

Alarm Management Services

- Know and improve alarm performance
- Integrate completely with almost any control system
- Increase operator efficiency
- Comply with regulatory and industry standards

The Value of Alarm Management

Alarm Management ensures that the correct alarms are annunciated to the operator at all times. This includes all modes of process operation. Poorly configured alarms in the control system lead to millions of dollars of direct losses per year and even more in production losses. Alarm “floods” lead to unsafe conditions and increase the probability of incidents resulting in financial loss.

Alarm standards in industrial processes are defined by ISA 18.2 and IEC 62682. These standards are recognized by many regulatory organizations around the world including the Occupational Safety and Health Administration (OSHA). Non-compliance with these standards can lead to fines and even loss of operational permits.

We suggest any alarm flood, defined by ISA 18.2 and IEC 62682 as more than 10 alarms occurring in a 10-minute period on a single alarm screen (one operator position), be treated as a safety near-miss.

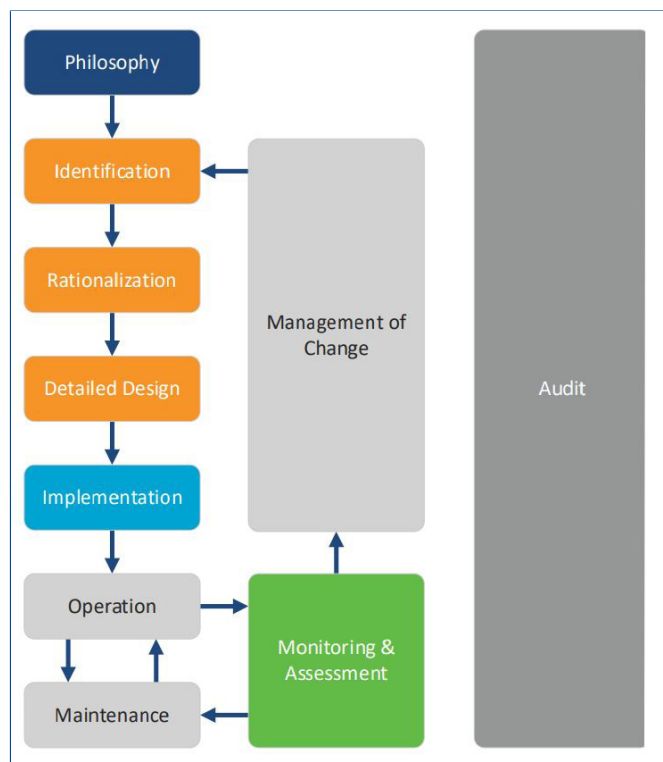
Benefits of Alarm Management

Know and improve your alarm performance. Emerson provides alarm reports based on an analysis of your event chronicle file through DeltaV Analyze (for DeltaV users only) or AgileOps EventKPI (for multiple control systems across sites). From that analysis, we create a report that details your current alarm performance and compares your alarm KPIs against the industry standard. The report identifies the modules and devices with the most frequently occurring alarms and presents them in order of frequency. The report also makes recommendations on where to begin with dynamic rationalization.

Integrate completely with your DCS. Alarm service remediation leverages AgileOps features, capabilities and solutions to address alarm floods and improve alarm performance deficiencies identified in alarm reports.

Increase operator efficiency. Dynamic alarm rationalization can significantly calm the control room, allowing operators to focus on production. Operators will be able to respond to alarms quickly and effectively, instead of being inundated by alarm floods and nuisance alarms.

Comply with regulatory and industry standards. The alarm report, in conjunction with follow-up remediation, administered by Emerson’s Operator Performance experts, will address shortcomings in your alarm performance and improve your alignment to regulatory and industry standards.



ISA 18.2 & IEC 62682 Lifecycle with Service and Software Support

Alarm Management Services Overview

Emerson's Alarm Management Services focuses on the complete Alarm Management Lifecycle. From alarm philosophy through alarm rationalization and implementation, we can help you align your alarm system with ISA 18.2 and IEC 62682 standards.

Alarm Philosophy Services. Emerson performs both corporate and site Alarm Philosophy reviews. The Alarm Management standard requires a documented process that defines the objectives of the alarm system and governs the work process and standards for alarming.

Alarm Assessments. Emerson analyzes alarm data and identifies areas of improvement. A report is available that provides recommendations based specifically on your site's alarm performance. Your event chronicle data is processed to produce an alarm analysis. From that analysis, Emerson creates a report that details your current alarm performance and compares the site's alarm KPIs against the industry standard KPIs. The report provides methodologies to remediate poor alarm performance e.g. alarm rationalization and nuisance alarm elimination. These alarm assessments can be ordered individually or as discounted bundles of reports.

