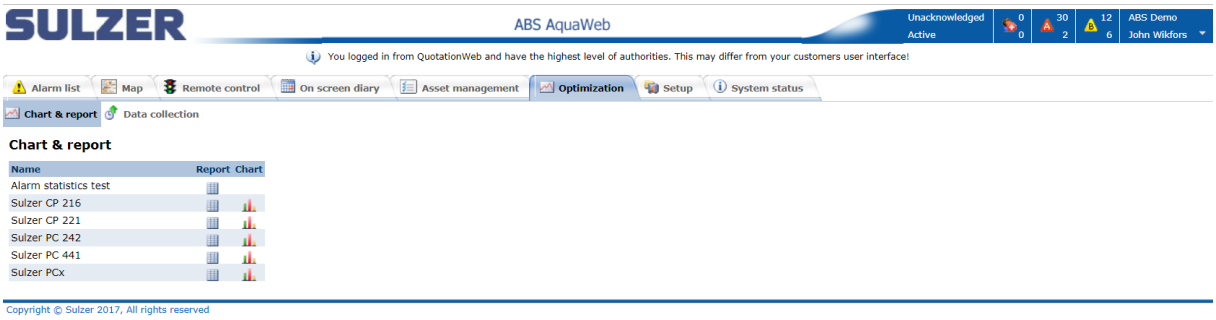
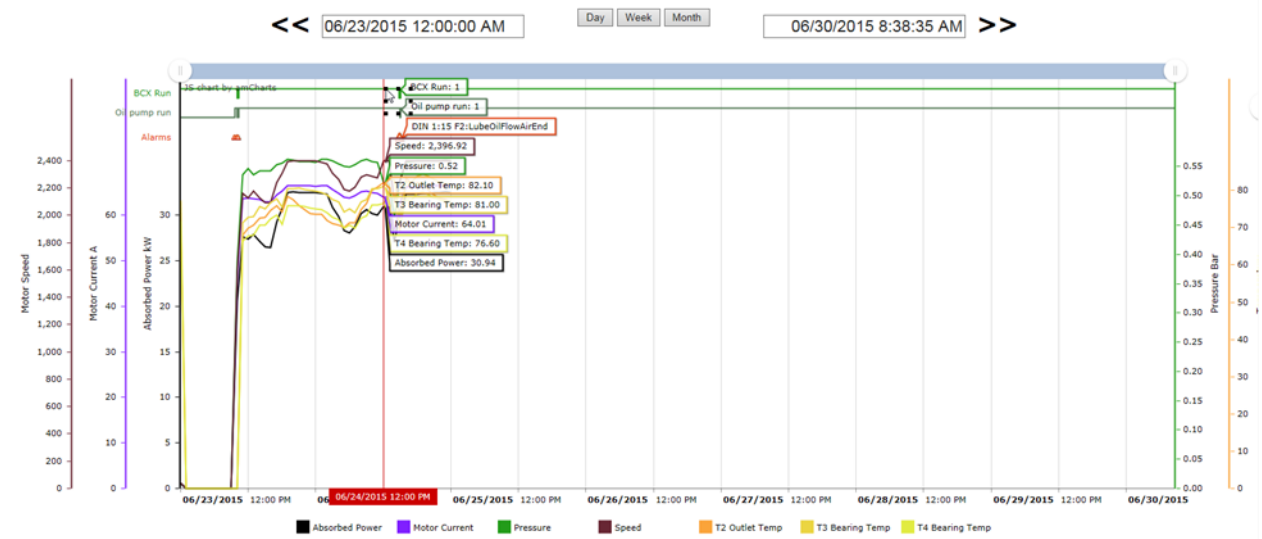


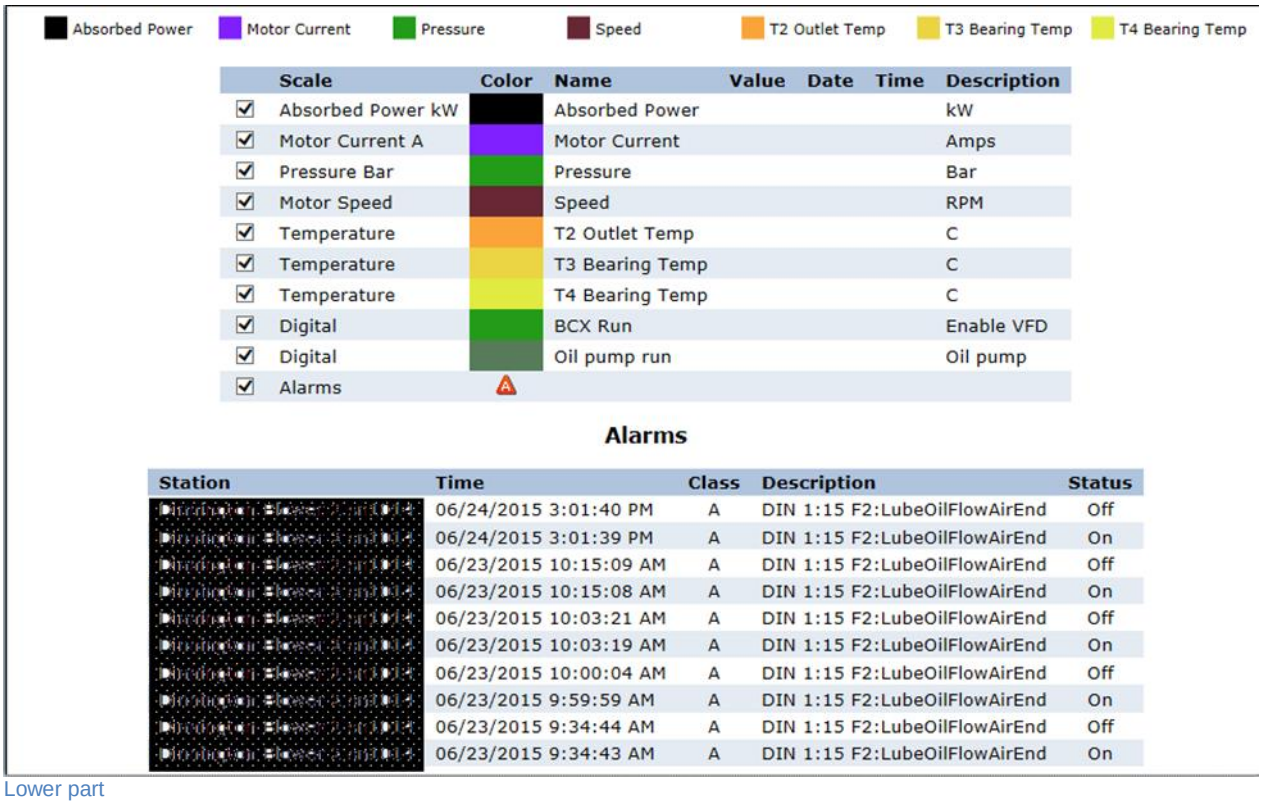
Figure 44: Optimization overview

Charts

The chart page shows an overview of digital signals, A-alarms and analogue signals at the same time. It's responsive and supported by touch/mobile devices. Support for multiple value axes. Navigation bar for zooming and panning, Smart date and time axis handling, which works great when zooming. Marker/ruler with balloons showing current value. Digital signals and alarms integrated in chart. Integrated legend with show/hide functionality.



Upper part



	Scale	Color	Name	Value	Date	Time	Description
☑	Absorbed Power kW		Absorbed Power				kW
☑	Motor Current A		Motor Current				Amps
☑	Pressure Bar		Pressure				Bar
☑	Motor Speed		Speed				RPM
☑	Temperature		T2 Outlet Temp				C
☑	Temperature		T3 Bearing Temp				C
☑	Temperature		T4 Bearing Temp				C
☑	Digital		BCX Run				Enable VFD
☑	Digital		Oil pump run				Oil pump
☑	Alarms						

Alarms

Station	Time	Class	Description	Status
[redacted]	06/24/2015 3:01:40 PM	A	DIN 1:15 F2:LubeOilFlowAirEnd	Off
	06/24/2015 3:01:39 PM	A	DIN 1:15 F2:LubeOilFlowAirEnd	On
	06/23/2015 10:15:09 AM	A	DIN 1:15 F2:LubeOilFlowAirEnd	Off
	06/23/2015 10:15:08 AM	A	DIN 1:15 F2:LubeOilFlowAirEnd	On
	06/23/2015 10:03:21 AM	A	DIN 1:15 F2:LubeOilFlowAirEnd	Off
	06/23/2015 10:03:19 AM	A	DIN 1:15 F2:LubeOilFlowAirEnd	On
	06/23/2015 10:00:04 AM	A	DIN 1:15 F2:LubeOilFlowAirEnd	Off
	06/23/2015 9:59:59 AM	A	DIN 1:15 F2:LubeOilFlowAirEnd	On
	06/23/2015 9:34:44 AM	A	DIN 1:15 F2:LubeOilFlowAirEnd	Off
	06/23/2015 9:34:43 AM	A	DIN 1:15 F2:LubeOilFlowAirEnd	On

Lower part

Figure 45: Chart overview

81307051H

Filter panel

In the filter panel you define what to show in the chart.

1. Press left arrows to get earlier data in the format Day, Week or Month.
2. Press right arrows to get later data.

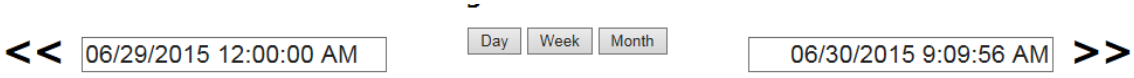


Figure 46 Filter panel

It's also possible to use the slider on the top of the page for zooming and panning:

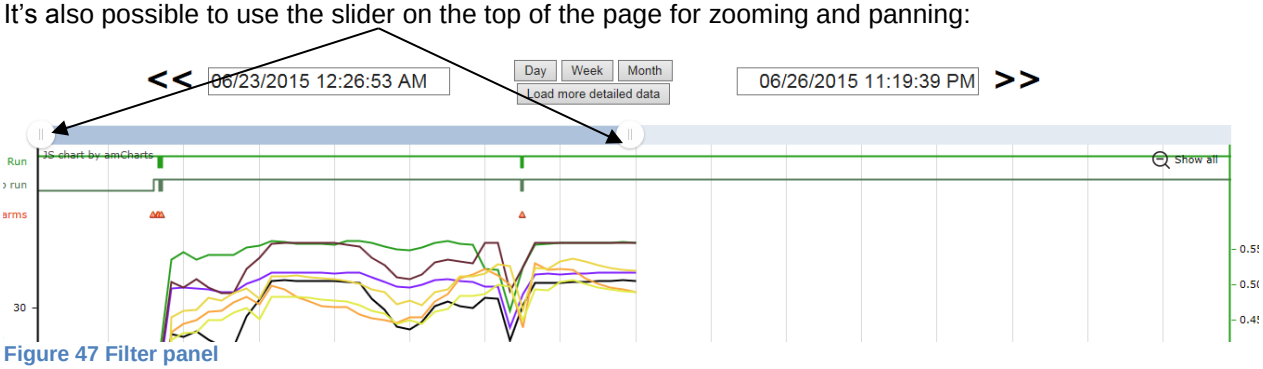


Figure 47 Filter panel

Load specific data in time interval by move the slider to the interval and press Load more detailed data:

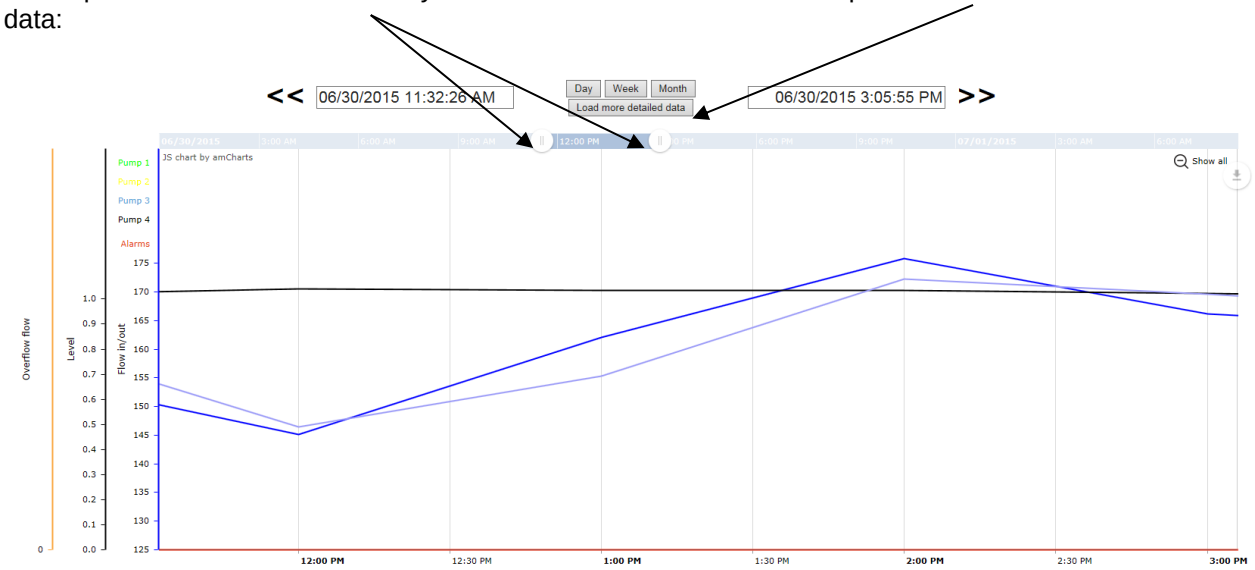


Figure 48 Load more detailed data

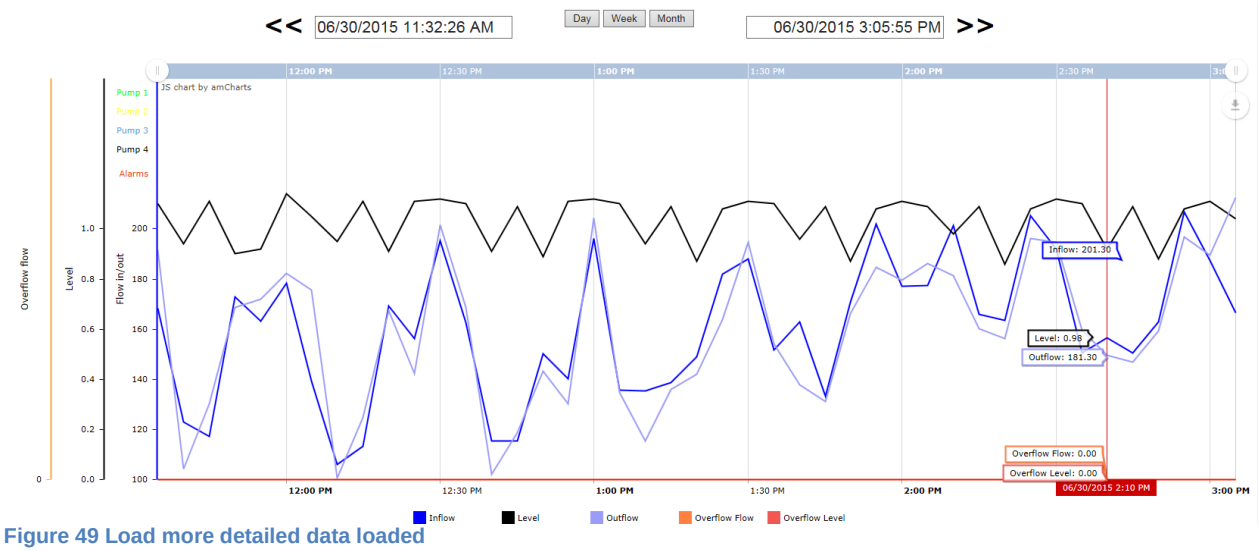


Figure 49 Load more detailed data loaded

81307051H

It's also possible to zoom and panning with the mouse:

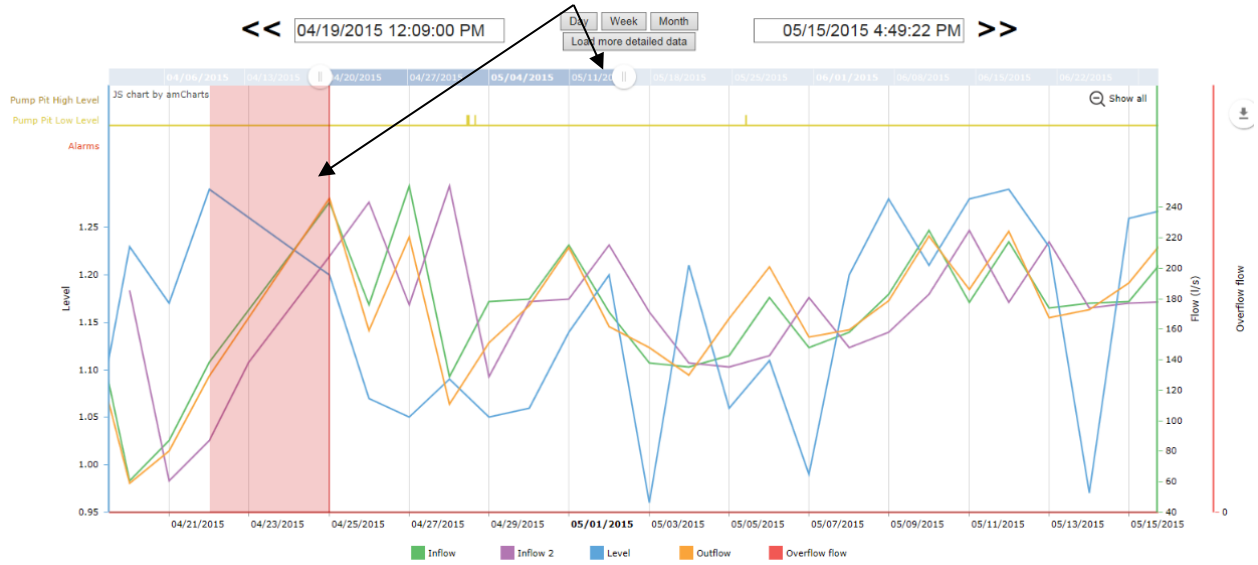


Figure 50 Load more detailed data zoom and panning with mouse.

Support for multiple axes

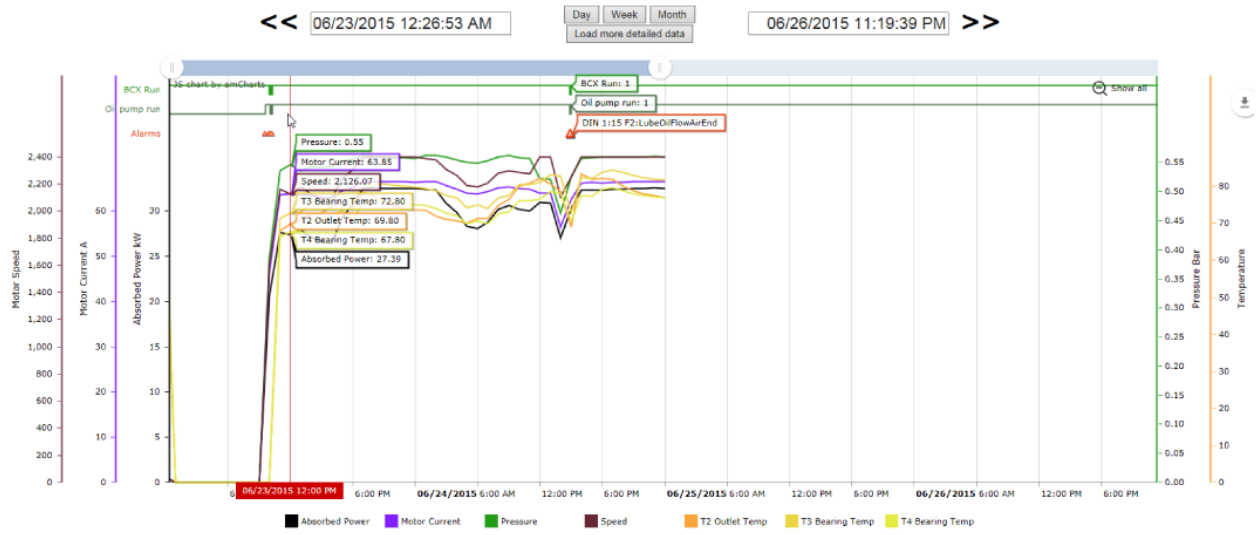


Figure 51 Multiple axis

It’s possible to temporary hide signals from the chart by unticking the checkbox to get a cleaner view

