

# AgileOps™

## The Only Complete Alarm Management Solution

AgileOps™ is the industry's first truly unified and complete alarm management execution environment. Take unprecedented command of your plant and alarm system to meet real business needs by earning more and spending less. Do all of the things you wish process control had helped you do all along. It is dynamic alarm management and control for the agile enterprise.

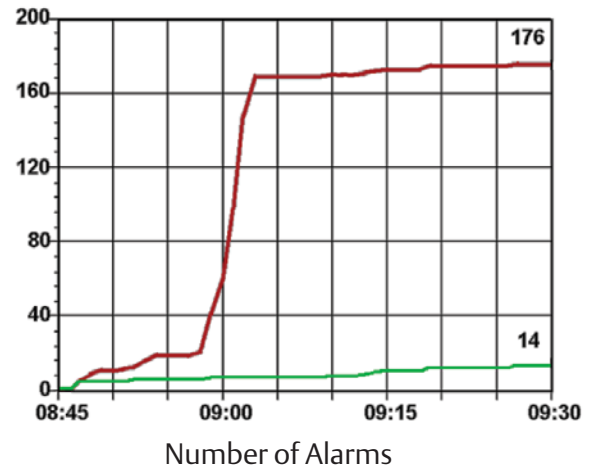
AgileOps enables plants to manage and document alarms and report results to the unit, plant and enterprise levels through AutoDiscovery.

AgileOps software is compliant with API RP1167, IEC 62682 and ISA 18.2 standards and is guaranteed to meet metrics when coupled with Emerson's alarm rationalization services.

AgileOps is compatible with multiple control systems including Emerson DeltaV®, Honeywell Experion® and TDC®, Siemens PCS7® and Invensys Foxboro®, thus delivering a complete alarm management system for an entire site with one or multiple control system manufacturers.

Several processes or modules make up the AgileOps product line. The functions of AgileOps are listed as follows:

- **Master Control System Database (MCSD)** – Central repository for viewing, configuring and managing all alarm data.
- **Dynamic Management (DM)** – Enables alarm configuration changes based on macro (case based) logic as well as micro (transition manager) logic. Ensures smooth alarm transitions from one operating mode to another.
- **List Management (LM)** – Enables management of malfunctioning alarms, broken instrumentation or stale alarms. Reduces nuisance alarms, minimizes length of alarm summary and auto re-enables alarms.
- **Event KPI (EKPI)** – Enterprise level, automatic alarm / event reporting tool with 14 dashboards and 7 standard status reports. Includes development environment for fully customized reports. Generates and emails routine reports or upon exception.



— Before Dynamic Management  
— After Dynamic Management

# Master Control System Database (MCSD)

The Master Control System Database (MCSD) module provides a central source for pre-approved, approved and historical control system parameter settings including alarm system design (rationalization) results. The MCSD is used to configure several modules of AgileOps: Dynamic Management (DM) and List Management (LM) modules. The MCSD greatly enhances your ability to audit, rationalize and control by giving you a unified view of all control system settings.

## Features

- Multi-user interface
- Role-based security
- View multiple control systems
- Alarm rationalization data collection
- View and modify dynamically managed parameters
- View and modify audited, notified and enforced parameters
- View history of modifications
- Nomination and acceptance of control changes with proper authority
- Boundary management