Alarm Rationalization. The step for designing an alarm system, Alarm Rationalization, should review every point in your control system. Alarm Rationalization consists of:

- **Alarm Management Design Preparation and Training**
Emerson will review your Alarm Philosophy Document and the Alarm Management database which provides the basis from which the dynamic alarm systems will be built. Kickoff meeting with preparatory training of your design team members so that all members are aware of the philosophy, objectives and capabilities of the Alarm Management systems to be implemented.
- **Alarm Management System Development Phase.** In leading the alarm design process, Emerson will provide its engineering knowledge to update the current alarm configuration. System boundaries and case logic for each system will be created. Individual alarms including causes, consequences, and suggested responses along with case-dependent and non-case-dependent alarm settings will be determined and documented. A rationalization report will be issued to you for review and comment. Upon receipt of your comments, Emerson will hold a face to face review on site. Necessary revisions to the management system updates will

be made after the review is completed and all design changes pass your MOC approval process.

- **Alarm Management Implementation.** Using the final revision from the above step, Emerson will conduct the on-site Alarm Management system configuration with your personnel actively involved in verification and approval of design.
- **Operator Training.** Emerson will provide basic Operator Training covering Alarm Management fundamentals, use of the software, and overview of the configuration prepared from the rationalization design.

Assessment and Monitoring

The alarm report provides an evaluation of your alarm performance, a comparison of your key alarm performance indicators versus ISA 18.2 targets and offers recommendations for improving deficiencies found in your alarm performance. You can use this report to establish a baseline to monitor your system's alarm performance over time.

To obtain a report, Emerson will require access to your Event Chronicle/Event Journal. The typical turnaround time to receive your report is 5 business days. Emerson provides individual and/or multiple reports. 4 and 12 alarm report bundles are available at a discount.

Alarm Flood / Nuisance Alarm Remediation

An alarm flood is defined as 10 or more annunciated alarms in any 10-minute period per operator station. A nuisance alarm is an alarm that annunciates excessively, unnecessarily, or does not return to normal after the correct response is taken (e.g. chattering, fleeting, or stale alarms).

Alarm performance deficiencies identified in the alarm reports can be addressed through a variety of remediations by leveraging AgileOps and DeltaV Alarm features e.g. conditional alarming, first out alarming and dynamic flood suppression.

Alarm Rationalization

We are sensitive to the issue regarding the limited availability of process engineering personnel in many plants. We have developed a process to reduce the time taken in the rationalization stage by 60%. This optional process allows Emerson to pre-rationalize all alarms and then deliver the preliminary results to the client for their internal review. Subsequent client meetings reconcile the recommendations with the client. Using this process, the time requirement for your personnel is reduced by ~60%.

Dynamic Pre-Rationalization Method™

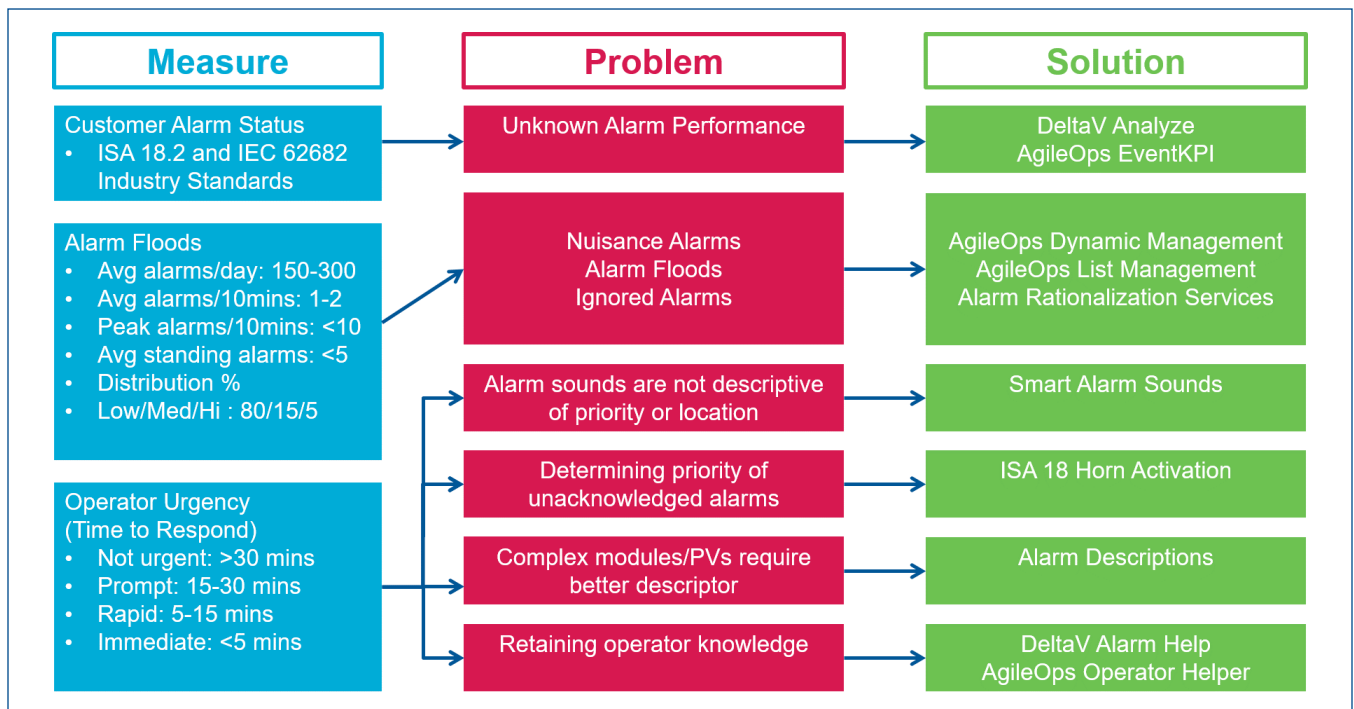
Our customers are rewarded with an effective full Dynamic Pre-Rationalization for consistent alarm management. Starting off with the proper ground work of an efficient process, every project begins with a review or development of an Alarm Management Philosophy Document and continues with an up-front review of the database, and continues with systems, boundaries and case logic. Using the Dynamic Pre-Rationalization™ process, we will fully and dynamically rationalize each point for results that meet ISA 18.2 metrics while saving you hours and hours of rationalization time.