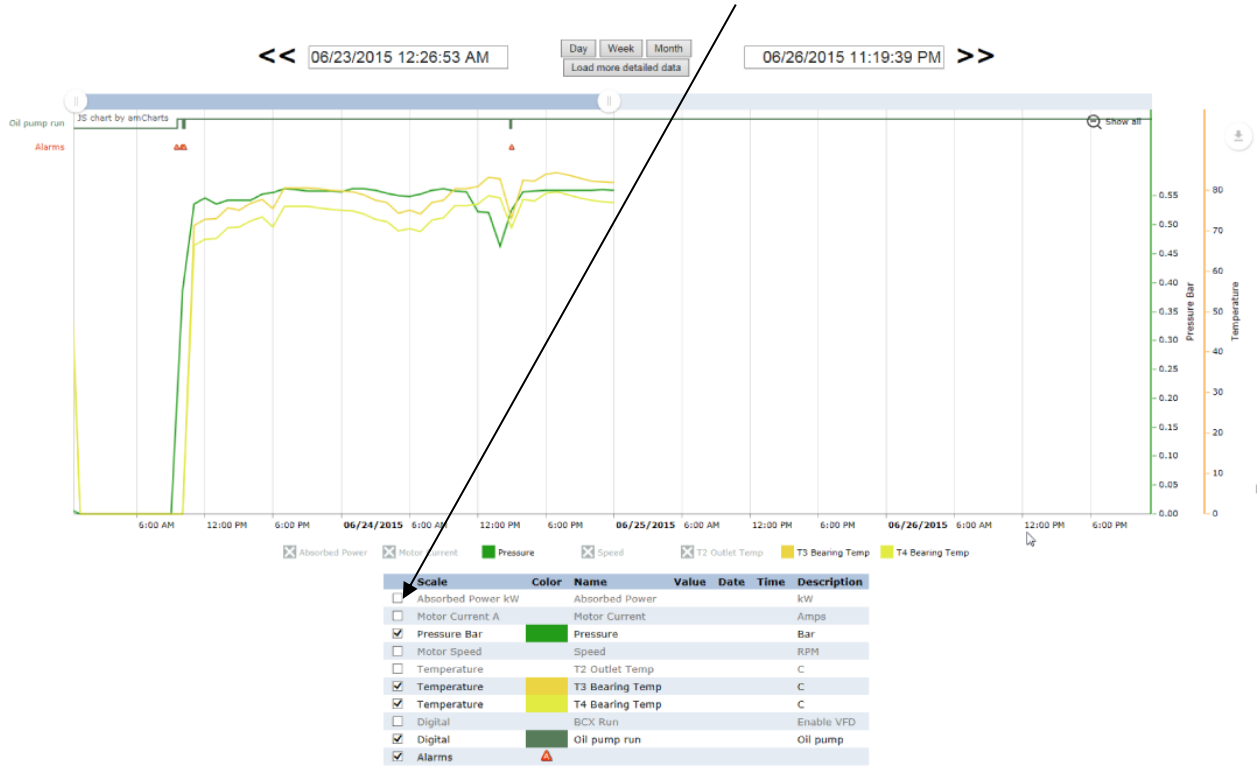


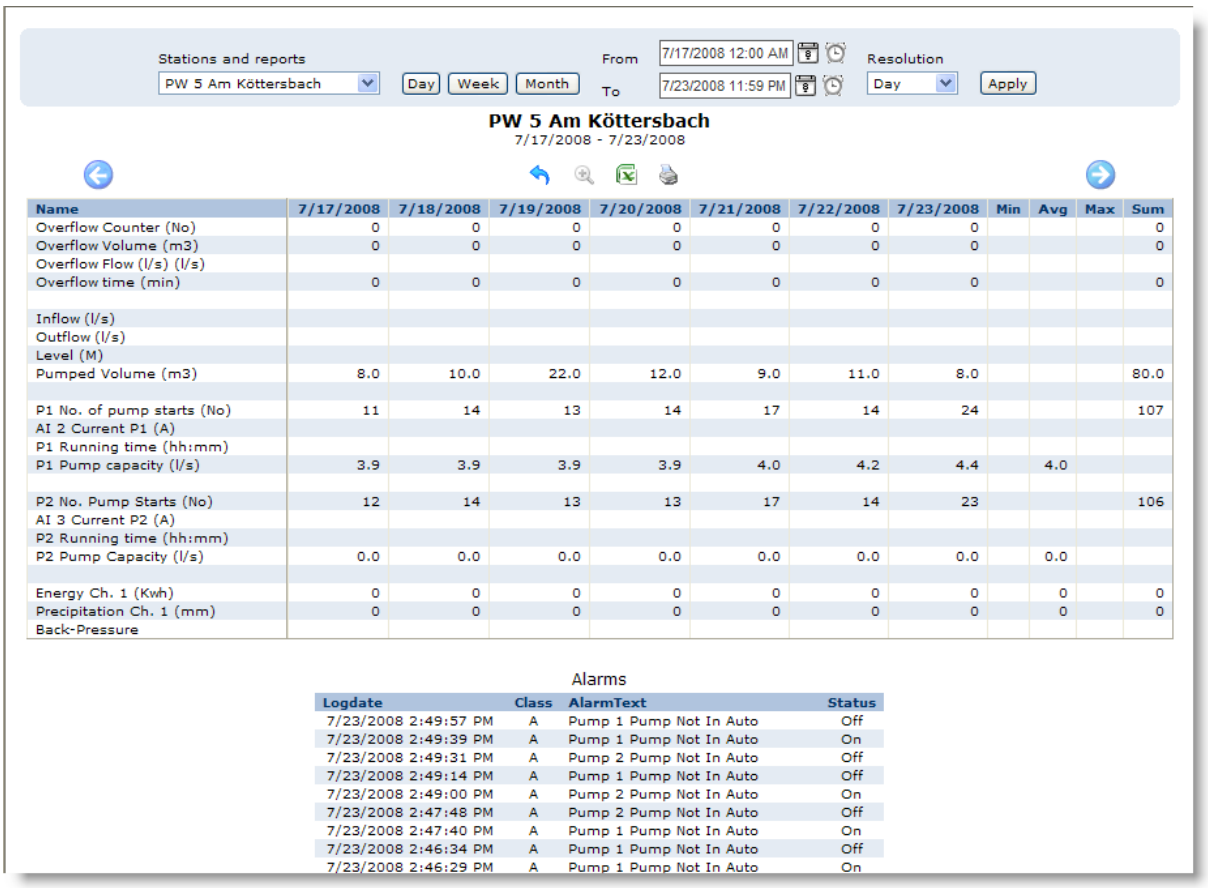
Figure 52 Temporary uncheck signals.

Chart areas

The chart consists of two areas connected with each other: the digital signals and the A-alarms in the top and the analogue signals in the bottom. A digital signal can be either high or low and this can be compared to the axis or by tooltip. All on events for A-alarms are represented by small A-icons. If you hold the mouse pointer over an icon a tooltip appears, with information about which alarm point it is and when the alarm event occurred.

Reports

The report page shows a grid of rows with analogue signals and columns with times and values. The four last columns contain statistics over the selected period. The view consists of three parts: the filter panel, the actual report and the alarm list.



Name	7/17/2008	7/18/2008	7/19/2008	7/20/2008	7/21/2008	7/22/2008	7/23/2008	Min	Avg	Max	Sum
Overflow Counter (No)	0	0	0	0	0	0	0				0
Overflow Volume (m3)	0	0	0	0	0	0	0				0
Overflow Flow (l/s) (l/s)											
Overflow time (min)	0	0	0	0	0	0	0				0
Inflow (l/s)											
Outflow (l/s)											
Level (M)											
Pumped Volume (m3)	8.0	10.0	22.0	12.0	9.0	11.0	8.0				80.0
P1 No. of pump starts (No)	11	14	13	14	17	14	24				107
AI 2 Current P1 (A)											
P1 Running time (hh:mm)											
P1 Pump capacity (l/s)	3.9	3.9	3.9	3.9	4.0	4.2	4.4		4.0		
P2 No. Pump Starts (No)	12	14	13	13	17	14	23				106
AI 3 Current P2 (A)											
P2 Running time (hh:mm)											
P2 Pump Capacity (l/s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
Energy Ch. 1 (Kwh)	0	0	0	0	0	0	0		0		0
Precipitation Ch. 1 (mm)	0	0	0	0	0	0	0		0		0
Back-Pressure											

Logdate	Class	AlarmText	Status
7/23/2008 2:49:57 PM	A	Pump 1 Pump Not In Auto	Off
7/23/2008 2:49:39 PM	A	Pump 1 Pump Not In Auto	On
7/23/2008 2:49:31 PM	A	Pump 2 Pump Not In Auto	Off
7/23/2008 2:49:14 PM	A	Pump 1 Pump Not In Auto	Off
7/23/2008 2:49:00 PM	A	Pump 2 Pump Not In Auto	On
7/23/2008 2:47:48 PM	A	Pump 2 Pump Not In Auto	Off
7/23/2008 2:47:40 PM	A	Pump 1 Pump Not In Auto	On
7/23/2008 2:46:34 PM	A	Pump 1 Pump Not In Auto	Off
7/23/2008 2:46:29 PM	A	Pump 1 Pump Not In Auto	On

Figure 53 Report overview

Filter panel

In the filter panel you define what to show in the report. Here's a walkthrough of the alternatives:

1. Select station from the dropdown list.
2. Select period by doing one of the following:
    a. Click on the "Day" button. Data from yesterday.
    b. Click on the "Week" button. Data from last calendar week (Monday to Sunday). This is the default view.
    c. Click on the "Month" button. Data from last running month and today up until now.
    d. Select exactly from and to by clicking on the calendar icons and clock icons.
3. Select resolution from the dropdown list. The contents vary depending on the selected period.
4. Click on the "Apply" button.

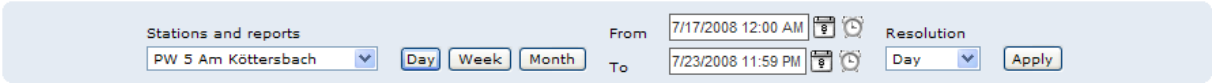


Figure 54 Filter overview

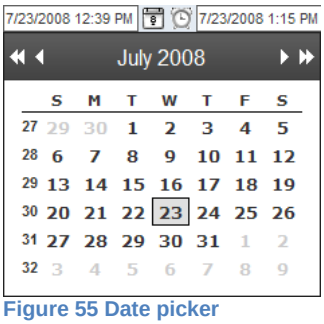


Figure 55 Date picker

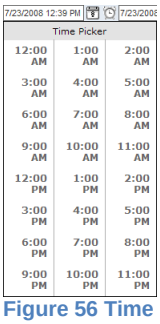


Figure 56 Time picker

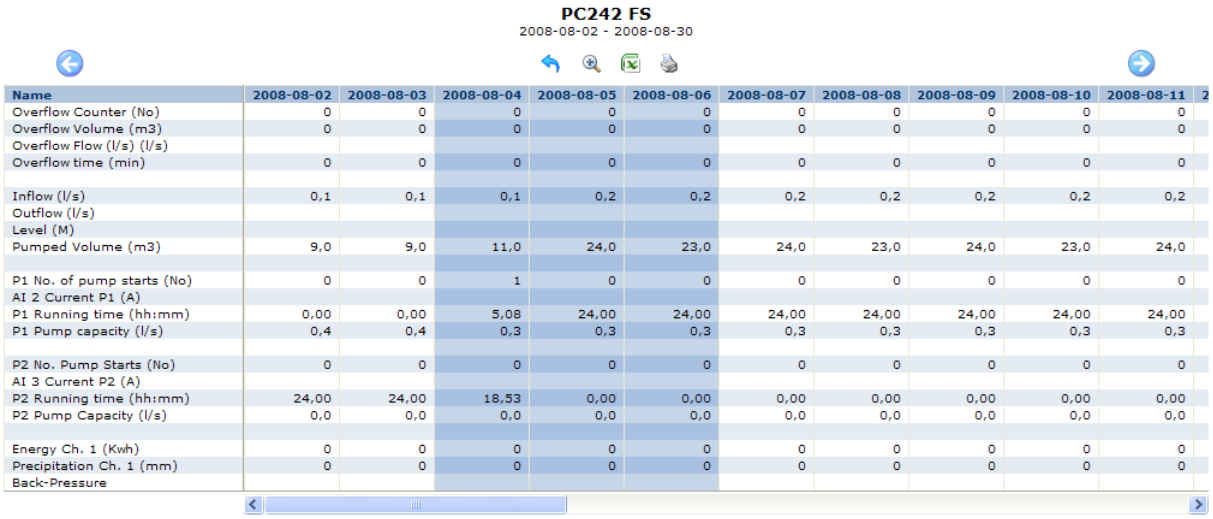
Toolbar

Here's a description of the buttons in the toolbar:

Symbol	Description
	Changes report period a step backwards in time.
	Goes back to the last view.
	Zooms into the selected columns.
	Exports to Excel.
	Shows the report in a pdf-file.
	Changes report period a step forwards in time.

Zoom

To make it easy to drill down into more detailed levels, there's zoom functionality in the grid. To select the columns you're interested in, press the left mouse button, drag the mouse to the right and then release the button. Then click on the zoom button in the toolbar.



PC242 FS
2008-08-02 - 2008-08-30

Name	2008-08-02	2008-08-03	2008-08-04	2008-08-05	2008-08-06	2008-08-07	2008-08-08	2008-08-09	2008-08-10	2008-08-11
Overflow Counter (No)	0	0	0	0	0	0	0	0	0	0
Overflow Volume (m3)	0	0	0	0	0	0	0	0	0	0
Overflow Flow (l/s) (l/s)										
Overflow time (min)	0	0	0	0	0	0	0	0	0	0
Inflow (l/s)	0,1	0,1	0,1	0,2	0,2	0,2	0,2	0,2	0,2	0,2
Outflow (l/s)										
Level (M)										
Pumped Volume (m3)	9,0	9,0	11,0	24,0	23,0	24,0	23,0	24,0	23,0	24,0
P1 No. of pump starts (No)	0	0	1	0	0	0	0	0	0	0
AI 2 Current P1 (A)										
P1 Running time (hh:mm)	0,00	0,00	5,08	24,00	24,00	24,00	24,00	24,00	24,00	24,00
P1 Pump capacity (l/s)	0,4	0,4	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3
P2 No. Pump Starts (No)	0	0	0	0	0	0	0	0	0	0
AI 3 Current P2 (A)										
P2 Running time (hh:mm)	24,00	24,00	18,53	0,00	0,00	0,00	0,00	0,00	0,00	0,00
P2 Pump Capacity (l/s)	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Energy Ch. 1 (Kwh)	0	0	0	0	0	0	0	0	0	0
Precipitation Ch. 1 (mm)	0	0	0	0	0	0	0	0	0	0
Back-Pressure										

Figure 57, Zoom in report

81307051H

Alarm list

The alarm list below the data grid is showing the alarm status changes that occurred during the period shown in the report. If the report contains signals from more than one station, a station column is added.

Alarms

Logdate	Class	AlarmText	Status
7/23/2008 2:49:57 PM	A	Pump 1 Pump Not In Auto	Off
7/23/2008 2:49:39 PM	A	Pump 1 Pump Not In Auto	On
7/23/2008 2:49:31 PM	A	Pump 2 Pump Not In Auto	Off
7/23/2008 2:49:14 PM	A	Pump 1 Pump Not In Auto	Off
7/23/2008 2:49:00 PM	A	Pump 2 Pump Not In Auto	On
7/23/2008 2:47:48 PM	A	Pump 2 Pump Not In Auto	Off
7/23/2008 2:47:40 PM	A	Pump 1 Pump Not In Auto	On
7/23/2008 2:46:34 PM	A	Pump 1 Pump Not In Auto	Off
7/23/2008 2:46:29 PM	A	Pump 1 Pump Not In Auto	On
7/23/2008 2:45:42 PM	A	Pump 1 Pump Not In Auto	Off
7/23/2008 2:45:42 PM	A	Pump Pit Both P1 and P2 Blocked	Off
7/23/2008 2:45:34 PM	A	Pump 2 Fallen Motor Protector	Off
7/23/2008 2:35:32 PM	A	Pump Pit Both P1 and P2 Blocked	On
7/23/2008 2:33:42 PM	A	Pump 1 Pump Not In Auto	On
7/23/2008 2:33:23 PM	A	Pump 1 Fallen Motor Protector	Off
7/23/2008 2:33:23 PM	A	Pump Pit Both P1 and P2 Blocked	Off

Figure 58: Alarm list

Export to Excel

To continue working with the data in the report using Excel, just click the Excel button in the toolbar. During the export to Excel a warning sometimes appears. Just press “Yes” to continue opening the file. If the decimal separator is wrong, use the replace functionality to change all commas to point or vice versa.

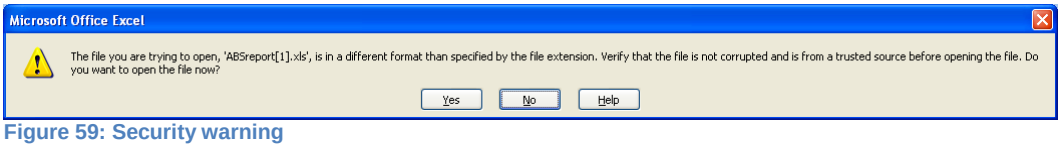
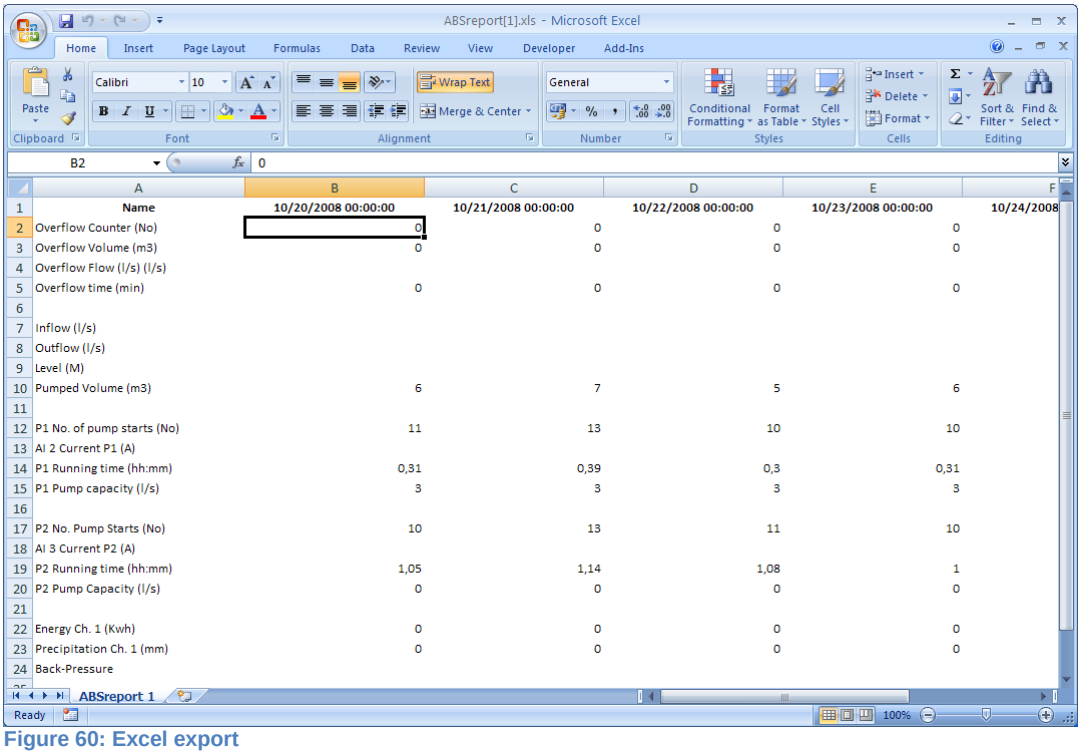


Figure 59: Security warning



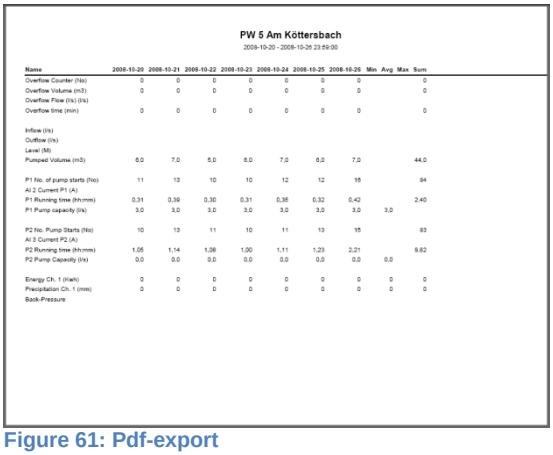
	A	B	C	D	E	F
1	Name	10/20/2008 00:00:00	10/21/2008 00:00:00	10/22/2008 00:00:00	10/23/2008 00:00:00	10/24/2008
2	Overflow Counter (No)	0	0	0	0	
3	Overflow Volume (m3)	0	0	0	0	
4	Overflow Flow (l/s) (l/s)					
5	Overflow time (min)	0	0	0	0	
6						
7	Inflow (l/s)					
8	Outflow (l/s)					
9	Level (M)					
10	Pumped Volume (m3)	6	7	5	6	
11						
12	P1 No. of pump starts (No)	11	13	10	10	
13	AI 2 Current P1 (A)					
14	P1 Running time (hh:mm)	0,31	0,39	0,3	0,31	
15	P1 Pump capacity (l/s)	3	3	3	3	
16						
17	P2 No. Pump Starts (No)	10	13	11	10	
18	AI 3 Current P2 (A)					
19	P2 Running time (hh:mm)	1,05	1,14	1,08	1	
20	P2 Pump Capacity (l/s)	0	0	0	0	
21						
22	Energy Ch. 1 (Kwh)	0	0	0	0	
23	Precipitation Ch. 1 (mm)	0	0	0	0	
24	Back-Pressure					

Figure 60: Excel export

81307051H

Print or export to pdf

The report can be exported or printed by clicking on the print button. The file can then either be printed, saved to file or sent to someone else by mail.


PW 5 Am Köttersbach

2008-10-20 - 2008-10-26 23:59:00

Name	2008-10-20	2008-10-21	2008-10-22	2008-10-23	2008-10-24	2008-10-25	2008-10-26	Min	Avg	Max	Sum
Overflow Counter (No)	0	0	0	0	0	0	0				0
Overflow Volume (m3)	0	0	0	0	0	0	0				0
Overflow Flow (l/s) (l/s)											
Overflow time (min)	0	0	0	0	0	0	0				0
Inflow (l/s)											
Outflow (l/s)											
Level (M)											
Pumped Volume (m3)	6.0	7.0	5.0	6.0	7.0	6.0	7.0				44.0
P1 No. of pump starts (No)	11	13	10	10	12	12	15				84
AI 2 Current P1 (A)											
P1 Running time (hh:mm)	0.31	0.39	0.30	0.31	0.36	0.32	0.42				2.40
P1 Pump capacity (l/s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0			
P2 No. Pump Starts (No)	10	13	11	10	11	13	15				83
AI 3 Current P2 (A)											
P2 Running time (hh:mm)	1.05	1.14	1.08	1.00	1.11	1.23	2.21				8.82
P2 Pump Capacity (l/s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Energy Ch. 1 (Kwh)	0	0	0	0	0	0	0	0	0		
Precipitation Ch. 1 (mm)	0	0	0	0	0	0	0	0	0		
Back-Pressure											

Figure 61: Pdf-export

Data collection

The data is automatically collected once a day. The most recent data is also collected when an A-alarm is received from the station. This gives the operator access to the most current data when looking for the alarm cause. However if the operator for some reason needs more current data, this can be done by clicking the Start link. A manual collection will then be made. The page is automatically updated during the collection, so it's possible to follow the progress without clicking anywhere.

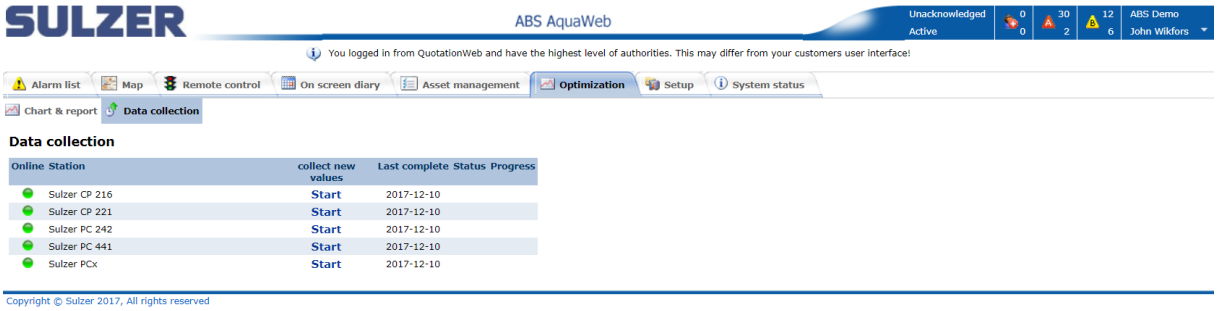


Figure 62: Data collection

Column	Description
Online	Show the current online status
Station	Station name
Collect new values	Click the Start link to start collecting new values
Last complete	Shows the date the system has collected all data for
Status	Text describing the current status in the collection
Progress	Collection progress shown in percent

Figure 63: Legend for online status

81307051H

Setup

The setup tab contains sections for configuring the system. Select one of the seven submenus.