Name	Description	System	P&ID
MYN_FIC101	Column Feed Control - NO CAS	Debut	p&id no 12314567890
MYN_FIC102	Reboiler Steam Flow Control - CAS from TIC101	Debut	p&id no 12314567890
MYN_FIC103	Column Reflux Control - NO CAS	Debut	p&id no 12314567890
MYN_FIC104	Distillate Product Flow Control - CAS from LIC103	Debut	p&id no 12314567890
MYN_FIC105	Column Liquid Bottom Control - CAS from LIC101	Debut4	p&id no 12314567890
MYN_LIC101	Column Sump Level Control - CAS to FIC105	Debut	p&id no 12314567890
MYN_LIC102	Reboiler Condensate Drum Level Control - NO CAS	Debut	p&id no 12314567890
MYN_LIC103	Reflux Receiver Level Control - CAS to FIC104	Debut	p&id no 12314567890
MYN_LIC104	Reflux H2O Boot Drum Level Control - NO CAS	Debut	p&id no 12314567890
MYN_M101	Bottom Pump Motor Control	Debut	p&id no 12314567890
MYN_M102	Distillate Pump Motor Control	Debut	p&id no 12314567890
MYN_PD101	Pressure Differential for PDC101	Debut	p&id no 12314567890
MYN_PDC101	Reflux Drum Differential Pressure Control - NO CAS	Debut	p&id no 12314567890
MYN_PIC101	Column Top Pressure Control - NO CAS	Debut	p&id no 12314567890
MYN_PIC102	Reflux Drum Pressure Control - NO CAS	Debut	p&id no 12314567890
MYN_PT101	Column Bottom Pressure Transmitter	Debut	p&id no 12314567890
MYN_TIC103	Column Temperature Control - CAS to FIC102	Debut	p&id no 12314567890
MYN_TT101	Column Reboiler In Temperature Transmitter	Debut	p&id no 12314567890
MYN_TT102	Column Reboiler Out Temperature Transmitter	Debut	p&id no 12314567890
MYN_TT104	Column Feed Temperature Transmitter	Debut	p&id no 12314567890

## AutoDiscovery

After AutoDiscovery is installed and implemented on the control system, it automatically browses the control system and brings all of the information into AgileOps. After the initial sync with the control system, AutoDiscovery can be set to run on a periodic basis in order to verify that no more points have been added.

If it finds any changes, it will update the AgileOps database to match what is on the control system. This greatly cuts down on user errors when transferring all of the points on the control system to AgileOps.

In addition to finding new points and tags that have been added to the control system, AutoDiscovery will also document any changes that have been made to existing tags. If these modifications are different than what is already in the database, AutoDiscovery will flag them. A controls engineer can then access the log of changes to the database to ensure that important work has not been overwritten.

## Branch and Boundary Management

After gathering all of the tags from the control system, AgileOps offers a user-friendly interface that allows you to view and manage each tag and edit any of its parameters. This allows a user to view any module in AgileOps for a single point. The user can edit any of the alarm parameters through an intuitive interface and add in any comments such as causes, consequences, actions and other alarm data. Any suggested revisions appear in a separate list than the existing database. Before any suggested revisions are implemented, they have to be approved by a user that has permission.

While configuring each branch, the respective boundaries can also be defined. A safety engineer may input a maximum pump safety limit, while the process engineer would input a maximum operating speed. MCSD would catalogue all of these inputted boundary layers and display them in an intuitive format for alarm rationalization members to understand. Once all the boundaries are in place, determining alarm set points, priorities and corrective responses becomes easier to understand and implement.

Each branch in MCSD can also be assigned to a system. These systems are usually designed around pieces of equipment that operate together such as a furnace, a compressor or a pair of towers that run in tandem. These systems can then be dynamically managed individually through the Dynamic Management (DM) module.

**AgileOps** | HOME | MANAGE SYSTEMS | ASSIGN BRANCHES | **MANAGE BRANCHES**

**APPLICATIONS**

- MCS D
- Dynamic Management
- List Management
- EventKPI

**CONFIGURATION**

### Manage Branches

System: All

Select	Edit	System	Branch	Description	Keyword	Entity	Status	P&ID	Equipment
		HtrRxtr	43AI0302	LD PEL FX					
		NucRxtr	43AI0672	O3 to Atmosphere					
		SepScrb	43FC0107	H2O TO SCRBR FM NUKE RX					
		HtrRxtr	43FC0507	NAT GAS TO PREHTR					
		HtrRxtr	43FC0527	NAT GAS TO HTR					
		HtrRxtr	43FC0550	MOLTEN PB TO SWT RX					
		NucRxtr	43FC0605	U238 FM STORAGE					
		HtrRxtr	43FC0608	PB FM STORAGE		MANLOAD			
		NucRxtr	43FC0618	H2 FM NUKE RX					
		HtrRxtr	43FC0668	SUGAR FM STORAGE					