By utilizing the Dynamic Pre-Rationalization process, Emerson can help you align your alarm system with ISA 18.2 and IEC 62682 standards.

Combined with our Alarm Rationalization Services, we utilize the AgileOps Master Control System Database (MCSD), a real-time application that manages alarm specification changes. MCSD has the ability to read and write alarm rationalization results directly into the control system configuration database, saving substantial control engineering effort and eliminating opportunity for human error.

DeltaV Alarm Remediation Features

DeltaV has several alarm remediation features that are native to the software and can be used to address alarm floods and nuisance alarms. These features, and additional AgileOps features, are highlighted in the DeltaV Alarm Features Chart and are compared to the specific ISA 18.2 KPIs and alarm related problems that can manifest themselves.



DeltaV System Compatibility

These DeltaV alarm features are also version dependent. Earlier versions of DeltaV will have fewer features to address alarm issues at your disposal compared to the latest version of DeltaV. Please review the DeltaV Alarm Features Version Comparison chart below to understand what capabilities reside in your version of DeltaV.

DeltaV Alarm Features and Solutions	DeltaV v14.x	DeltaV v13.x	DeltaV v12.x	DeltaV v11.x	DeltaV v10.x	DeltaV v9.x	DeltaV v8.x
Conditional Alarming	✓	✓	✓	✓	✓	✓	✓
Alarm Suppression	✓	✓	✓	✓	✓	✓	✓
SIS Alarming	✓	✓	✓	✓	✓	✓	✓
Hardware Alarms	✓	✓	✓	✓	✓	✓	✓
DeltaV Analyze Updates*	✓	✓	✓	✓	✓	✓	✓
Built-in Conditional Alarming	✓	✓	✓	✓	✓		
Dynamic Alarming Module Template	✓	✓	✓	✓	✓		
First-Out Alarming Module Template	✓	✓	✓	✓	✓		
Alarm Help*	✓	✓	✓	✓			
Contextual Alarm Knowledge	✓	✓	✓	✓			
Smart Switch Alarms to Operator	✓	✓	✓	✓			
Alarm Descriptions	✓	✓	✓				
Alarm Sounds	✓	✓	✓				
Alarm Sounds for expected actions	✓	✓	✓				
Unambiguous ID of each module alarm	✓	✓	✓				
Alarm Mosaic*	✓	✓					
Native Alarm Setting Alarm Reports	✓	✓					
Enhanced Suppressed Alarm Lists	✓	✓					
Suppressed Alarm Ownership	✓	✓					
Alarm Timeline	✓	✓					
Capability to Change Module Alarm Priorities in the Online Mode	✓	✓					

AgileOps System Compatibility	DeltaV v14.x	DeltaV v13.x	DeltaV v12.x	DeltaV v11.x	DeltaV v10.x	DeltaV v9.x	DeltaV v8.x
Master Alarm Database (MCSD)	✓	✓	✓				
Conditional Alarming (DM)	✓	✓	✓				
Dynamic Alarming (DM)	✓	✓	✓				
Alarm Suppression (DM, LM)	✓	✓	✓				
Alarm Shelving (LM)	✓	✓	✓				
Alarm Reporting (EventKPI)	✓	✓	✓				

*DeltaV v11.3 requires the Customer to be on or have bridge support.

Ordering Information

Description	Model Number
Individual Alarm Report	VE9125S01
4 Alarm Report Bundle *	VE9125S04
12 Alarm Report Bundle *	VE9125S12
Alarm Rationalization **	Consult your local Emerson office or Emerson's Control and Operator Performance experts for availability, quotation and order entry.

*The 4 and 12 Alarm Report Bundles are valid for 1 year after purchase.

**AgileOps, Alarm Help, Alarm Mosaic and DeltaV Analyze products can be purchased separately from this service.

Related Alarm Management Products

Related alarm products are available in addition to the services and solutions documented here.

- AgileOps
- DeltaV Alarm Help
- DeltaV Analyze
- DeltaV Alarm Mosaic

Supported products:

- DeltaV and non-DeltaV control systems

Prerequisites

- DeltaV v8.4 or later
- Access to customer's Event Chronicle file
- Enrollment in Guardian support is not required

Certification and Training

- Alarm Certification
 - Alarm Management 7620
 - AgileOps Alarm Management Software 7621
- Field Service Certification

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