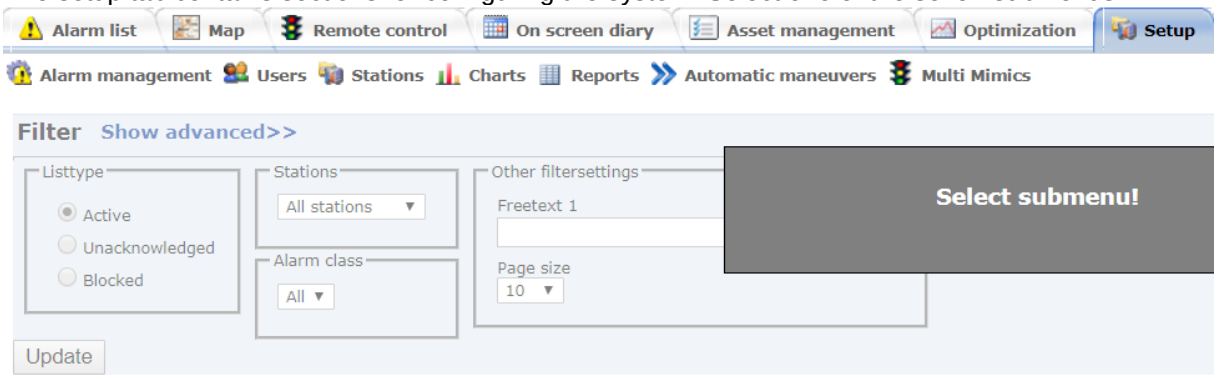


Figure 64: Setup overview

Configuration change dialog

In a complex system like AquaWeb it's important to keep track of who did what and when. All changes are logged in an operator log. After a change, the operator gets the possibility to enter a comment or reason for the change. This is useful when doing something on behalf of someone else. As confirmation and information, you can send a mail, either to a user in the system or to a mail address of choice. Just click in the checkbox called Send mail, and select or enter one or more addresses (separated by semicolon).

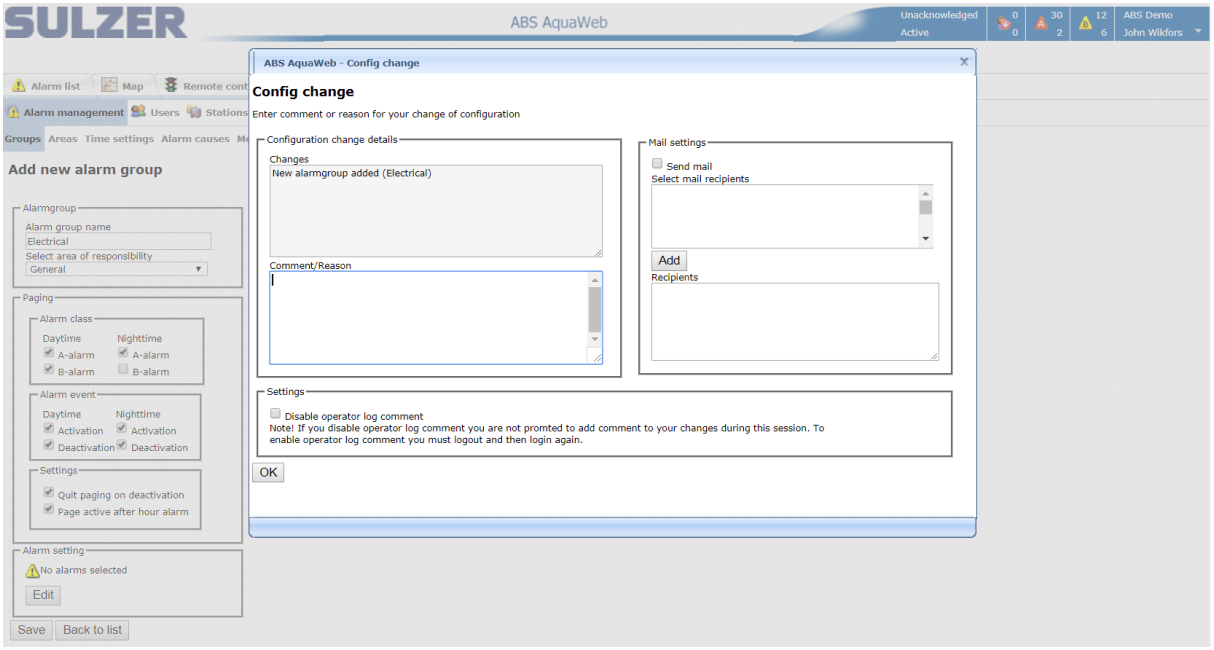


Figure 65: Config change dialog

If you're doing a lot of changes, for example during setup, it may not be necessary to comment every change; therefore it's possible to disable the comment dialog.

81307051H

Alarm management

The behavior of the alarm management system can be adjusted to your organization's needs and desires. You can for example decide what the system will do when an alarm event comes in.

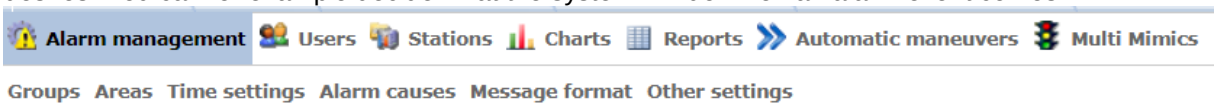


Figure 66: Alarm management menu with sub menus

If you have a large organization it might be a good idea to define different areas of responsibility. These areas can for example be divided either by technique, competence or geographic regions.

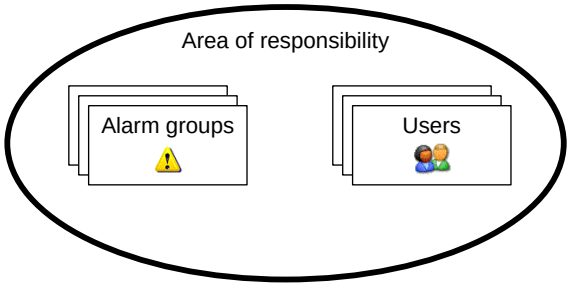


Figure 67: Area of responsibility

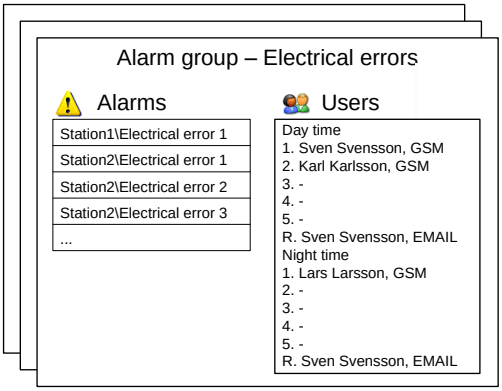


Figure 68: Alarm groups

When an alarm event occurs the paging is following the schema shown in the diagram below, until someone has acknowledged the alarm. The adjustable settings are marked with asterisks (*).

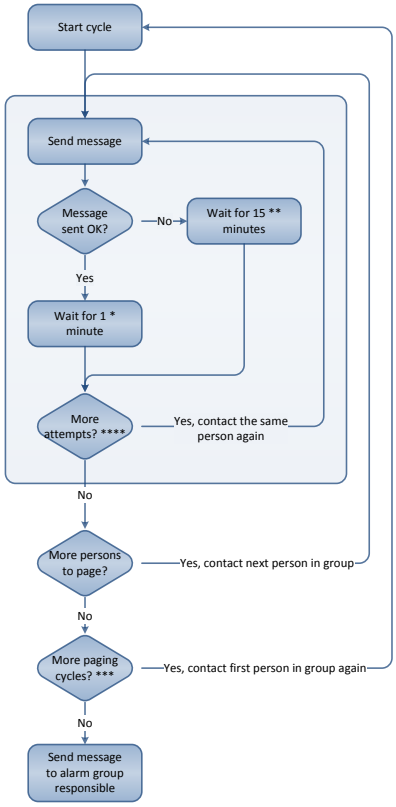


Figure 69: Paging cycle with asterisks showing the settings

Alarm groups

An alarm group is a description of how to handle events from a specified set of alarm points. In a group you define what alarms to handle and who to inform when the events occur.

Overview

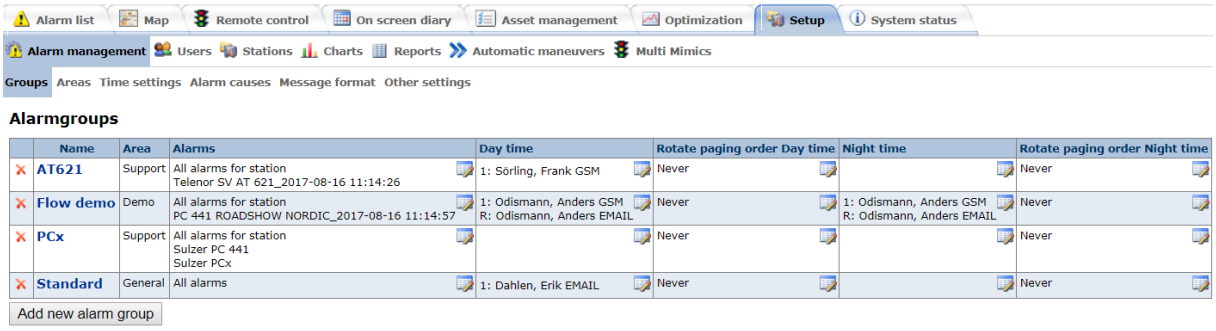


Figure 70: Alarm group list

In the list you can see an overview of the groups. General settings are changed by clicking on the group name. For each of the other settings, you click on the edit symbol in the upper right corner of the cell. To delete a group, click on the red x to the left.

Alarm group settings

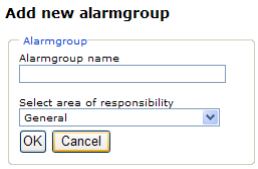


Figure 71: New alarm group

When you create a new alarm group, you have to enter the name and area first, and then the rest of the settings appear.

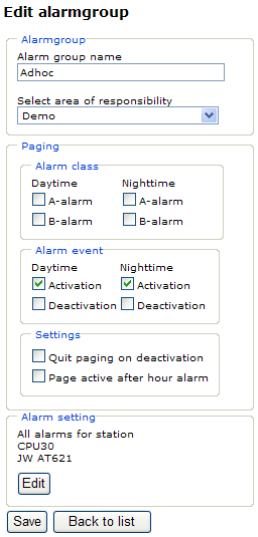


Figure 72: Alarm group settings

Filter out the alarm events for paging by clicking in the checkboxes for alarm class and alarm event. If “Quit paging on deactivation” is checked, the paging stops when the alarm goes off. If “Page active after hour alarm” is checked, alarms occurring at night are not paged until day time.

Here’s an example: the B-alarm is checked for day time and unchecked for night time (see dialog below). If a B-alarm is triggered during night time, and the alarm is still active when the morning

comes, a paging is made to remind users on the day time shift that the alarm cause needs to be taken care of.

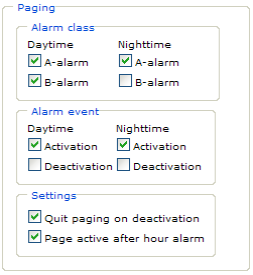


Figure 73: Example showing "Page active after hour alarm"

Select alarms to include

A specific alarm point can only be managed by one alarm group. The priority of the alarm groups is depending on the level of detail in the definition. The table below shows the order.

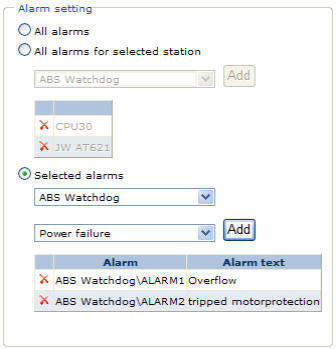
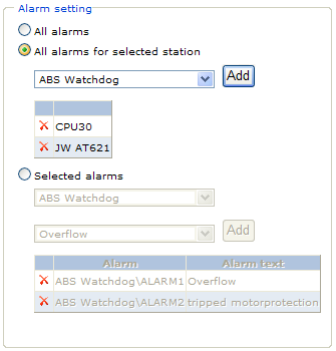
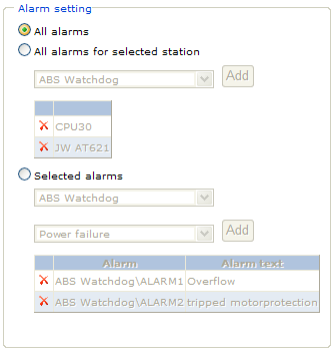
1 Selected alarm points	2 All alarms for selected stations	3 All alarms
		

Figure 74: Alarm group priority

Select receivers

Select users to receive paging by clicking the checkbox to the left of the name and then the “Add” button. A user can get the notification either by PUSH notification on the smartphone, SMS to any type of phone or by mail (EMAIL). To change the order of the users in the right list, select the user and click on the “Up” or “Down” buttons. If you’d like to move the last person in the list up to the first position, click on the “Rotate” button.

81307051H

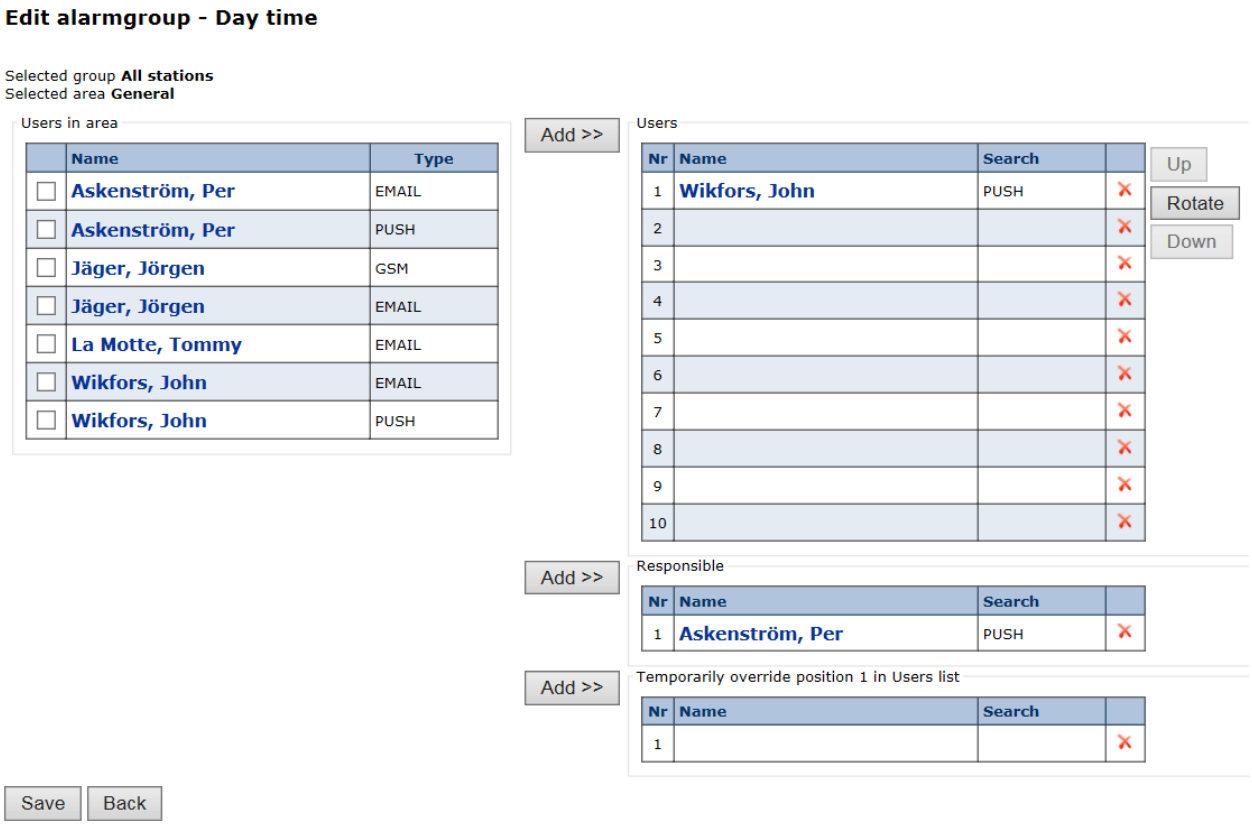


Figure 75: Edit alarm receivers

The user set as “Responsible” is notified if none of the users has acknowledged the alarm.

Rotate paging order

When having several users in an alarm group, it may be useful to rotate the paging order, to level the work between the users. This can be done manually as described above, or automatically according to the rotate setting. Click on the edit symbol in the rotate paging order column to change it.

Figure 76: Manual

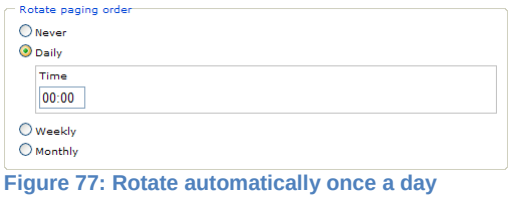


Figure 77: Rotate automatically once a day

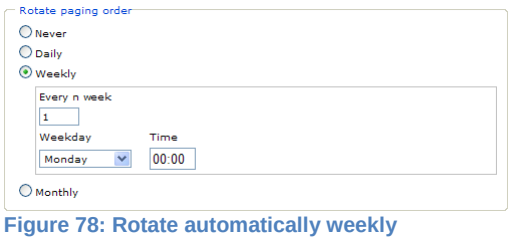


Figure 78: Rotate automatically weekly

81307051H

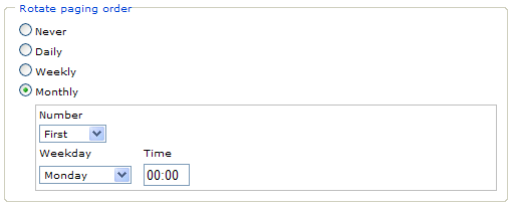


Figure 79: Rotate automatically monthly

Areas

The use of areas makes it easier to manage personnel for on call hours. When adding users to alarm groups, there's a filter showing all personnel belonging to the same area as the alarm group. The "General" area is setup default and cannot be removed.

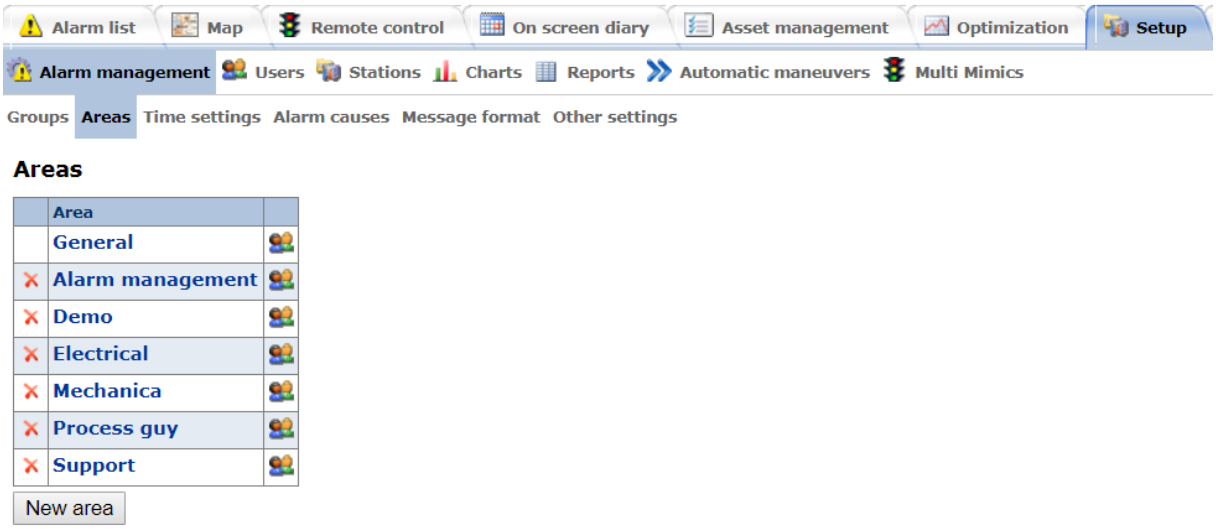


Figure 80: Areas overview

Click on the name to edit the name. Click on the users' symbol to select users for the area.

Figure 81: Edit area

Select users by clicking the checkbox to the left of the name, and then the Add button.

Time settings

You can adjust the definition of day time and night time on a normal working week for your organization. Everything outside the times given is considered night time (or on call hours). If you enter 00:00 in both "From" and "To", it means that the whole day is on call hours. After changing the time settings, click on the "Save" button.

Working hours

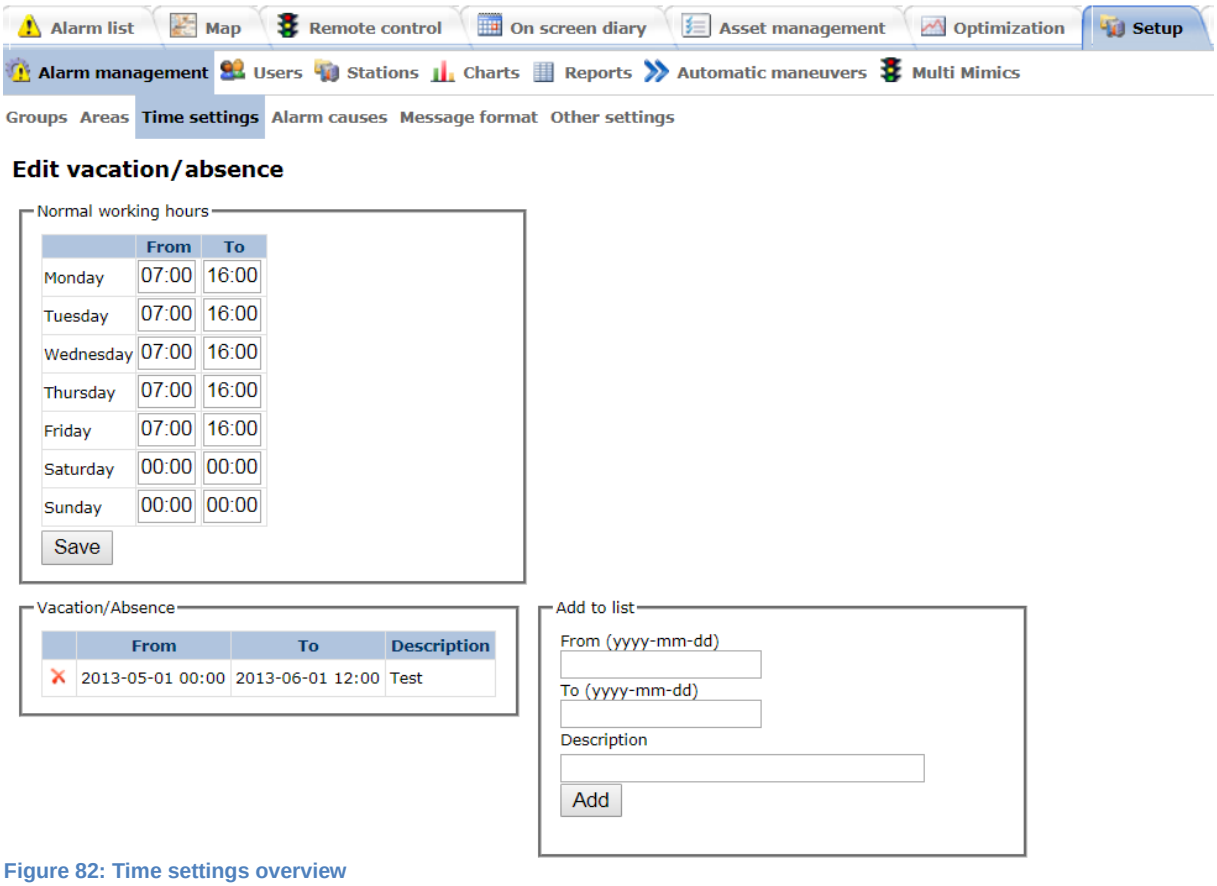


Figure 82: Time settings overview

Special days

Special days, that are common to all users, can also be entered here. These are then treated as on call hours. Enter date, time and description in the box to the right and click on the “Add” button.