43AI0302=>43FC0668

Properties Copy Branches

Parameter Data | DM | Boundaries | **Alarms**

View: By Alarm

#### Alarms for Selected Point

Select	Promote	Name	Alarm Type	Boundary	Status
		ADVDEV (PIDA) (CDA)	DevOffnormal	[None]	NE
		BADCTL (PIDA) (CDA)	BADGENER	[None]	NE
		BADPV (DACA) (CDA)	BADIOERR	[None]	NE
		DEVII (PIDA) (CDA)	DEVII	[None]	NC
		DEVLO (PIDA) (CDA)	DEVLO	[None]	NE
		OPHI (PIDA) (CDA)	OAH	[None]	NE
		OPLO (PIDA) (CDA)	OAL	[None]	NE
		PVHI (DACA) (CDA)	PVHI	\$-HL / [None]	NE
		PVHIHI (DACA) (CDA)	PVHIHI	[None]	NE
		PVLO (DACA) (CDA)	PVLO	[None]	NE

1) ADVDEV (PIDA) (CDA)>>PVLO (DACA) (CDA)

#### Property Values for Alarm

Edit	Promote	Name	Last Read	Last Proposed	Last Approved	Details
		Source	49.99999999999994			
		Priority	High	Low		Details
		ManagementStatus	Normal			
		Enabled	Enabled			
		Desired Normal	High		High	Details
		Deadband Units	EU			
		Deadband	1 EU			
		Active	Inactive			

Last Approved Date: 10/21/2015 7:10:32 PM

2) Source=>Active

# Dynamic Management Module (DM)

The Dynamic Management (DM) module provides the capability to manage the states and state transition of control system settings according to any set of logic. The DM module allows for both macro and micro configuration and provides a dynamic mechanism to reconfigure the system for start-ups, shutdowns and operating mode changes. Alarm parameters can be configured; therefore, the configuration of control and alarm points is always appropriate for the current operating state. Plant processes are dynamic by nature. The DM module gives you the capability to control your process and its alarms through every process state with accuracy and confidence.

DM is a powerful process management tool that allows the alarm configuration to change as the operating state changes. Therefore, it can effectively eliminate alarm floods during upset conditions and operators can focus on stabilizing the plant rather than responding to unnecessary alarms. DM also includes transition management to help enable alarms to activate only as needed during a process mode change. This prevents critical alarms from being missed during a flood and ensures alarms are available upon startup.

DM delivers the control you need to meet larger operational objectives like never before. The logic tools provided as a part of DM make logic implementation or changes simple, fast and easy to follow. Loop logic can be changed and implemented in a fraction of the time with greater robustness without the use of cumbersome proprietary code.

## Dynamics

Every alarm in the Master Control System Database (MCSD) can be configured to change when the plant changes state (case). In order to determine which case the selected system is currently in, DM uses a variety of real-time readings from instruments, valve positions and other systems' operating statuses. By using key parameters to determine the operating state for a system, alarm floods are minimized with no operator assistance required.

### Manage Branches

System:

Select	Edit	System	Branch	Description	Keyword	Entity	Status	P&ID	Equipment
		HtrRxtr	43AI0302	LD PEL FX					
		NucRxtr	43AI0672	O3 to Atmosphere					
		SepScrb	43FC0107	H2O TO SCRBR FM NUKE RX					
		HtrRxtr	43FC0507	NAT GAS TO PREHTR					
		HtrRxtr	43FC0527	NAT GAS TO HTR					
		HtrRxtr	43FC0550	MOLTEN PB TO SWT RX					
		NucRxtr	43FC0605	U238 FM STORAGE					
		HtrRxtr	43FC0608	PB FM STORAGE		MANLOAD			
		NucRxtr	43FC0618	H2 FM NUKE RX					
		HtrRxtr	43FC0668	SUGAR FM STORAGE					

43AI0302=>43FC0668

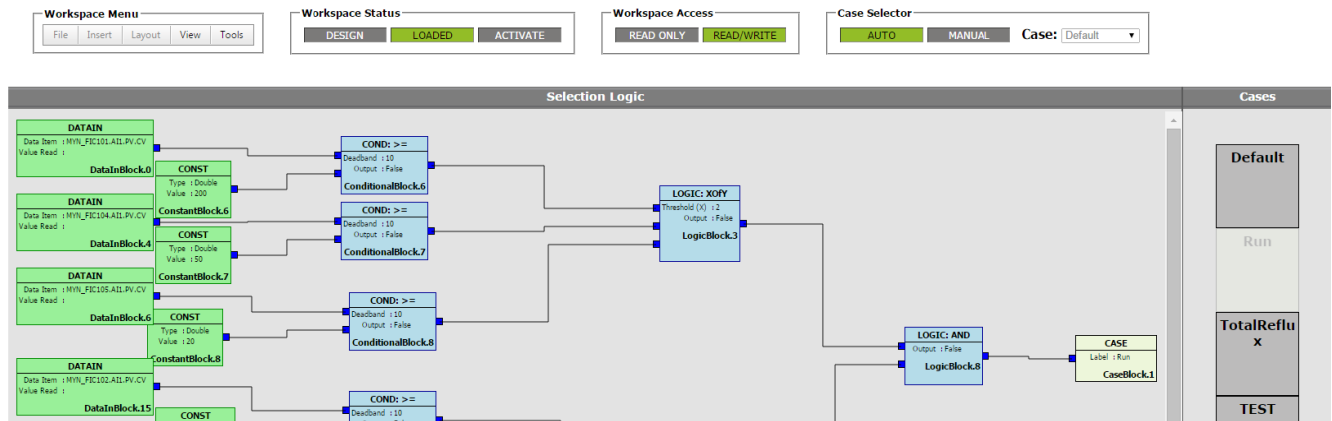
Parameter Data		DM	Boundaries	Alarms	
Edit	Alarm	Actions for Case 1 (Default)	Actions for Case 2 (Run)	Actions for Case 3 (WarmUp)	Actions for Case 4 (Shutdown)
	ADVDEV (PIDA) (CDA)				
	BADCTL (PIDA) (CDA)	Asserted State: Set Alarm Status = Normal	Asserted State: Set Alarm Status = Normal	Asserted State: Set Alarm Status = Normal if Active == Inactive for 5m or after 4h timeout	Asserted State: Set Alarm Status = Shelved

In addition to alarm suppression on case change, the DM module has intelligent enabling built-in. Without intelligent enabling present, minor alarm floods could occur on operating mode change due to some process variables responding slower or faster to a change in operating mode. As shown below, the clear-to-enable and delay timers allow alarms to follow their normal operating path without having an alarm sounding unless it's an abnormal condition. With clear-to-enable and delay timers on parameters that are being changed from case to case, there will not be any more nuisance alarms annunciating before the process variable has time to adjust to the case change.

## Interface

Dynamic management logic is configured through an easy-to-use drag and drop interface. Each case can be created using any of the parameters in the control system. Using the logic blocks given, the user can create any case determinacy logic required. The DM module includes case transition logic as well. In order to prevent cases from chattering, the logic includes deadbands and indeterminacy rules.

### DM Workspace Configure [Debut]



## Perspectives

From an operator’s perspective, everything has already been configured and implemented behind the screen. The operator will not have to perform any actions in order for DM to function. The DM module will follow key process parameters and suppress any alarms that will be irrelevant to the operator depending on the operating state. The operator will be able to access helper screens to see the current status of the DM module and verify that all of the instruments are reading correctly. If the operator believes too many instruments are reading incorrect or are unreliable, he/she will have the ability to push a system into a ‘Default’ case in which has no dynamic management enabled.

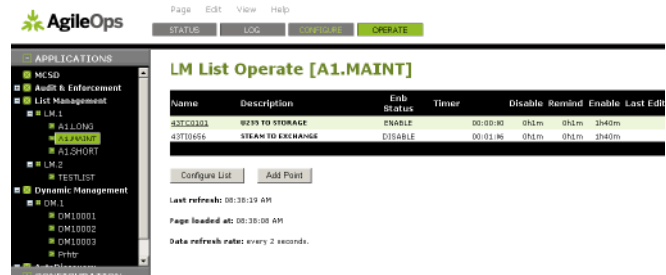
Engineers will be able to use the above interface to configure each system and their respective cases based upon the process conditions. They will also be able to change the alarm configuration based upon the operating condition. Because the DM module has controlled access, it can be configured so that an engineer for unit A will not be able to edit the DM for unit B.