Figure 83: Vacation/absence

Alarm causes

It's important to keep track of what caused an alarm. AquaWeb comes with a standard set of causes, and it's possible to add your own.

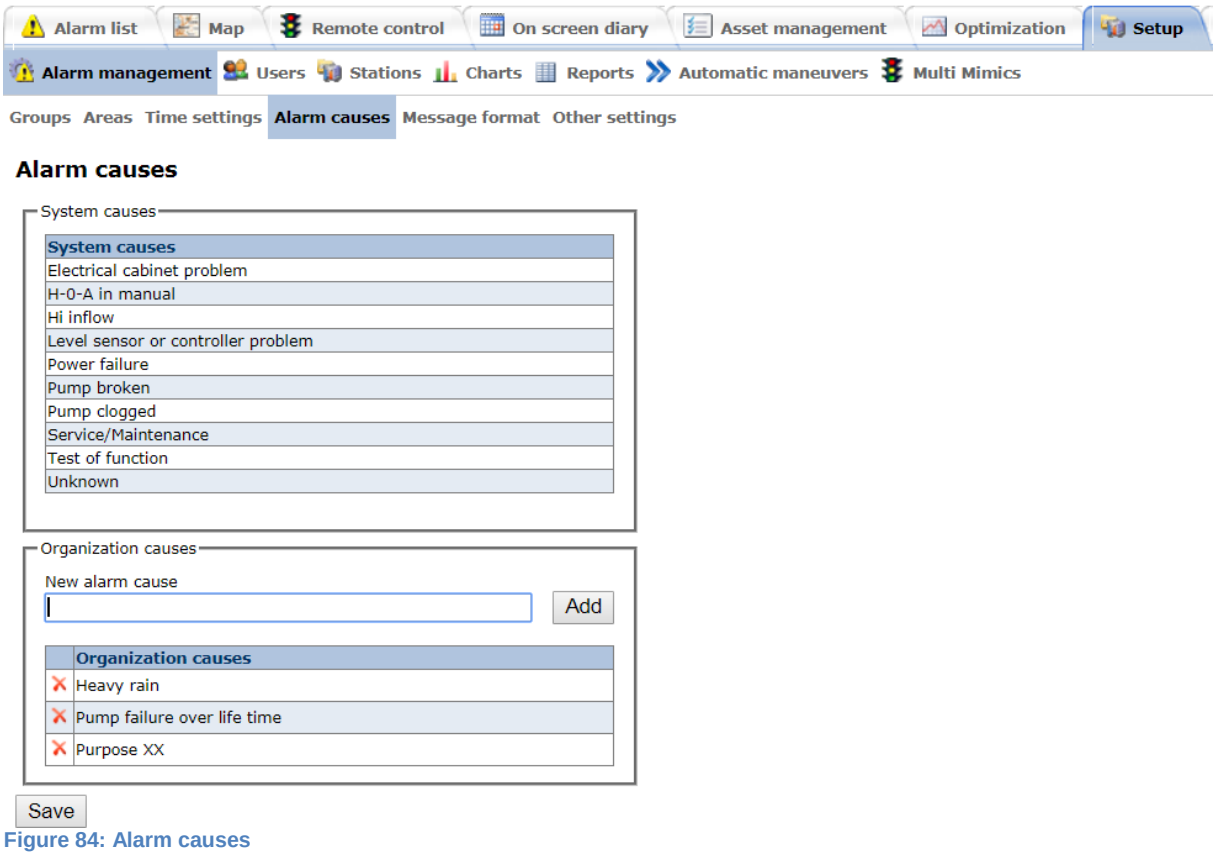


Figure 84: Alarm causes

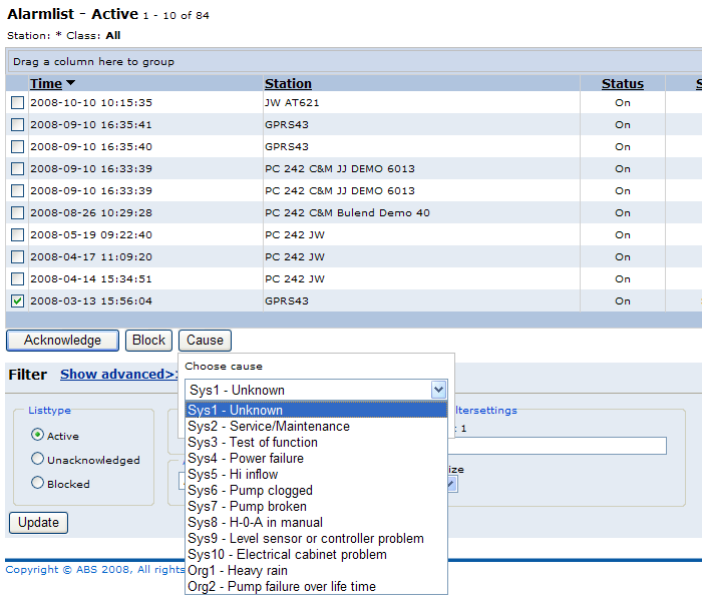


Figure 85: Alarm causes in use in alarm list

Message format

This page allows the alarm message to be sent in other format than standard.

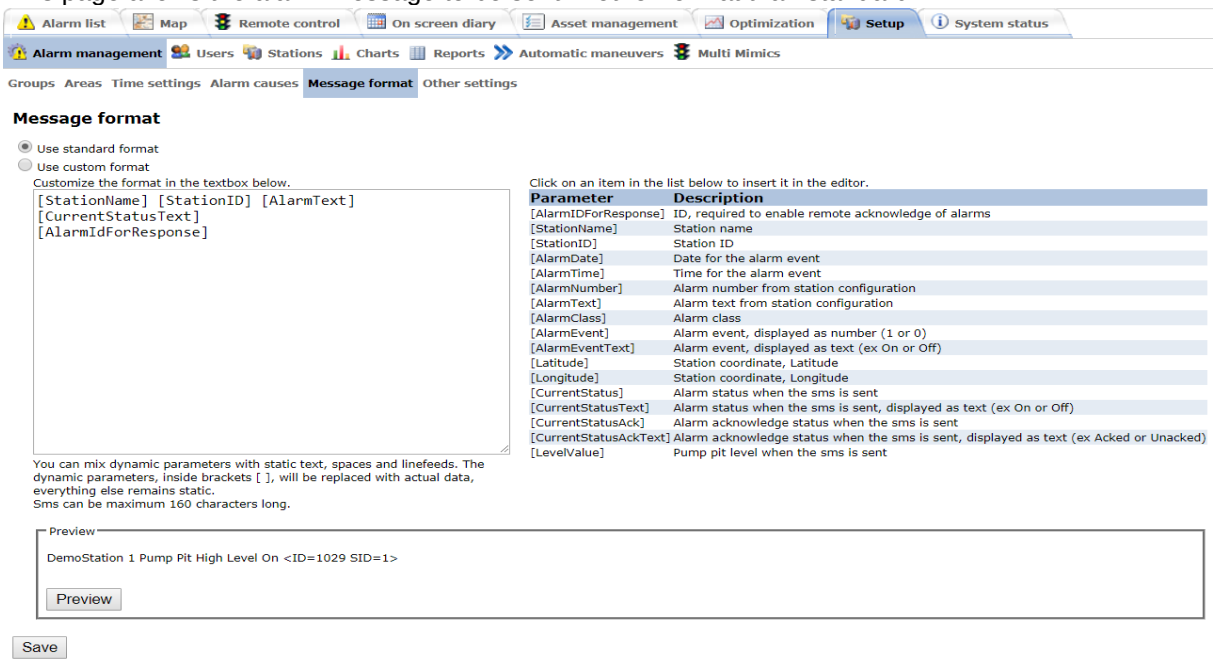


Figure 86 Message format

It is possible to mix dynamic parameters with static text, spaces and linefeeds. The dynamic parameters, inside brackets [ ], will be replaced with actual data, everything else remains static. Sms can be maximum 160 characters long.

Other settings

This page contains various settings for AquaWeb.

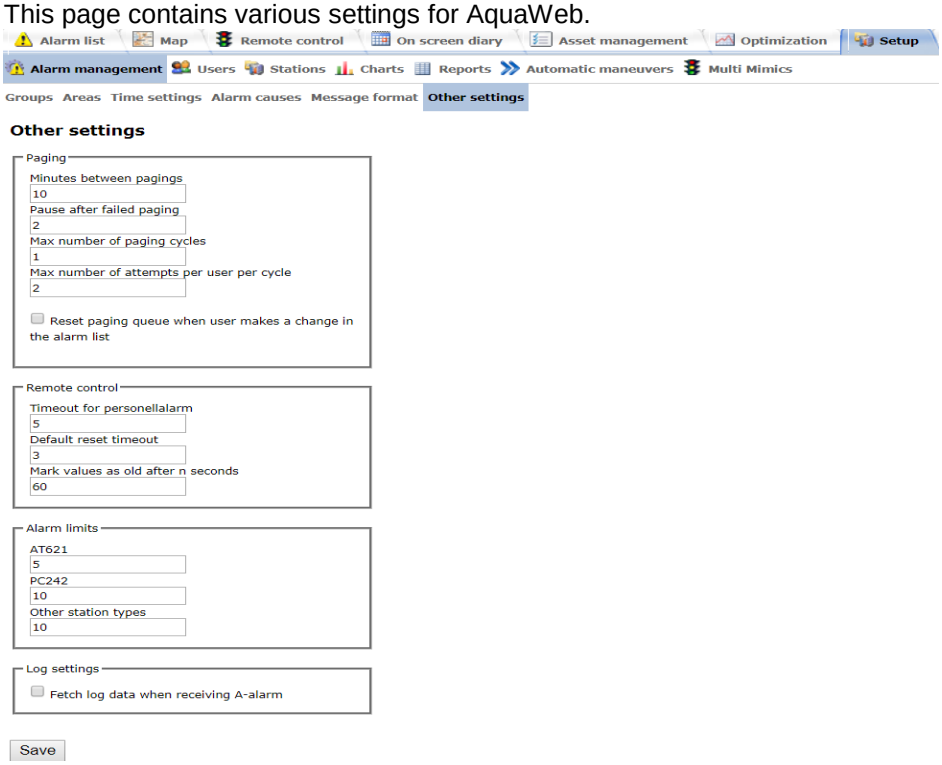


Figure 87 Other settings

Too make it easier to understand what the paging settings are for, here's a diagram showing the paging cycle:

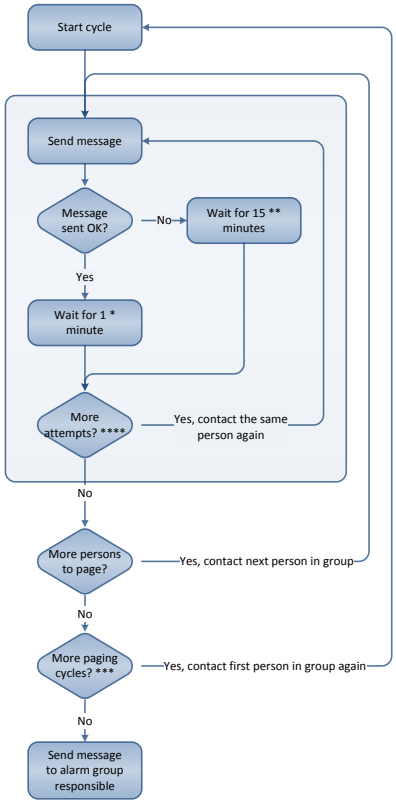


Figure 88 Paging cycle with asterisks showing the settings

Setting		Description
Paging		
*	Minutes between pagings	Pause in minutes after a successful paging.
**	Pause after failed paging	Pause in minutes after a failed paging.
***	Max number of paging cycles	Number of cycles for the whole group
****	Max number of attempts per user per cycle	Number of attempts per user per cycle
Remote control		
Timeout for personnel alarm		Minutes after man sets station in local mode
Default reset timeout		Preset value for reset maneuvers for AT621
Mark as old after n seconds		Process mimic and values are dimmed
Alarm limits		
AT621		Number of alarms before limit alarm is set
PC242		Number of alarms before limit alarm is set
Other station types		Number of alarms before limit alarm is set

Figure 89 Table describing the settings

81307051H

Users

On the users page you can see an overview of all users. Click on the user name to edit basic information, like name and phone number. To change area or add vacation, click on the edit symbols in the corresponding columns.

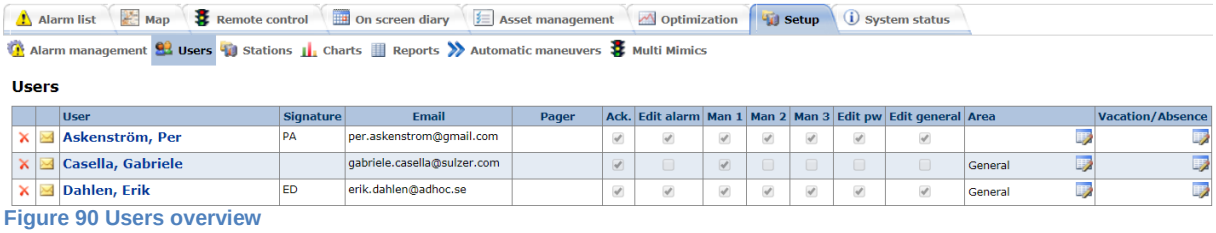


Figure 90 Users overview

Add new user

To add a new user, click on the “New user” button below the list. Then you get to enter data for the new user. First name, last name and signature are mandatory. The permissions are explained in a later chapter “Edit user permissions”. The information field “Registered push notifications devices” is, in the example, when the smartphone first was registered and on what platform (Google or Apple). You can also click on the question mark to view a table of what the permissions means in practice.

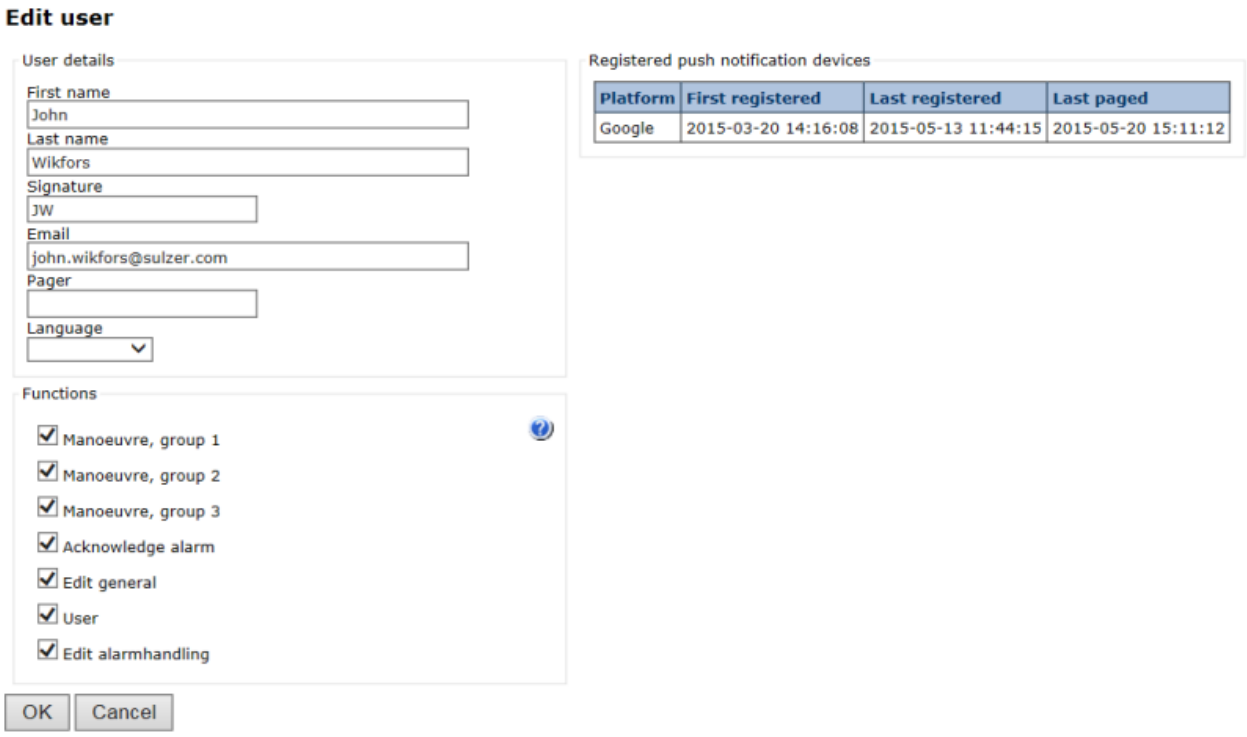


Figure 91 Add new/edit user

When you click OK, the user data is saved and a popup dialog appears, asking you if you’d like to send a welcome mail to the user. This could be done right away or later by clicking the mail symbol in the users list. Each time a welcome mail is sent, a new password is generated.

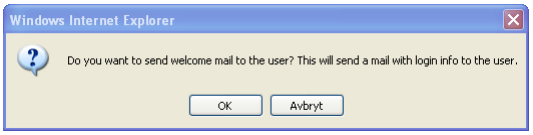


Figure 92 Send welcome mail?

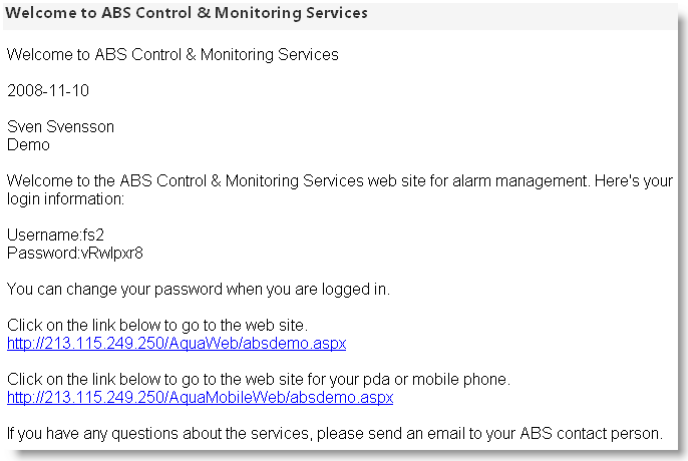


Figure 93 Welcome mail

The new user should probably be added to an alarm group, and that's what the next question is about. If you click OK, the alarm group page is shown.

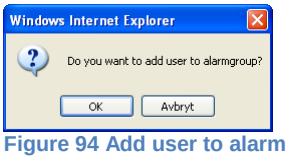


Figure 94 Add user to alarm group?

Add user to area

The user is automatically added to the "General" area. If you'd like to change it or add the user to more areas, click on the edit symbol in the "Area" column.

Figure 95 Areas of responsibility for user

Enter vacation for user

To make the on screen diary useful for planning on call duty, planned vacations and other absence should be entered continuously. Click on the edit symbol in the "Vacation/Absence" column.

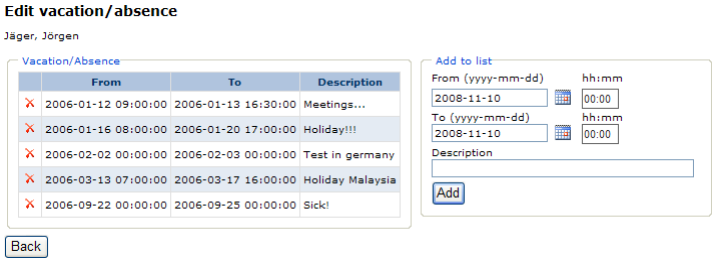


Figure 96 Vacation/absence for user

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Edit user permissions

In AquaWeb it's possible to control each user's permissions to access and edit information. The following table shows what the checkboxes in the edit user dialog means.

	No authorization	Acknowledge alarms	Edit alarm handling	Edit general	Edit users	Remote control level 1-3
Alarm management						
Contract: Alarm management						
Alarm groups						
- View		X	X	X		
- Edit			X	X		
Areas						
- View		X	X	X		
- Select users			X	X		
Other alarm settings (day time settings, holidays, alarm causes and timeouts)						
- View		X	X	X		
- Edit			X	X		
Users						
Contract: Alarm management						
Users						
- View			X		X	
- Edit everything for all users					X	
- Edit alarm settings for all users			X		X	
Setup						
Contract: Alarm management						
Stations						
- View settings		X	X	X		
- Edit settings				X		
- View configuration		X	X	X		
- Edit configuration				X		
- View equipment attributes		X	X	X		
- Edit equipment attributes		X	X	X		
Alarm list						
Contract: Alarm management Advanced						
Alarm list						
- View	X	X	X	X	X	X
- Acknowledge		X				
- Block			X			
- Unblock			X			
- Select cause		X	X			
- View activity log		X	X			
- Edit activity log		X	X			
Event list						
- View		X				
- Reset			X			
Operator log						
- View					X	
Personnel planning						
Contract: Alarm management Advanced						
Labour force calendar						
- View		X	X			
- (Edit, see alarms and users above)			X			
Signal status						
Contract: Remote Control & Surveillance						
Signal status						
- View	X	X	X	X	X	X
- Update		X	X			
- Remote control 1, 2 and 3						X
Charts and reports						
Contract: Optimization						
Charts						
- View	X	X	X	X	X	X
- Edit templates				X		
Reports						
- View	X	X	X	X	X	X
- Edit templates				X		

Remote Control level 1:
Start/stop pumps, mixers etc

Remote Control level 2:
Cange set-points

Remote Control level 3:
Not in use

Figure 97 User permissions

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Stations

The stations are created by Sulzer with default settings, to make it easier for you to get them up and running. In the stations list you can get an overview of the settings. You can also see the online status, and an indication of personnel working at the stations. To change a station's settings, click on the station name. To view or change the equipment details, click the "Show" link in the rightmost column.