# List Management Software (LM)

The List Management (LM) module is more advanced than any other shelving tool on the market. It not only allows operators to shelve nuisance alarms, but also can shelve stale, standing alarms automatically. LM offers the ability to restrict critical alarms from being shelved and can be set to re-enable after a set period of time or if the alarm is inactive. With the ability to restrict which alarms can be shelved, a reminder that the operator has alarms shelved and the ability for alarms to automatically unshelve themselves, LM is the premiere method to allow operators to shelve alarms.

## Features

- Exclusion list
- Simple right-click entry from Interface Dynamics v3
- Entry validation – verifies roles and restricts multiple entries
- Easy list configuration and management
- Automatic shelving to remove stale alarms from the alarm summary
- Automatic unshelving based on an alarm being inactive or using a fixed un-shelve timer
- State-based shelving



LM can be used by multiple users with different control system responsibilities. Each type of user can have a different set of authorized privileges.

## Alarm Categorization

Though more can be configured, there are three shelving lists that originally exist: short-term, long-term and maintenance. When instruments begin to malfunction and cause the alarm to chatter in and out, the operator can navigate to the LM interface and shelve it on the short or long-term shelving list. If the instrument needs maintenance, the operator can shelve it under the maintenance shelving list. The interface shown below allows an operator to easily pick a configured list and specify which alarm to shelve and whether to shelve immediately or not. After shelving multiple alarms, it is very easy for operators and engineers to keep track of which alarms are shelved by accessing a list of all alarms that are currently shelved in each specific list.

### LM List Operate [Debut.Short]

#### Overview

Description	Area	Enabled	Total Alarms	Shelved Alarms	Active Alarms
Debutanizer Short List	Debutanizer	Enabled	1	1	1

#### Alarm Status/Configuration

Alarm	Shelved	Active	Timer	Disable	Remind	Enable	Status	Comments
MYN_FIC102.ALM1.LO_ALM	Shelved	Active	00:01:43	0h2m	0h2m	0h30m	Running	Delete

Configure List    Add Alarm

Page last updated: 3:21:07 PM

## Auto Bookkeeping

The remind time is the maximum length of time that an alarm will remain shelved independent of the status of the alarm. This is used to unshelve alarms that are still annunciating when they were expected to clear within a given period of time. The enable time is also known as the clear-to-enable time. This is the continuous period of time that an alarm must be inactive before it will be unshelved. The disable timer will shelve an alarm after it has been active for the timer length. During normal operations, operators will use the immediate disable option that will immediately shelve the alarm. The configurable disable time is part of permanent shelving.

## Auto Shelving

Automatic shelving is designed during rationalization and is used to solve stale alarm issues. When alarms are configured with automatic shelving, they will annunciate for a set period of time and then automatically shelve themselves for a variable period of time. In order for the point to re-enable, the process variable must remain in a non-alarmable state for a configurable clear-to-enable time.

Automatic shelving is used on points that the operator’s corrective action does not clear the alarm. This causes alarms to only appear on the operator’s alarm summary as soon as they occur, rather than the entire time they are in the alarm state. Examples would include pump statuses, first-outs and some hand switches.

## Exclusion Lists

There are some critical alarms that should never be shelved due to the consequences that could arise if they are not responded to. Engineers have the ability to create exclusion lists that prevent any operators from shelving these alarms. With controlled access in LM by point, user and area, you will never have to worry about critical process and safety alarms getting suppressed inadvertently.

**AgileOps** EXCLUSION LISTS

APPLICATIONS

- MCS
- AutoDiscovery
- PCS7VB
- List Management
  - Auto Shelve
  - Maint. / TAR
  - Long
  - Short
- Dynamic Management
  - DM1
    - DAbatCP
    - DAbatE

CONFIGURATION

**Exclusion Lists**

Selected Exclusion List: MaintTARExclusion

List	Area	Description	Edit	Delete
AutoShelveExclusion	D UNIT	Exclusion List for Auto-Shelving Group	Edit	Delete
ShortExclusion	D UNIT	Exclusion List for Short Term Group	Edit	Delete
LongExclusion	D UNIT	Exclusion List for Long Term Group	Edit	Delete
MaintTARExclusion	D UNIT	Exclusion List for Maint. / TAR Group	Edit	Delete

Add New Exclusion List

**Excluded Alarms for MaintTARExclusion**

Select	Device	Alarm
<input type="checkbox"/>	DE1734/_	OFFNRML
<input type="checkbox"/>	DE1744/_	OFFNRML
<input type="checkbox"/>	DEA104/_	OFFNRML
<input type="checkbox"/>	DEA1055/_	OFFNRML
<input type="checkbox"/>	DEA1065/_	OFFNRML
<input type="checkbox"/>	DEA1075/_	OFFNRML
<input type="checkbox"/>	DEA1554/_	OFFNRML
<input type="checkbox"/>	DEA1707/_	OFFNRML
<input type="checkbox"/>	DEA172/_	OFFNRML
<input type="checkbox"/>	DEA2008/_	OFFNRML

Page size: 10 291 items in 30 pages

Select All Deselect All Allow Selected Alarms Import Excluded Alarms

**Available Alarms for MaintTARExclusion**

Select	Device	Alarm
<input type="checkbox"/>	D838AMBALM/_	OFFNRML
<input type="checkbox"/>	D838REDALM/_	OFFNRML
<input type="checkbox"/>	DD1179/_	OFFNRML

## EventKPI (EKPI)

EventKPI (EKPI) allows the measurement, tracking and reporting of key performance indicators for events occurring in your facility. EKPI reports alarm metrics as a result of data analysis which it collects automatically from one or more control systems. Metrics can be analyzed by the minute, hourly, daily, weekly, monthly or on a yearly basis. EKPI is designed as an enterprise application that provides the necessary detailed information from local unit personnel up through complex-wide and cross facility views for the enterprise.

In addition to the standard dashboards and reports, Analyst users can create ad-hoc reports, generate new reports and publish them to all users. Reporter users can trigger reports to be run automatically and emailed to them if certain criteria are met or on a preset schedule.

EKPI provides the necessary information to document and support improvements of Alarm Management, risk reduction and human factor management for HSE and benchmarking. Additionally, these reports can be helpful for organizations focused on Six Sigma or other continual improvement methodology.

In today's highly competitive environment, where companies need ready-to-deploy, powerful solutions to incorporate business intelligence (BI) into their enterprise portals, EKPI web portions assure seamless integration with Microsoft® SharePoint® corporate portals. The web portions also transparently integrate and communicate out-of-the-box with SharePoint functionality including Tasks and Discussions.

A typical Microsoft SharePoint portal includes a number of web portions that visually consolidate content from multiple sources and display it all together on a single page. This mechanism allows decision makers to make informed and effective decisions by viewing pertinent information from all relevant angles. An example portal application with AgileOps web parts can allow users to:

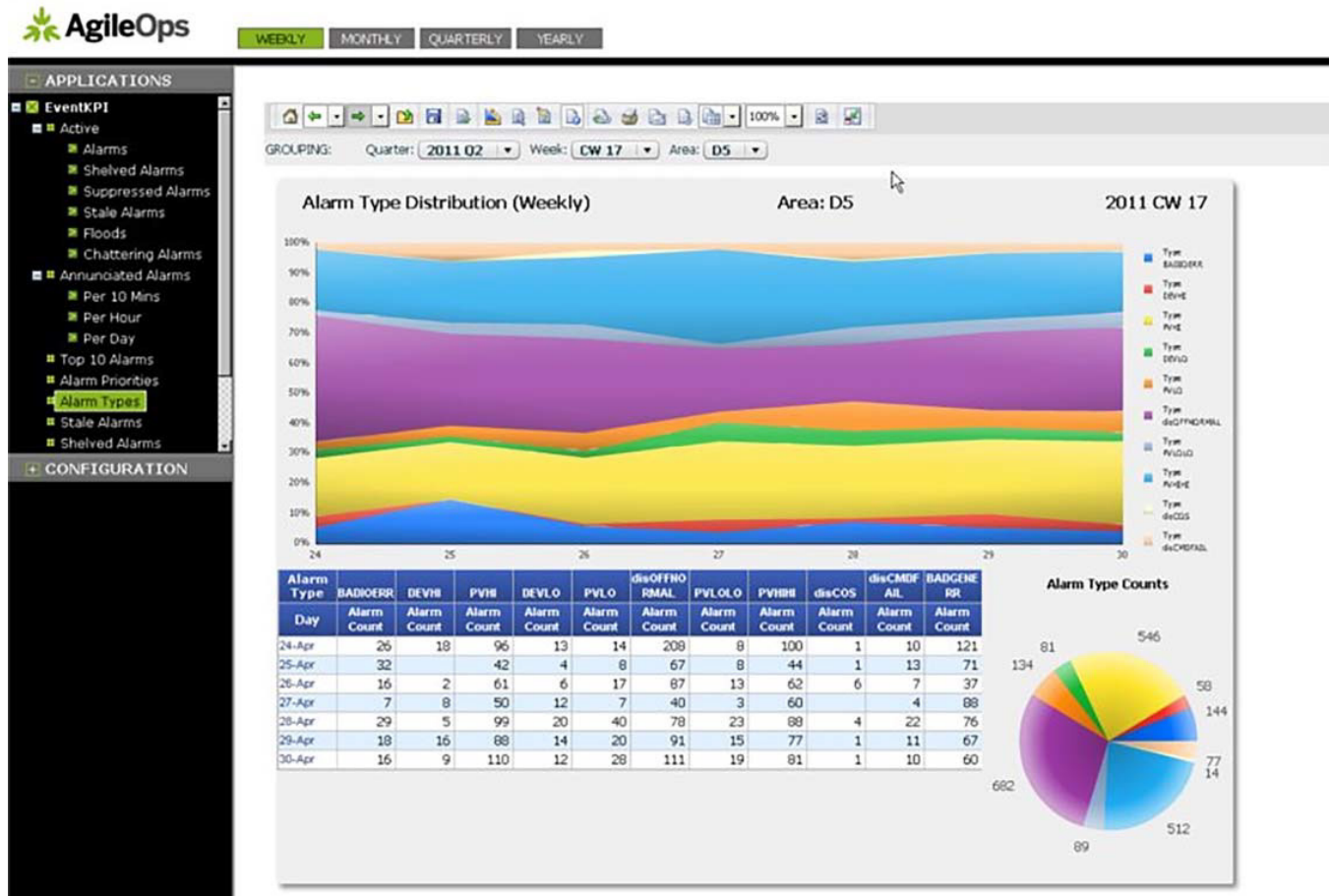
- View and interact with personalized information, utilizing corporate access privileges related to their job function, along with other relevant information on the same portal page.
- Interact with, analyze and highlight critical EKPI data through charts, grids, heat maps and other visualizations transparently across web portions.
- Collaborate with colleagues by creating alarm management tasks and start discussions whenever action items need to be defined.
- Add a scorecard or combine with an existing scorecard alarm management and operations excellence KPIs.
- Create a workflow where the cause is investigated and the action is taken in different web portions on the same page.





Whether at your desk, on your iPad® or on your mobile device, EKPI gives you the capability to monitor your alarm system performance, archive events or analyze detailed event data.

EKPI provides the metrics in line with the following guidelines, standards and regulations: EEMUA 191, ISA 8.2, API RP1167, 49CFR192.631 and 49CFR195.446.



©2018 Emerson. All rights reserved.

The Emerson logo is a trademark and service mark of Emerson Electric Co. [Brand name] is a mark of one of the Emerson Automation Solutions family of business units. All other marks are property of their respective owners.

The contents of this publication are presented for information purposes only, and while effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services describe herein or their use or applicability. All sales are governed by our terms and conditions, which are available on request, We reserve the right to modify or improve the designs or specifications of our products an any time without notice.