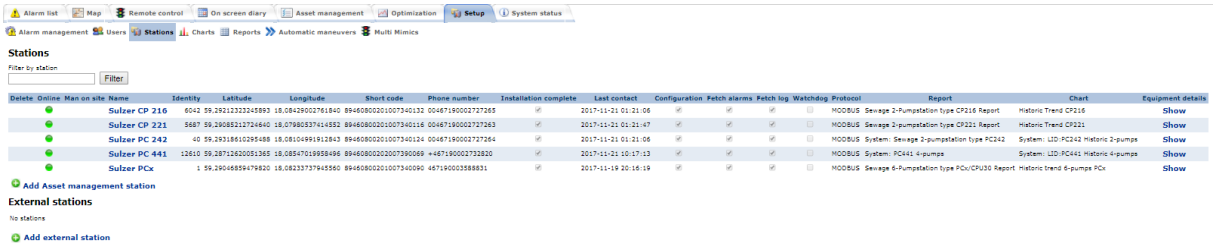

Figure 98 Stations overview

Edit station

Depending on station type different settings are enabled on the edit page.

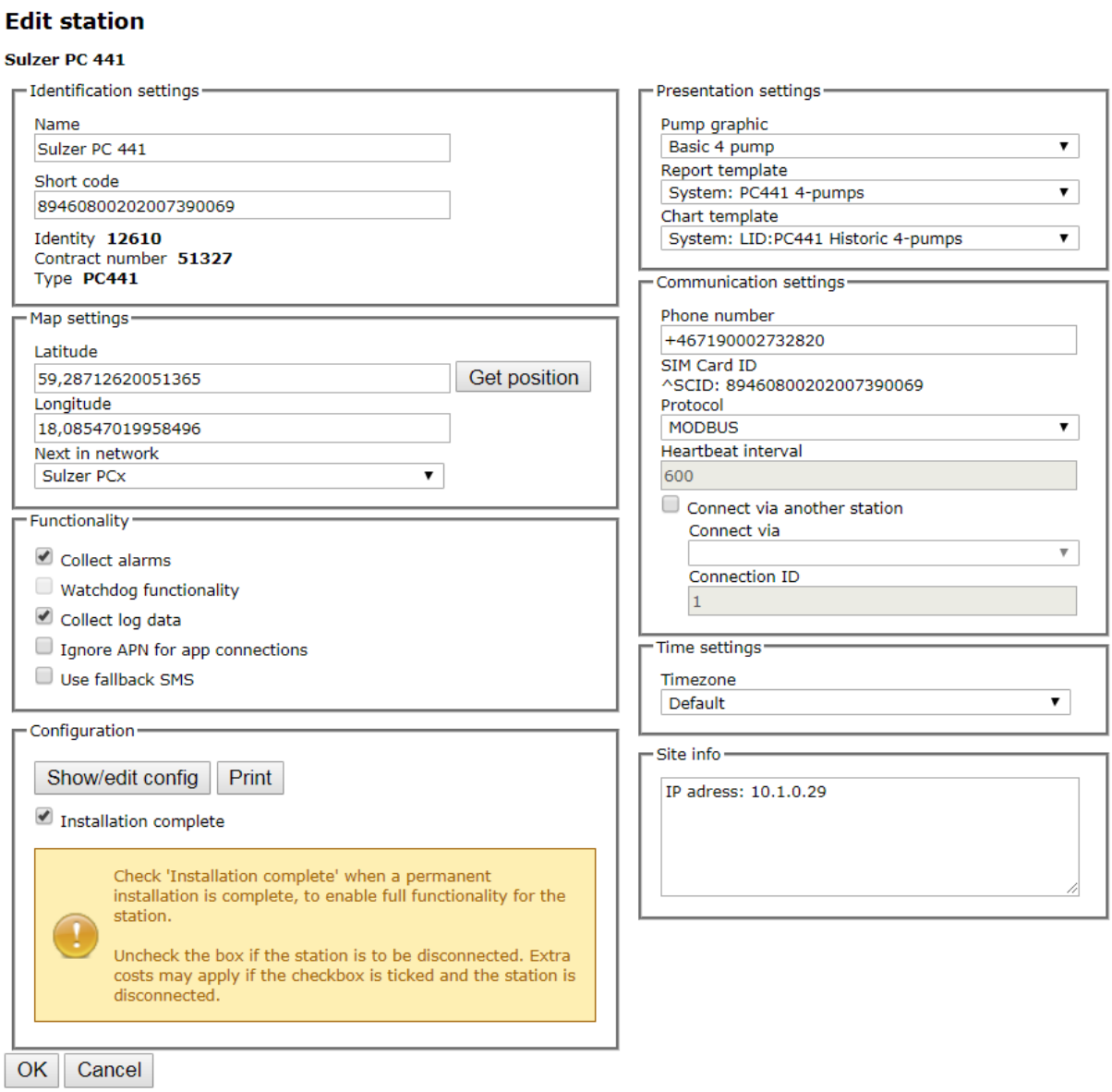

Figure 99 Edit station settings

Identification settings

Name is mandatory and has to be unique. Short code could be added as a tag.

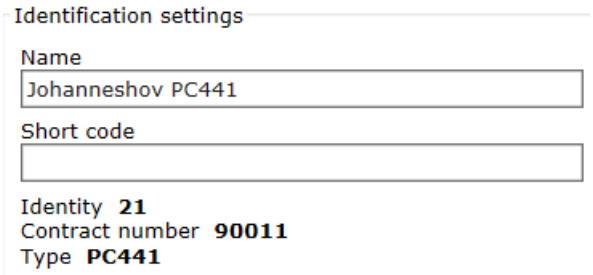

Figure 100 Identification settings

Map settings

AquaWeb includes full mapping functionality and this is the place to enter where the station is located. The coordinate system used is a world standard called WGS84 (world geodetic system). If you already have the coordinates for your station, just enter it in the Latitude and Longitude boxes. Otherwise you can click on the “Get position” button to point it out on a map.

In the “Next in network” box you select the station that is next to this in the network. This adds arrows to the map showing the pumping direction.

Figure 101 Map settings

When the position is correct, click the OK button.

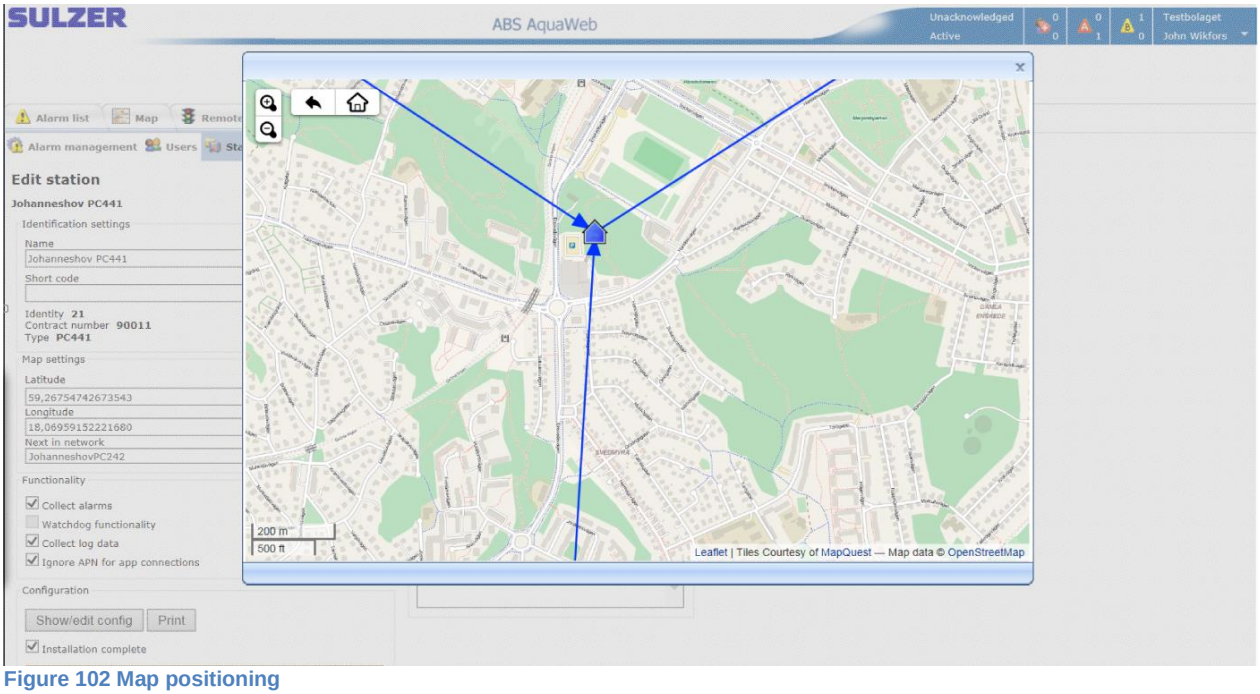

Figure 102 Map positioning

Functionality

Alarm reading, watchdog functionality and log fetching is on by default. Uncheck the boxes if you don’t want it. (The Ignore APN for app connections needs to be checked if you are going to use apps (Android, Apple) with old SIM cards in the substation. With new SIM this is automatically). Fallback SMS will allow alarms to be set by SMS if GPRS is not available (**Note! Can generate extra costs!)**

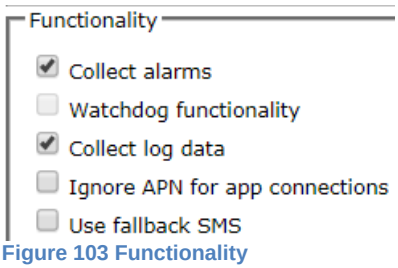

Figure 103 Functionality

Presentation settings

Select pump graphic for the remote control page from the predefined process mimics. Default report and chart template can also be selected. Those lists contain both predefined and your own templates.

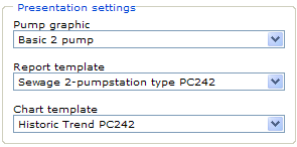

Figure 104 Presentation settings

Communication settings

Since the sim-cards in the stations are Swedish, the phone number should always start with 0046. The protocol should be MODBUS for most GPRS/3G stations. The heartbeat interval is adjustable for AT621 GSM stations. It controls how often (in hours) the station contacts the system for heartbeat communication. The SIM card ID is collected from the station with GPRS communication first time it connects and the heartbeat is read from the substation. Not adjustable in AquaWeb. Connect via another station is for special solutions (Contact C&M for more information.)

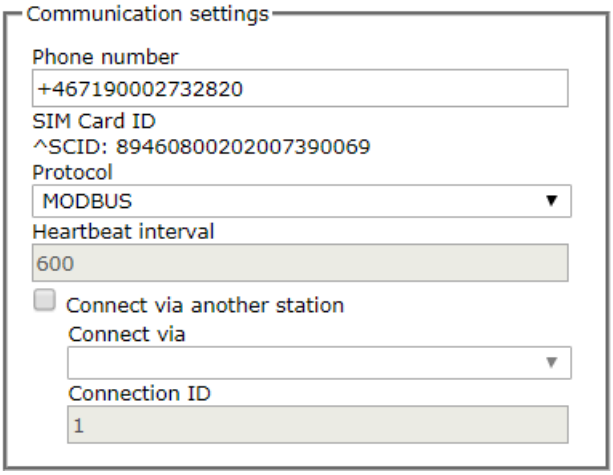

Figure 105 Communication settings

Site info

Site info can be general information about the station, for example description of the location.

Figure 106: Site info

Configuration

Several parts in AquaWeb are dependent of the station configuration. It controls how to communicate with the station, which signals to communicate, which signals to show on the Remote control page and where etcetera.

Editing the station configuration is for advanced users only. This could make big changes to how your station works. If you're not sure what you're doing, please consult Sulzer personnel.

To make changes to the configuration, click on "Show/edit config" button. Depending on the type of station you can update the configuration in different ways. GSM stations are configured by selecting from predefined templates, and GPRS/3G stations by fetching the configuration from the station.

The configuration is shown in two different views: the table view for an easy overview, and the text view for details and editing.

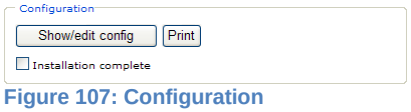

Figure 107: Configuration

Figure 108: Configuration table for a GSM station

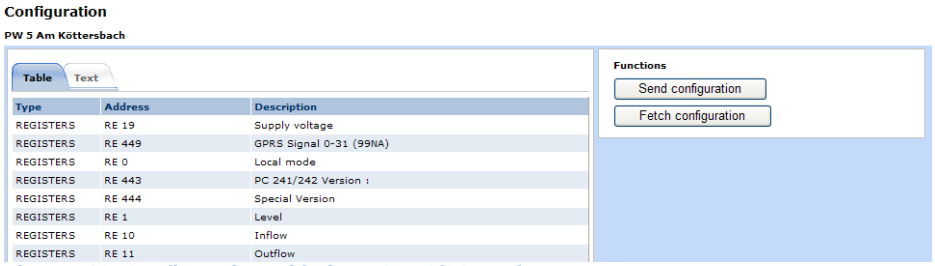

Figure 109: Configuration table for a GPRS/3G station

Fetch configuration from a GPRS/3G station

Click on the "Fetch configuration" button. AquaWeb contacts the station and starts to download the current configuration. The progress is shown dynamically.

Change configuration for a GPRS/3G station

Certain parts of the configuration could need to be adjusted to fit special purposes/functions in some projects. For example change the list of signals in the Remote control page. This can be done, for GSM stations, by editing the configuration text and clicking OK. The configuration is then saved to the database and the changes are applied immediately.

This works fine also for GPRS/3G stations, until you fetch the fresh configuration again from the station. The manual changes are then overwritten. The solution is to edit the station-specific rid-information that resides on the server, via AquaWeb. The changes are then merged into the complete configuration when a new fetch is made.

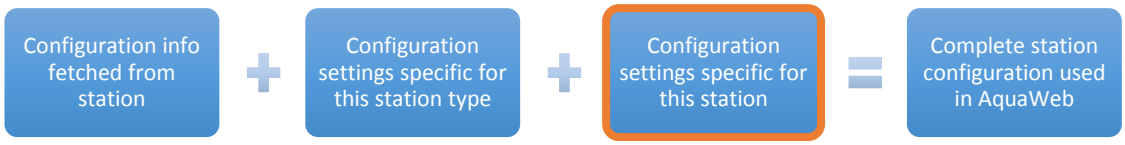

Figure 110: The configuration settings unique to this station (red frame) are editable via AquaWeb.

To make a change to the station-specific rid-file, edit the bottom textbox like this:

1. Find the row that you want to edit in the upper textbox.
2. Copy its section header (enclosed with []) to the bottom textbox.
3. Copy the row to edit to the bottom textbox.
4. Make the changes.
5. Click the OK button.

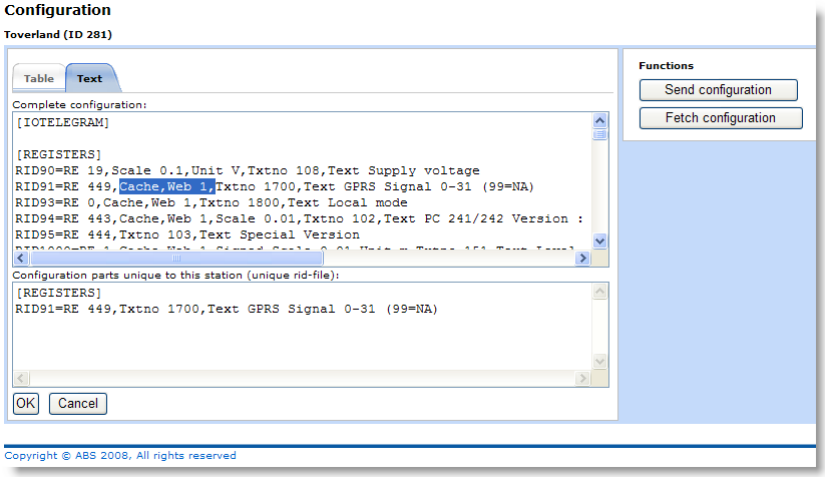

Figure 111: In this example the RID91 is removed from the cache and the web 1 list.

Remote control signals

To define how signals are presented on the Remote control page, you can change the signal parameters in the configuration. The Web parameter says in which of the lists the signal is shown. The Cache parameter says that the signals value should be updated and stored every time the system is in contact with the station. Without the Cache parameter the signal value won't appear on the Remote control page.

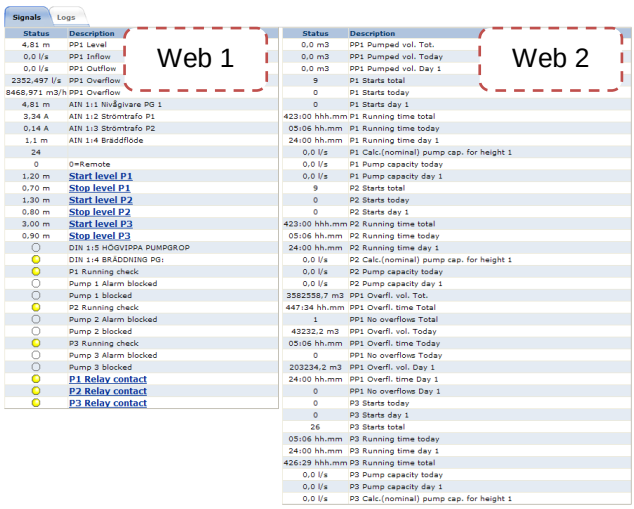

Figure 112: Signal lists in Remote control page

```
RID1000=RE 1, Cache, Web 1, Signed, Scale 0.01, Unit m, Txtno 151, Text Level
.
.
```

Figure 113: Extract from station configuration with the Cache and Web parameters highlighted

Send configuration

This can be done on both GSM and GPRS/3G stations. Click on the “Send configuration” button. AquaWeb contacts the station and starts to upload the current configuration. The progress is shown dynamically.

Installation complete

When the station is configured and all settings are applied, click the checkbox called “Installation complete” to enable full functionality for the station. This means for example automatic watchdog handling for GSM stations and automatic log fetching for GPRS/3G stations.

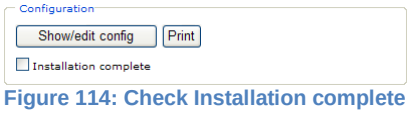

Figure 114: Check Installation complete

Chart templates

From the chart list you can delete, preview, copy, edit or add new template. There are two types of templates: general chart templates, without station name in the signal addresses, and special chart templates, with selected station’s name in the signal addresses. General templates can be connected to a station in the Edit station page. Specific templates are run stand alone and can be previewed from the list.

It’s possible to use LogID for each channel (PC 242 and PC 441). Each channel has it’s on ID and therefore it’s possible to use the LogID instead of a name, makes it possible to create non-language independent templates.

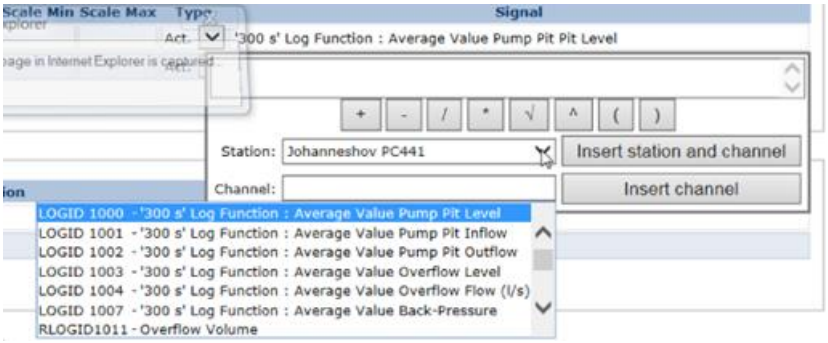

Figure 115 LogID and Name of channel

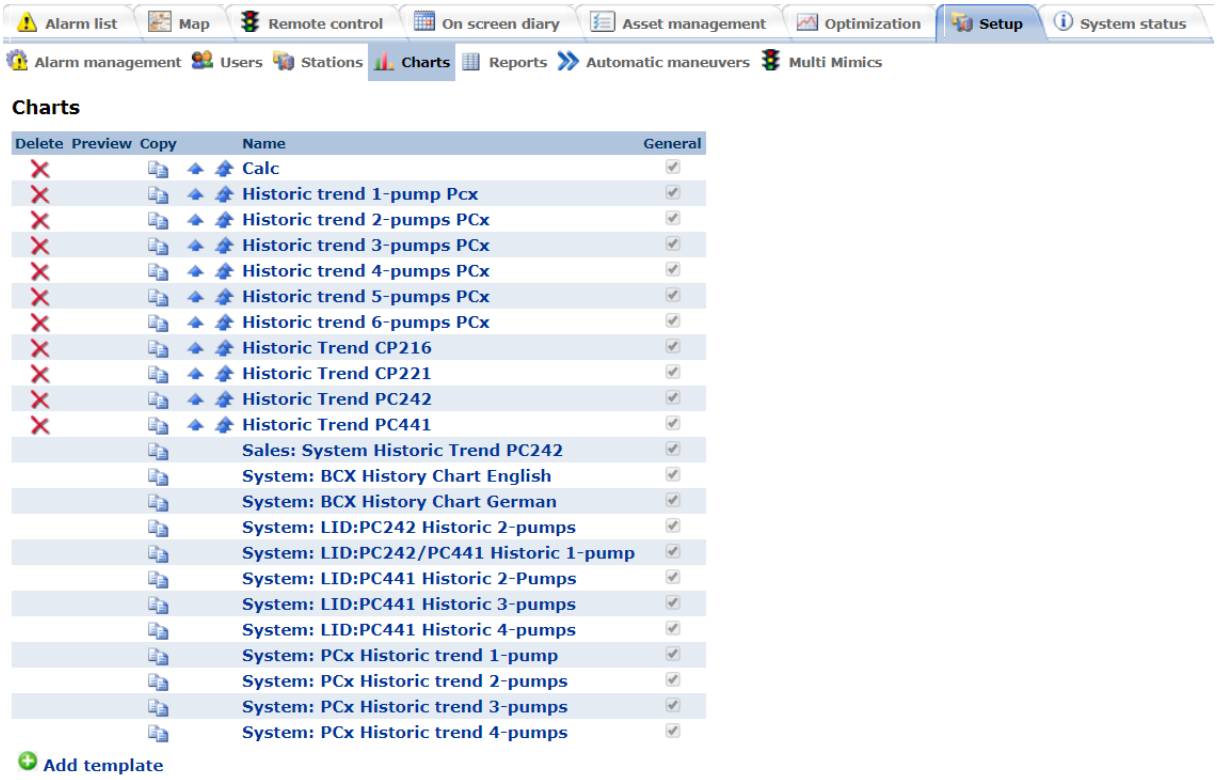

Figure 116 Chart templates overview

Edit chart template

If you copy, edit or add new, the Edit chart page is shown. The template name is mandatory and has to be unique. A chart template consists of digital signals and analogue signals. In the screen shot below you can see where they are placed when running the chart.

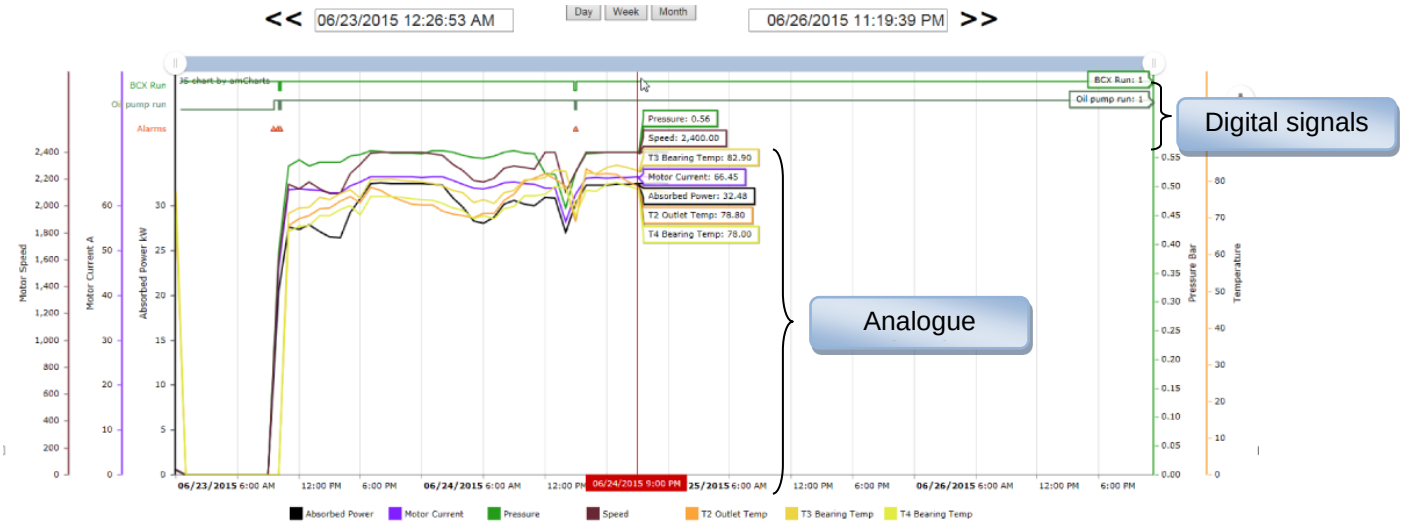

Figure 117 Chart overview

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Analogue signals

In the first signal frame, you enter the analogue signals. Here's a description of the columns:

Column	Description
Delete	Click on the delete symbol to delete the row.
Name	Identifies the signal in the chart. Mandatory.
Description	Shown in legend when running chart.
Compare	If checked, the time offset for this row is changed when running then chart, according to the compare settings in the upper right corner of this page.
Color	Palette to select color for the signal.
Axis	Dropdown to choose the Axes to use as Axis.
Scale Min	If the left scale is set to percent, Scale min and Scale max are used for calculating the percentage. For example: an analogue value for motor currents can be extremely large for one pump and very small for another. To set up a chart with adapted display, you therefore set max and min scaling for each pump.
Scale Max	See Scale min.
Type	Can be actual value, or a statistic value of choice: min, max, average or sum.
Signal	The address of the signal to show. It could be station\signal or just signal. Click in the signal field to select. It could also be a formula. If so, encapsulate the channels with []. For example: [Station1\Signal1] + [Station2\Signal1]

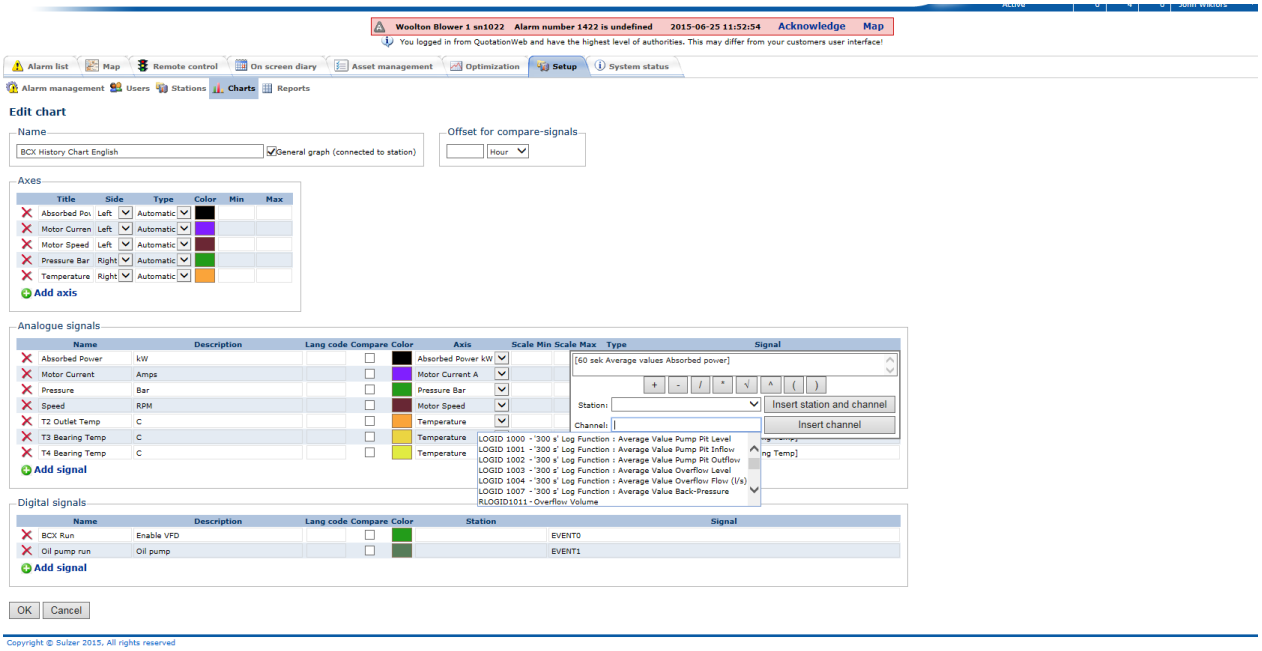

Figure 118 Edit chart template

Click on the station name in the upper list and wait for that station's channels to appear in the bottom list. Select the channel and click the "Insert" button, either for both station and channel or just the channel.

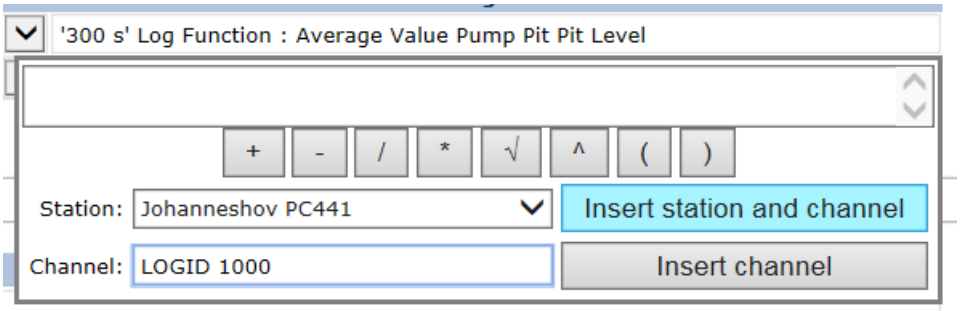

Figure 119 Select channel dialog.

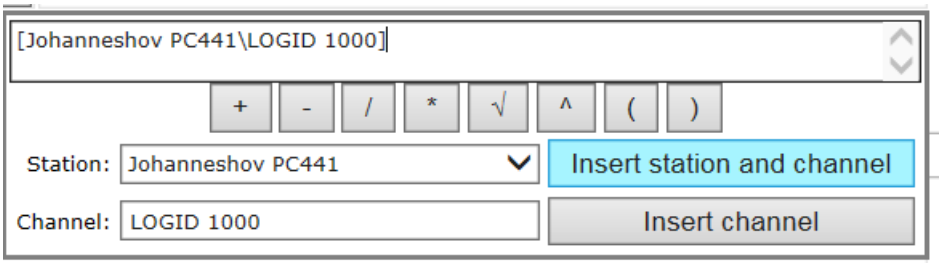

Figure 120 Select channel dialog with LOGID.

Digital signals

In the second signal frame, you enter the digital signals. Here's a description of the columns:

Column	Description
Delete	Click on the delete symbol to delete the row.
Name	Identifies the signal in the chart. Mandatory.
Description	Shown in legend when running chart.
Compare	If checked, the time offset for this row is changed when running then chart, according to the compare settings in the upper right corner of this page.
Signal	The address of the signal to show. It could be station\signal or just signal. Click in the station\signal field to select.

Scales

You can use left scale, or both left and right scale. Select automatic (default), manual or percent. The manual setting requires min and max limits. You can add as many axis as you want.

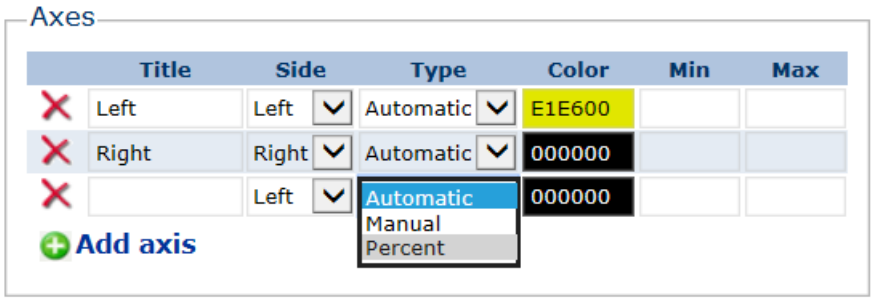

Figure 121 Scale settings

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Formulas

These are the operators available when using formulas.

Operator	Meaning
()	Sub expressions
^	Power
*, /	Multiplication, division
%, Mod	Modulus (remainder)
\	Integer divide
+, -	Addition, subtraction
>, >=, <, <=, <>	Logical comparison. Returns 0 for False and -1 for True. If you want to return 0 or 1 instead, add abs(int()) around the expression. Example: abs(int([Signal1]< [Signal2]))
&, |, And, Or	Logical "and", logical "or"

In addition to the standard operators, the following built-in functions are supported (they are case insensitive): Abs, Sin, Cos, Tan, Atn, Log, Log10, Exp, Sqr, Int, Ceil and Floor.

Compare

Signals marked with compare will have values from a different time frame. You can set the offset in five different units: hour, day, week, month or year.

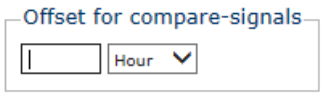

Figure 122 Compare settings

Just add the signal you want to compare on two rows, one showing current value, and the other showing the compare value. Here's an example comparing today's values with yesterday's values:

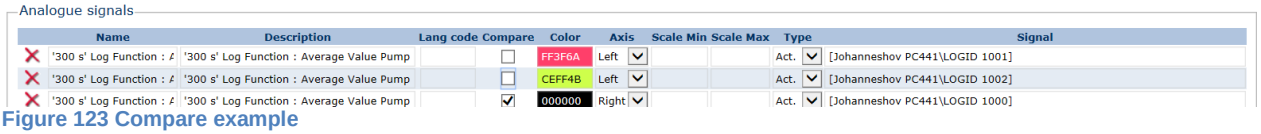

Figure 123 Compare example

General graph

If the "General graph" box is checked, the chart template can be tied to a station. If it's not checked, the template can be run on its own.

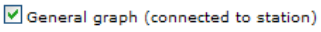

Figure 124 General setting

Report templates

From the reports list you can delete, preview, copy, edit or add new template. There are two types of templates: general report templates, without station name in the signal addresses, and special report templates, with selected station's name in the signal addresses. General templates can be connected to a station in the "Edit station" page. Specific templates are run stand alone and can be previewed from the list.

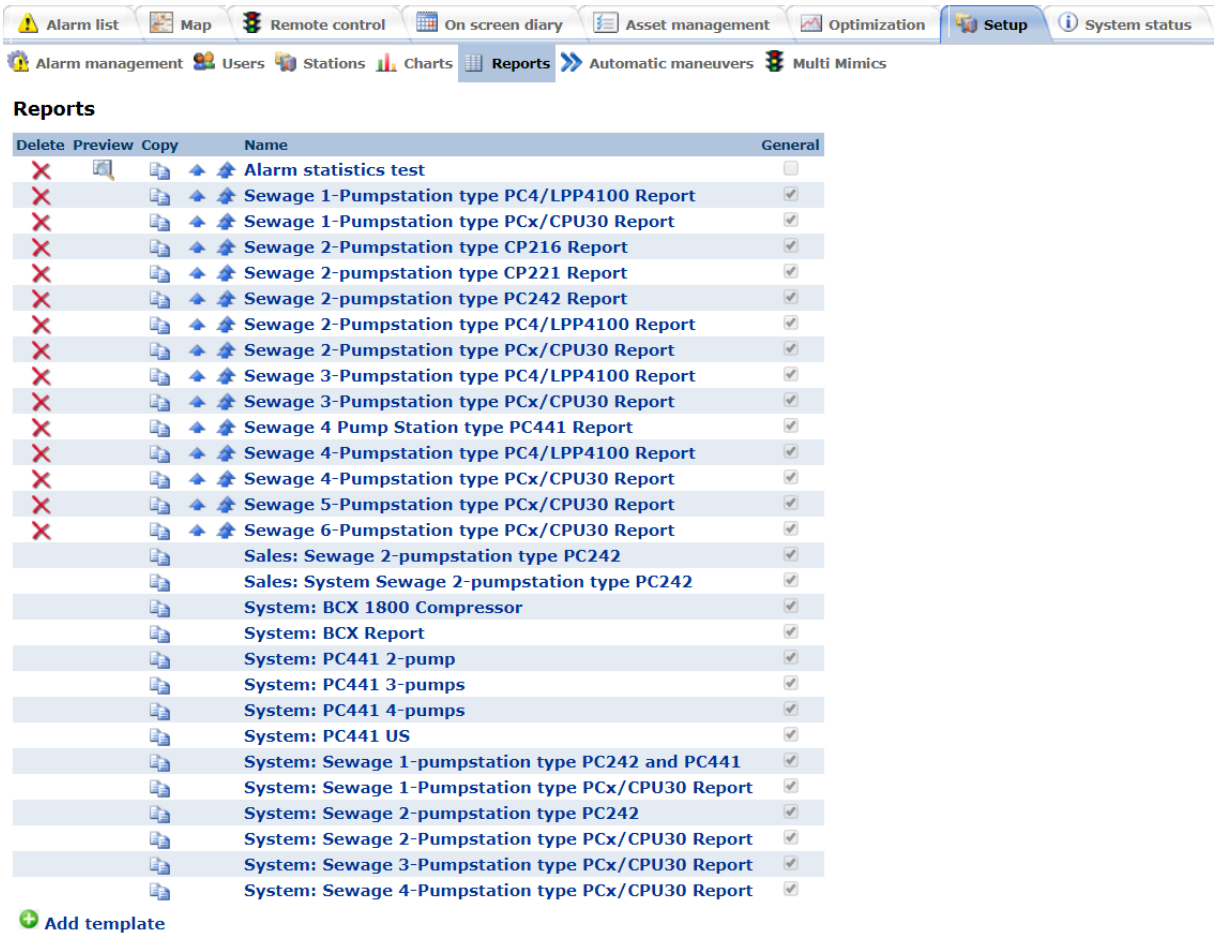

Figure 110: Report templates overview

Edit report template

If you copy, edit or add new, the edit report page is shown. The template name is mandatory and has to be unique.

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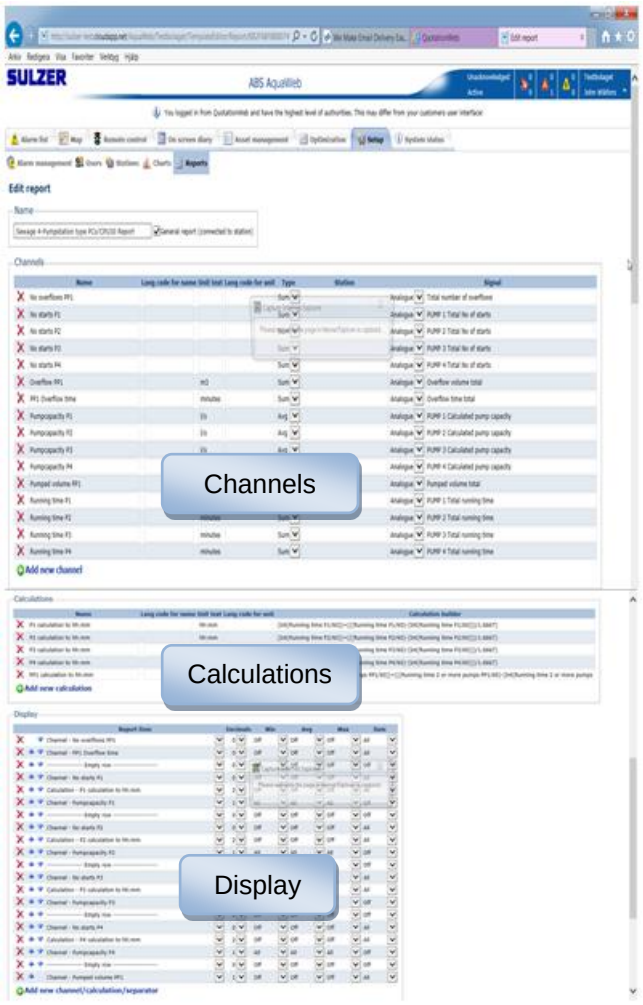

Figure 111: Report templates consist

The template consists of three parts:

1. Channels (values in)
2. Calculations
3. Display (values out)

Channels

The input for the report engine is the channels. Enter the signal address manually or select from a dialog by click in the empty field.

Channels

Name	Lang code for name	Unit text	Lang code for unit	Type	Station	Signal
No overflows PP1				Sum		Analogue Total number of overflows
No starts P1				Sum		Analogue PUMP 1 Total No of starts
No starts P2				Sum		Analogue PUMP 2 Total No of starts
No starts P3				Sum		Analogue PUMP 3 Total No of starts
No starts P4				Sum		Analogue PUMP 4 Total No of starts
Overflow PP1		m3		Sum		Analogue Overflow volume total

Figure 112: Report templates channels

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Here's a description of the columns:

Column	Description
Delete	Click on the delete symbol to delete the row.
Name	Identifies the channel in the report. Mandatory.
Unit text	Shown to the right of the name in the report.
Type	Can be actual value, or a statistic value of choice: min, max, average or sum.
Station	Station name should be entered if the template should be run on its own (General report = False). Click on the … button to select.
Signal	The address of the signal to show. Click on the … button to select. It could also be a formula. If so, encapsulate the channels with []. For example: [Station1\Signal1] OR [Station2\Signal1]

Click on the station name in the station column list and wait for that station's channels to appear in the signal column list. Select the channel by click in the signal field, either for both station and channel or just the channel. You can select either analog values, like pump pit level, or statistics from digital signals, like alarms or events.

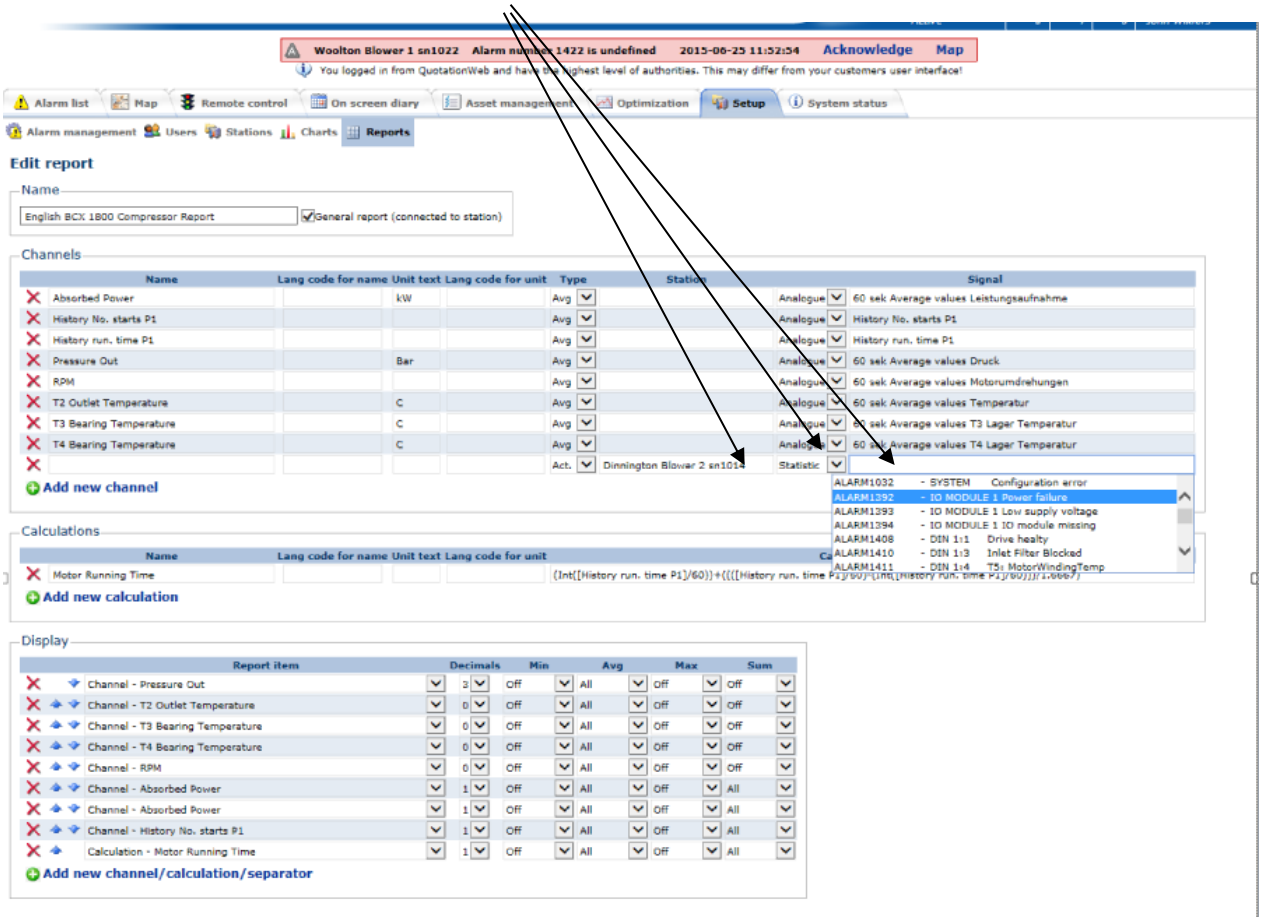


Figure 113: Select signal dialog showing statistic signals

Calculations

If the values from the channels need to be processed before presenting them, you can work with the calculation tool.

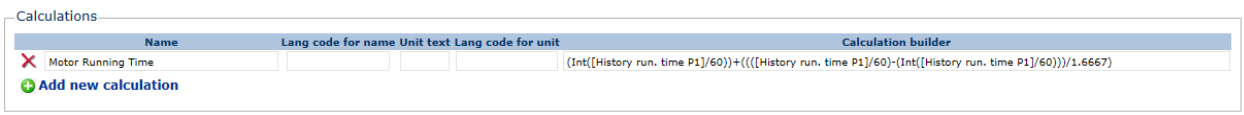


Figure 114: Calculation overview

Here's a description of the columns:

Column	Description
Delete	Click on the delete symbol to delete the row.
Name	Identifies the channel in the report. Mandatory.
Unit text	Shown to the right of the name in the report.
Calculation	The formula. Click in the calculation builder field to edit it.

Click in the calculation builder field to open up the editor. Pick channels or Calculations by clicking on them in the Channels list\Calculations list. Channels are enclosed with []. The formula operators are described in the next chapter.

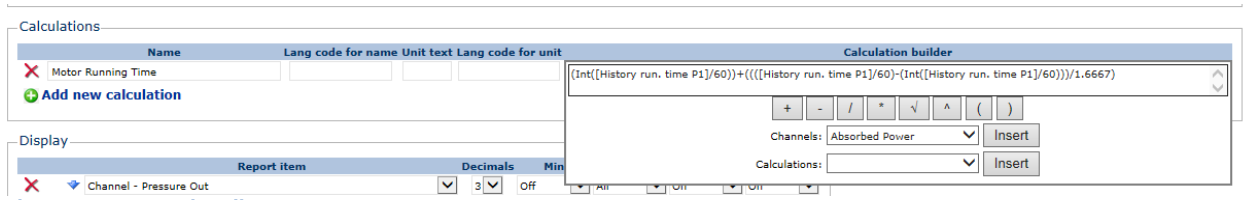


Figure 115: Formula editor

Your formula will be verified as you are working with it.

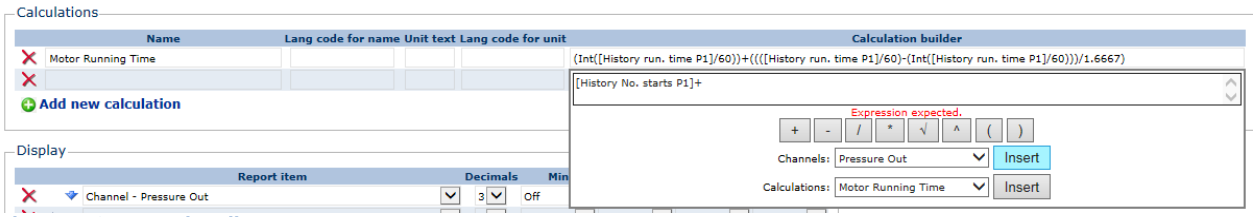


Figure 116: Formula editor

Formulas

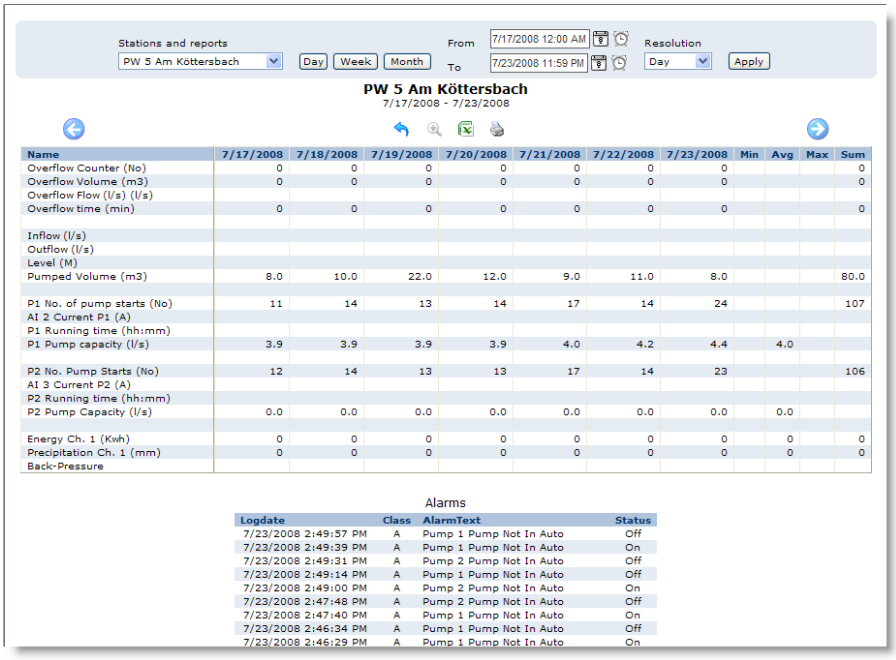
These are the operators available when using formulas.

Operator	Meaning
()	Sub expressions
^	Power
*, /	Multiplication, division
%, Mod	Modulus (remainder)
\	Integer divide
+, -	Addition, subtraction
>, >=, <, <=, <>	Logical comparison. Returns 0 for False and -1 for True. If you want to return 0 or 1 instead, add abs(int()) around the expression. Example: abs(int([Signal1]< [Signal2]))
&, |, And, Or	Logical "and", logical "or"

In addition to the standard operators, the following built-in functions are supported (they are case insensitive): Abs, Sin, Cos, Tan, Atn, Log, Log10, Exp, Sqr, Int, Ceil and Floor.

Display

In this section you decide what to show on the report, and how to show it.



Name	7/17/2008	7/18/2008	7/19/2008	7/20/2008	7/21/2008	7/22/2008	7/23/2008	Min	Avg	Max	Sum
Overflow Counter (No)	0	0	0	0	0	0	0				0
Overflow Volume (m3)	0	0	0	0	0	0	0				0
Overflow Flow (l/s) (l/s)											
Overflow time (min)	0	0	0	0	0	0	0				0
Inflow (l/s)											
Outflow (l/s)											
Level (M)											
Pumped Volume (m3)	8.0	10.0	22.0	12.0	9.0	11.0	8.0				80.0
P1 No. of pump starts (No)	11	14	13	14	17	14	24				107
AI 2 Current P1 (A)											
P1 Running time (hh:mm)											
P1 Pump capacity (l/s)	3.9	3.9	3.9	3.9	4.0	4.2	4.4	4.0			
P2 No. Pump Starts (No)	12	14	13	13	17	14	23				106
AI 3 Current P2 (A)											
P2 Running time (hh:mm)											
P2 Pump Capacity (l/s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Energy Ch. 1 (Kwh)	0	0	0	0	0	0	0	0			0
Precipitation Ch. 1 (mm)	0	0	0	0	0	0	0	0			0
Back-Pressure											

Logdate	Class	AlarmText	Status
7/23/2008 2:49:57 PM	A	Pump 1 Pump Not In Auto	Off
7/23/2008 2:49:39 PM	A	Pump 1 Pump Not In Auto	On
7/23/2008 2:49:31 PM	A	Pump 2 Pump Not In Auto	Off
7/23/2008 2:49:14 PM	A	Pump 1 Pump Not In Auto	Off
7/23/2008 2:49:00 PM	A	Pump 2 Pump Not In Auto	On
7/23/2008 2:47:48 PM	A	Pump 2 Pump Not In Auto	Off
7/23/2008 2:47:40 PM	A	Pump 1 Pump Not In Auto	On
7/23/2008 2:46:34 PM	A	Pump 1 Pump Not In Auto	Off
7/23/2008 2:46:29 PM	A	Pump 1 Pump Not In Auto	On

Figure 117: Example of a report template in use

Select the item to show from the drop down list of channels and calculations, or select an empty row as separator. Set the number of decimals to show. You can also add appropriate statistics for each channel. These statistics are shown in the rightmost four columns when running the report (see screenshot above). The statistics columns have three options:

Setting	Description
Off	Shows nothing.
Indicated	Shows statistics based on values visible in report.
All	Shows statistics based on all values. This option is more accurate but could look wrong due to the rounding effects.

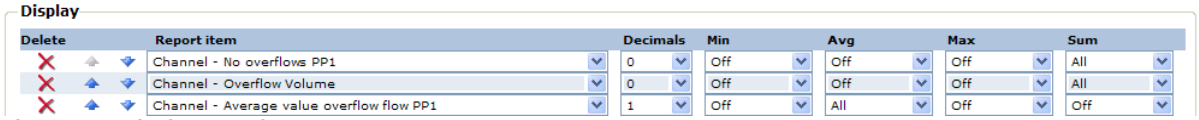


Figure 118: Display overview

You can change the position of a row by clicking the arrow symbol, either up or down.

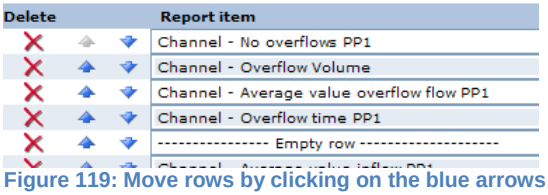


Figure 119: Move rows by clicking on the blue arrows

Settings

There are three settings that control the overall appearance of the report:

Setting	Description
Header text	Text to show at the top of the report. The tag <STATIONNAME> is replaced with the current station name when running the report. The tag can be inserted by clicking on the <- Station name button.

Values missing	If a value is missing in a cell, this is shown instead.
Show alarms	If this box is checked, an alarm list is shown below the grid containing the report values.

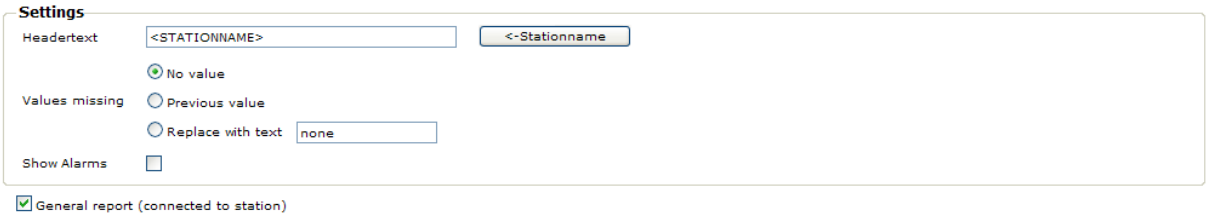
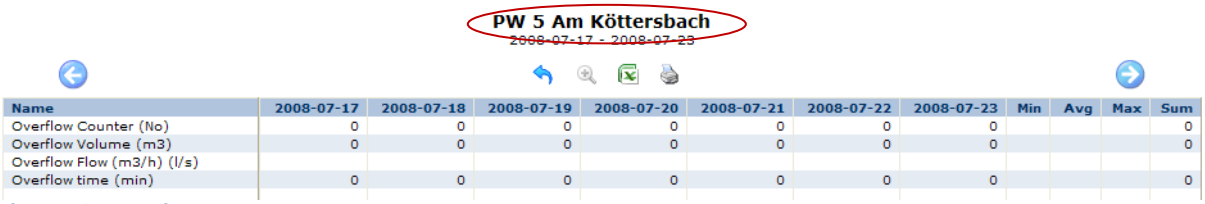


Figure 120: Settings overview



Name	2008-07-17	2008-07-18	2008-07-19	2008-07-20	2008-07-21	2008-07-22	2008-07-23	Min	Avg	Max	Sum
Overflow Counter (No)	0	0	0	0	0	0	0				0
Overflow Volume (m3)	0	0	0	0	0	0	0				0
Overflow Flow (m3/h) (l/s)											
Overflow time (min)	0	0	0	0	0	0	0				0

Figure 121: Header text

General report

If the General report box is checked, the report template can be tied to a station. If it's not checked, the template can be run on its own.

Automatic maneuvers

In a sewage collection system there will arise occasions when it would be beneficial if the central control & monitoring system could perform automatic overruling actions over the settings in the local controllers. Contract level needs to be Remote Control & Alarms.

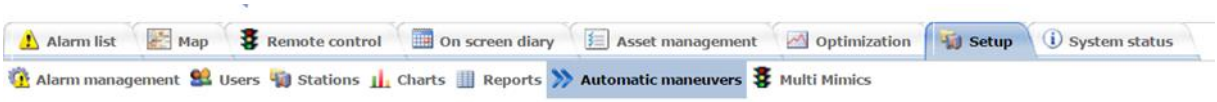


Figure 122: Automatic maneuvers

To create a new Automatic Maneuver click on *Add new template*:

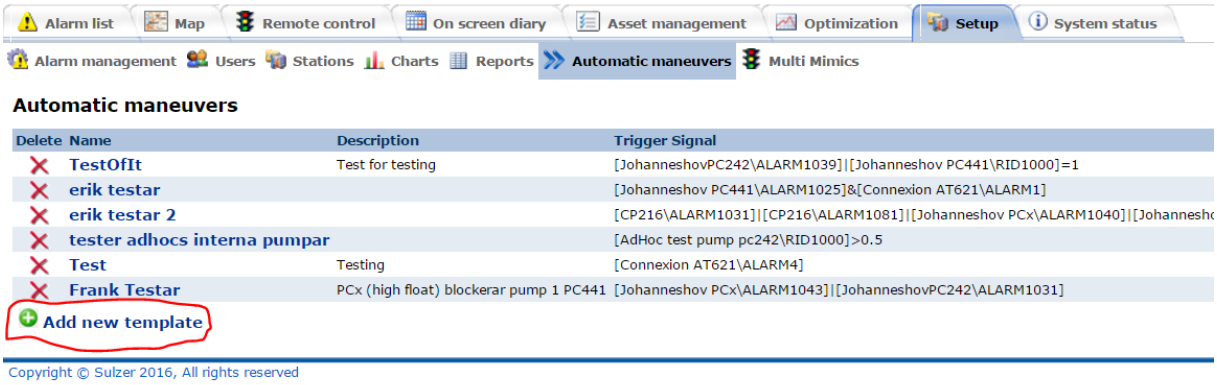


Figure 123: Create Automatic maneuver

Give the Automatic Maneuver a name and a description. To make the Automatic Maneuver *active* the checkbox *Enabled* needs to be checked.

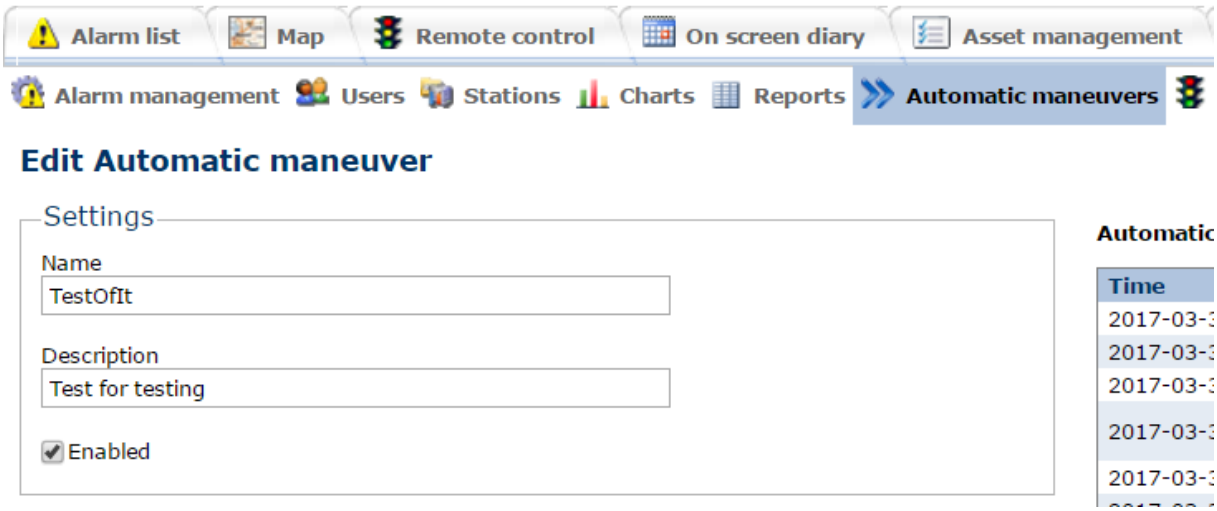


Figure 124: Enable and name the Automatic maneuver

81307051H

Trigger Formula Settings

The function *Trigger* (conditions that will activate some action in another station) can be set up with several stations analogue and/or digital signals. In this example a PC242 High level float OR (|) PC441 pump pit level must be more than 1 meter for the Trigger to get activated (ON).

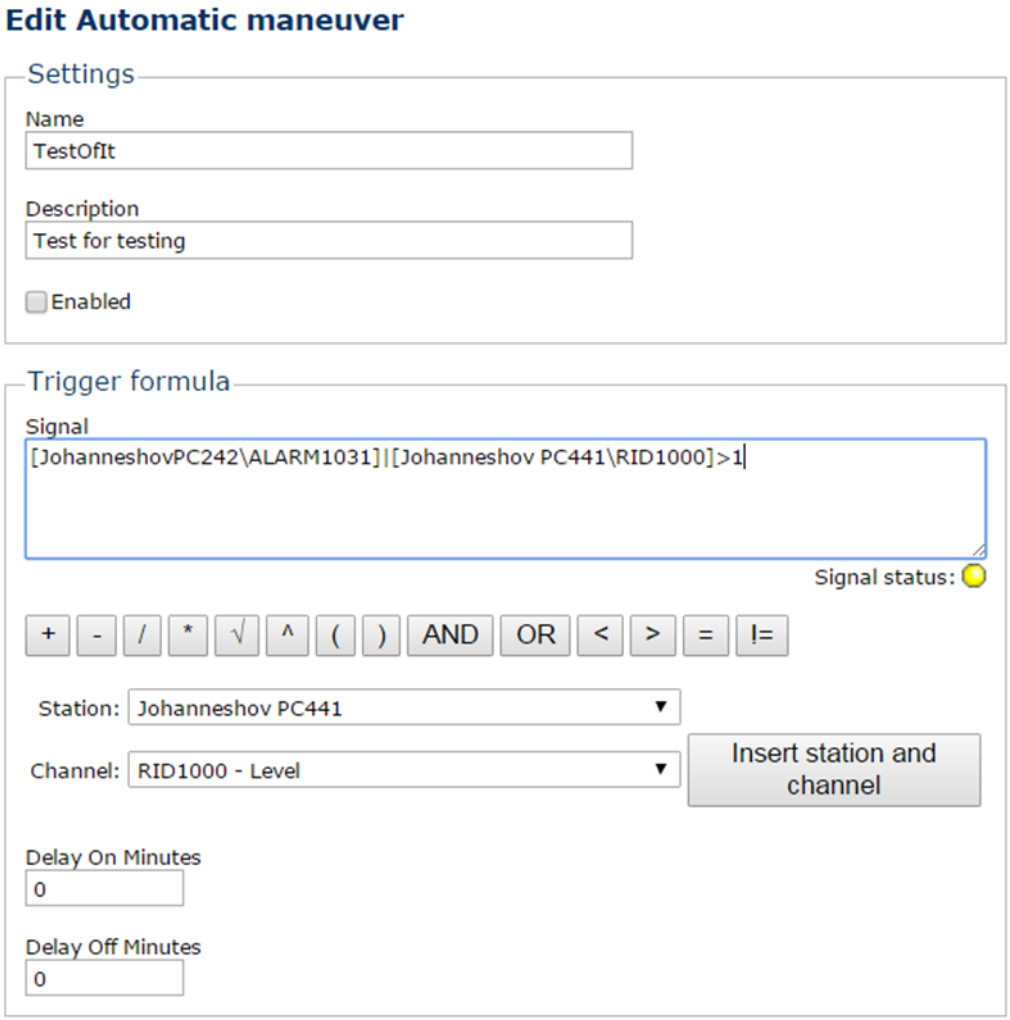


Figure 125: Settings trigger formula

The conditions can be seen by *hover* (mouse over) each function:

Figure 126: Settings trigger conditions

Stations and signals are set by the dropdown lists. (Possible to use several signals for each station):

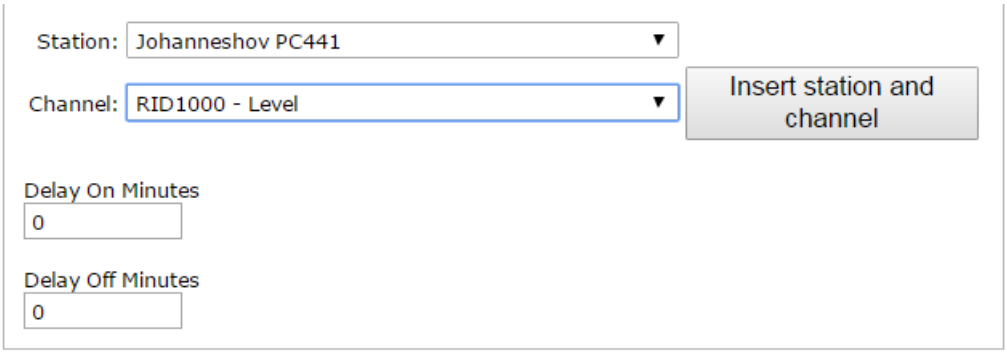
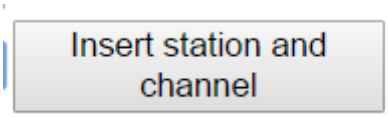


Figure 127: Settings trigger conditions station and channel

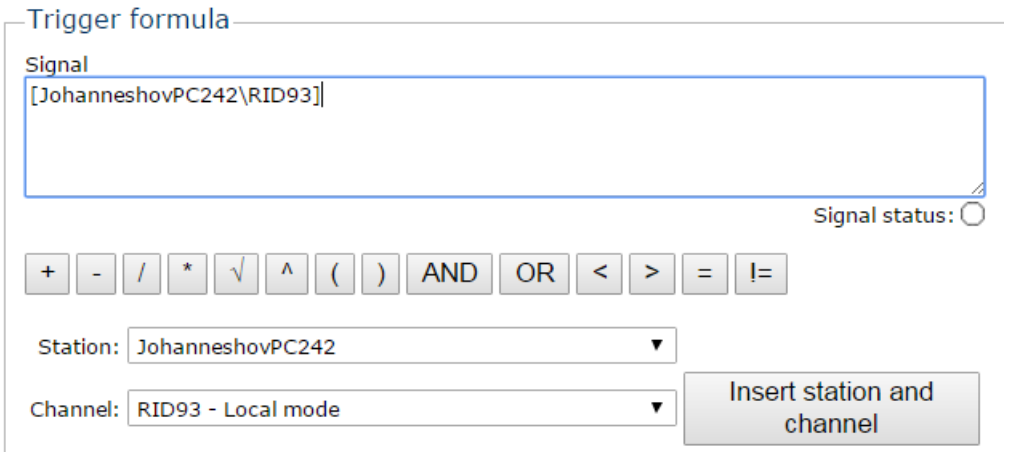
For each station and each signal, press the *Insert station and channel*:



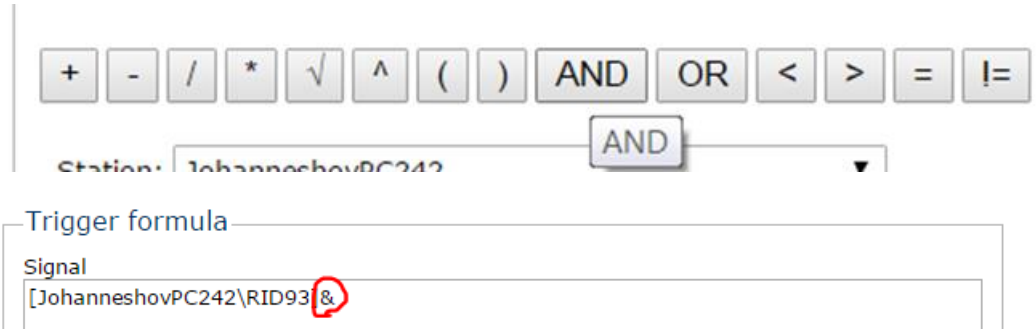
It's *only* when a trigger value *changes* a maneuver is sent.
For example: If a trigger returns true, and the trigger formula is changed but also returning a true value, no maneuver is sent.

Example 2 of Trigger formula:

If a PC242 is in *Local mode*:

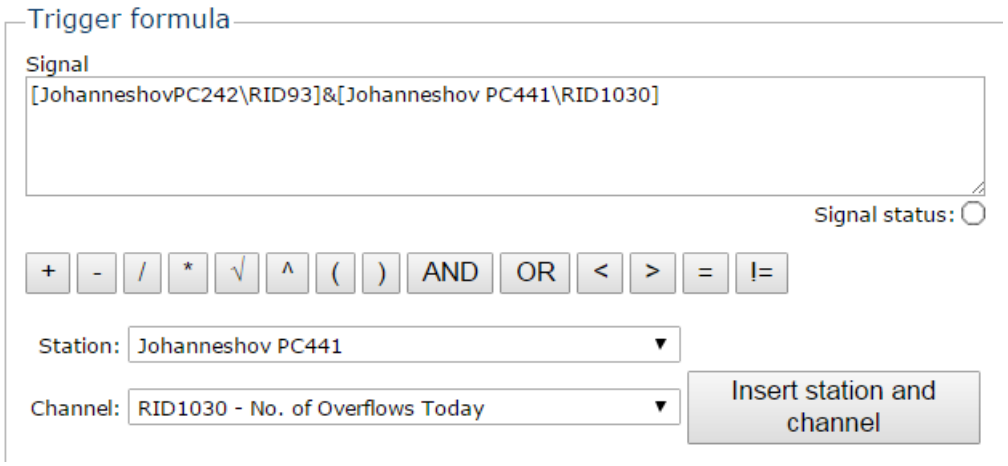


AND

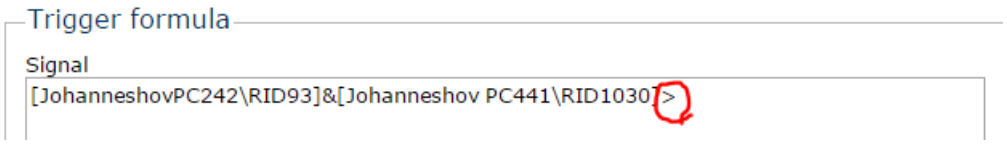


81307051H

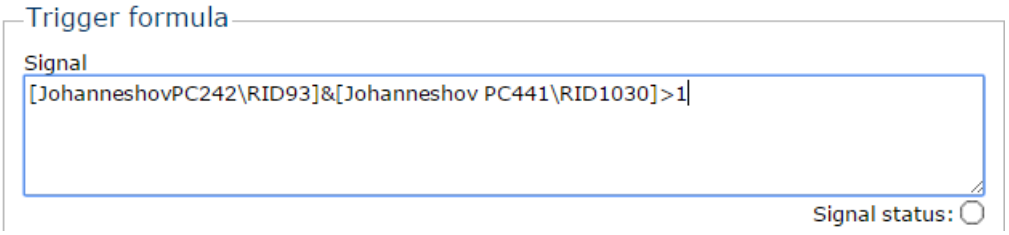
A PC 441 *numbers of overflows today*



Are more (*Greater than*)



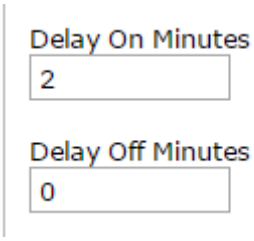
Than one (1):



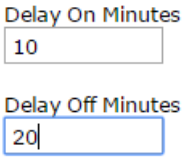
The trigger gets activated.

Delay

It is possible to set a *delay* for the trigger function to get ON or OFF in minutes:



Example:

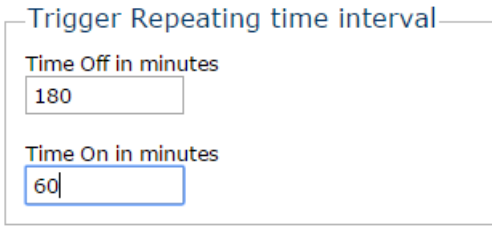


07:00 Trigger value is set to 1
07:10 The system sends maneuver ON to the station (Delay ON 10 minutes)
07:40 Trigger value is set to 0
08:00 The system sends maneuver OFF to the station (Delay OFF 20 minutes)

Trigger repeating time interval

The trigger can be set up with a repeating interval.
For the Trigger Repeating time interval to work, it is necessary to have values in both ON and OFF:

For example:
OFF 180 and ON 60.

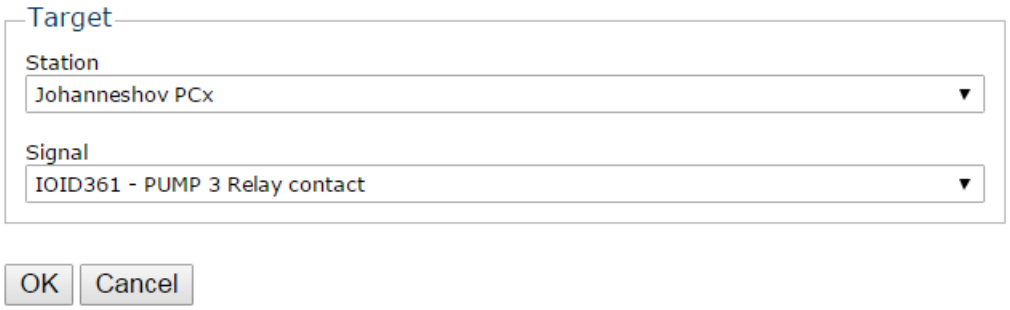


The interval is supposed to be OFF 180 minutes and ON 60 minutes.

09:30 Maneuver OFF is sent
12:30 Maneuver ON is sent (Has been OFF for 180 minutes)
13:30 Maneuver OFF is sent (Has been ON for 60 minutes)
16:30 Maneuver ON is sent (Has been OFF for 180 minutes)

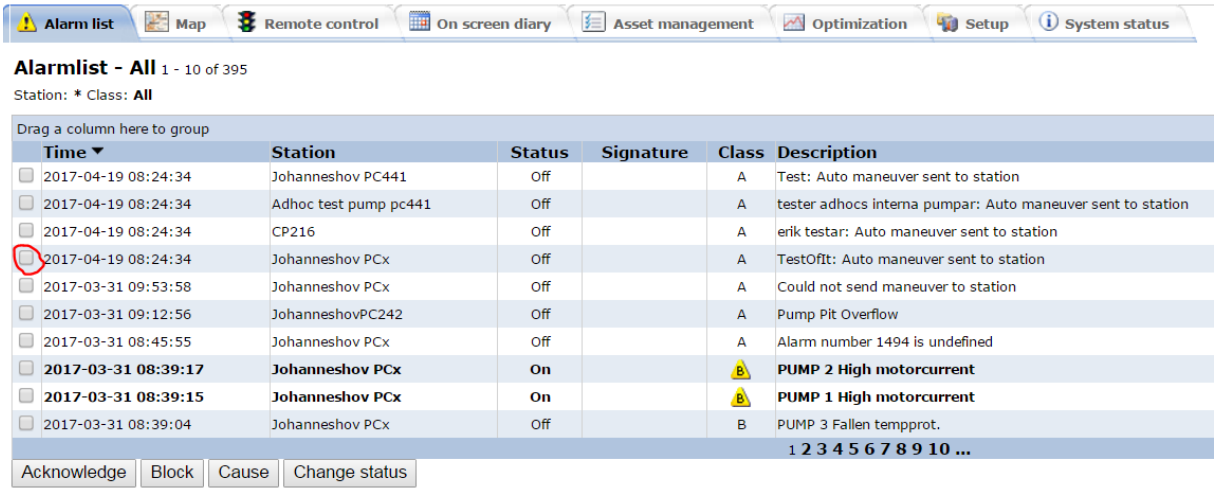
Target

The trigger functionality's target station and signal.



Target station and signal is chosen by the drop down list for *station* and *signal*

When a trigger is activated (ON), an alarm gets activated for the station:



Only one target can be set for a trigger maneuver.

81307051H

Automatic maneuver log

All actions and all changes are logged.
To update the log a refresh of the web page is necessary.

Automatic maneuver log

Time	Description
2017-03-31 09:53:58	Value sent to station value=OFF
2017-03-31 09:53:41	Send maneuver attempt 1 Send value OFF
2017-03-31 09:53:41	Trigger value changed from True to False
2017-03-31 09:53:37	Template updated (TestOfIt) Signal: '[JohanneshovPC242\ALARM1039]!=1|[Johanneshov PC441\RID1000]=1' -> '[JohanneshovPC242\ALARM1039]|[Johanneshov PC441\RID1000]=1'
2017-03-31 09:53:23	Value sent to station value=ON
2017-03-31 09:52:48	Send maneuver attempt 5 Send value ON
2017-03-31 09:52:48	Error sending value to station Retry=4
2017-03-31 09:51:44	Send maneuver attempt 4 Send value ON
2017-03-31 09:51:44	Error sending value to station Retry=3
2017-03-31 09:50:40	Send maneuver attempt 3 Send value ON
2017-03-31 09:50:40	Error sending value to station Retry=2
2017-03-31 09:49:37	Send maneuver attempt 2 Send value ON
2017-03-31 09:49:37	Error sending value to station Retry=1
2017-03-31 09:49:15	Timeout sending value to station
2017-03-31 09:48:10	Send maneuver attempt 1 Send value ON
2017-03-31 09:46:09	Wait 2 minutes before send value ON to station
2017-03-31 09:46:09	Trigger value changed from False to True

Multi Mimic

Sometimes it's good to see process mimics from many stations in one screen. In order to see stations in a Multi Mimic you first have to create a template, under setup.

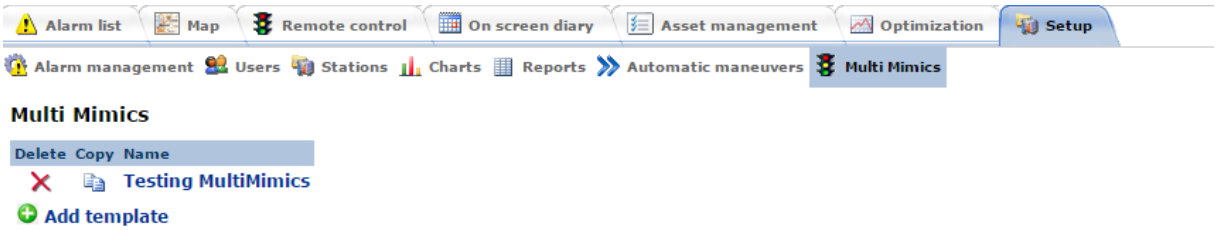


Figure 125 Multi Mimics

Multi mimic templates

Under Setup you can find the list of the existing multi mimics, here you can choose to edit an existing multi mimic, copy it or add a new.

Edit multi mimic templates

Inside the edit page you must choose a name for the multi mimic. Then you choose which stations will be a part of this multi mimic, with the arrows you can choose in which order to display them. After that you will choose which signals to show. The signal can be a numerical value, a time value or a digital value. For the numerical values it is possible to make formulas including one or more signals. At last you will choose if you want to show the stations on rows or on columns and if you want to include the alarms and the operator log. The multi mimic will not be saved before you press ok.

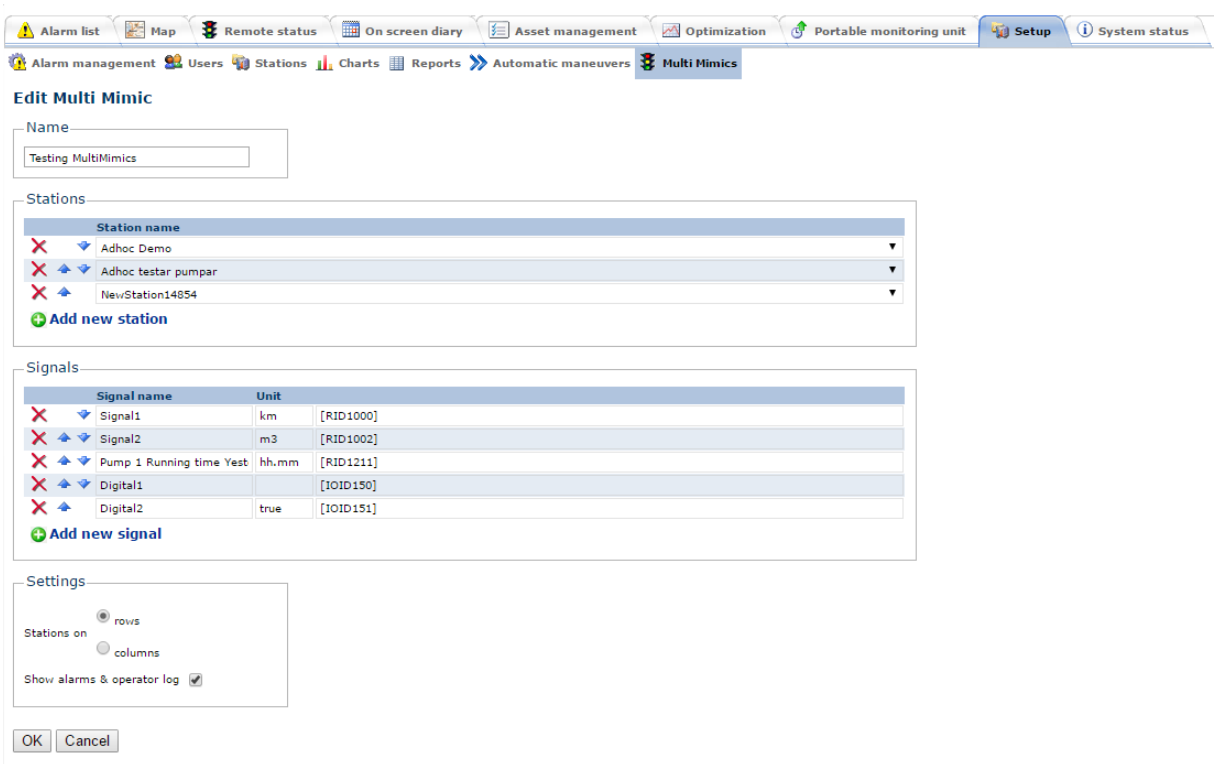


Figure 126 Edit/Create Multi Mimics

The difference on having stations on rows or on columns is shown below. The first picture is on rows and the second is on columns. The only difference is how it is displayed, there is no difference in output or functionality.

81307051H

Testing MultiMimics

Station	Signal1 (km)	Signal2 (m3)	Pump 1 Running time Yesterday (hh.mm)	Digital1	Digital2 (true)	Last updated	Request new values
Adhoc Demo	36	0	00:00	○	●	2016-10-01 21:57:21	Request new values
Adhoc testar pumpar	1.73	0	24:00	○	○	2016-10-05 21:22:05	Request new values
NewStation14854						2016-04-14 12:42:07	
NewStation14855						2016-04-14 12:42:07	

Testing MultiMimics

	Adhoc Demo	Adhoc testar pumpar	NewStation14854	NewStation14855
Signal1 (km)	36	1.73		
Signal2 (m3)	0	0		
Pump 1 Running time Yesterday (hh.mm)	00:00	24:00		
Digital1	○	○		
Digital2 (true)	●	○		
Last updated	2016-10-01 21:57:21	2016-10-06 20:25:18	2016-04-14 12:42:07	2016-04-14 12:42:07
Request new values	Request new values	Request new values		

Figure 127

Formulas and signals

For signals you can build formulas and/or insert channels. All Channels are assumed to be written in the form [RID???] or [IOID???], where RID is numerical or time values and IOID is digital values. In the drop-down list you will find the most common signals, if you do not find your signal in there you can write it by hand. If your signals are numerical values you can add multiple signals and make some equations for it, with time and digital values this is not possible.

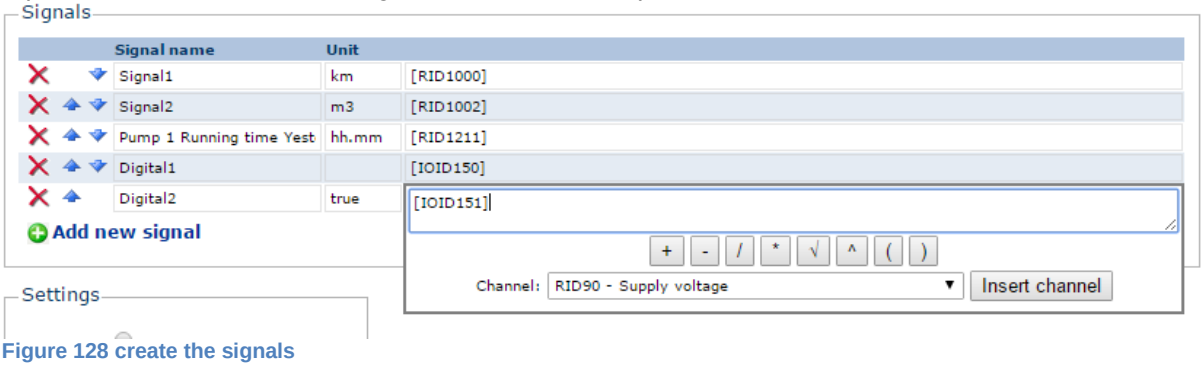


Figure 128 create the signals

These are the operators available when using formulas.

Operator	Meaning
()	Sub expressions
^	Power
*, /	Multiplication, division
%, Mod	Modulus (remainder)
\	Integer divide
+, -	Addition, subtraction
>, >=, <, <=, <>	Logical comparison. Returns 0 for False and -1 for True. If you want to return 0 or 1 instead, add abs(int()) around the expression. Example: abs(int([Signal1]< [Signal2]))

And in additions to these standard operators the following built-in functions are also supported (they are case insensitive): Abs, Sin, Cos, Tan, Atn, Log, Log10, Exp, Sqr, Int, Ceil and Floor.

Formula limitations

- The formula cannot be used on digital signals, i.e. the formula do not support logical operations.
- If one inserts more than one digital signals or one digital signal and one non-digital signal the formula will return nothing.
- If one inserts a digital signal and some equation the formula will return only the digital value. E.g. “true*2” will be regarded as “true” and “false+5” will be regarded as “false”.

- The formula do not support equations with time.
- If one inserts a time signal and some equation the formula will return only the time value. E.g. “11:15*2” will be regarded as “11:15”.
- The formula will not work with having multiple signals including one which is a time signal, i.e. if one or more signal is a time signal in an equation containing more than one signal the formula will not work.
- The formula assumes all signal starting with RID to either be numerical values or time values.
- The formula assumes all signal starting with IOID to be digital values.

Displaying a multi mimic

The first table will show the stations and signals you chose in the edit part. For stations which are connected you can Request new values, the program will then try to connect to the station and fetch new values. If you press refresh it will fetch new values from the database, not connecting to the station. The second table is the alarm log, here will you see up to the last 20 alarms for all the stations in the multi mimic. The third table is the operatorlog, here will you see up to the last 20 posts in the operatorlog.

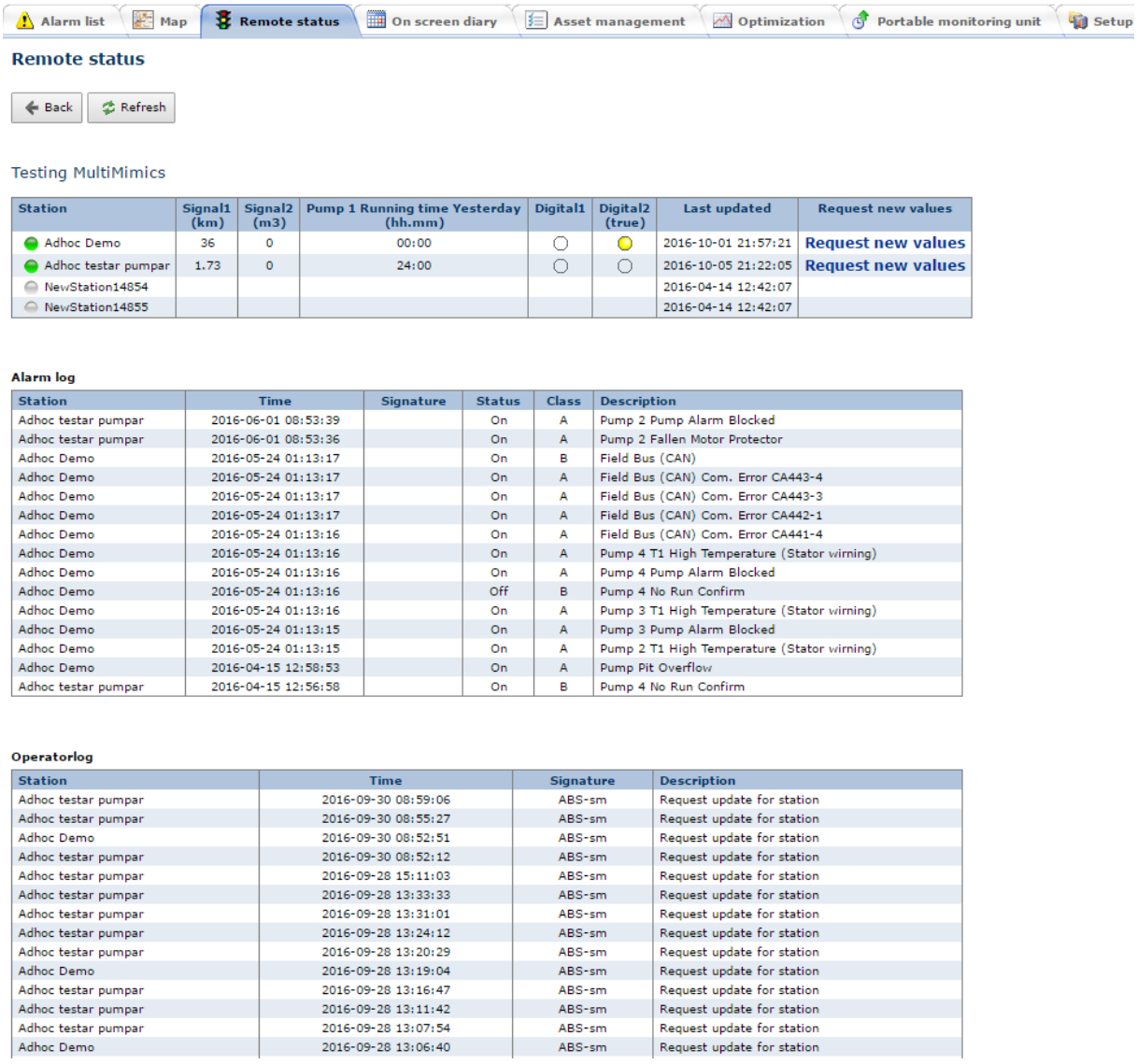


Figure 129 Display Multi Mimics

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