ALARM MANAGEMENT

exida Can Show you the Way

Alarm Management: Set a new standard for Performance, Safety, and Reliability

Alarm Management affects the bottom line. A well-tuned alarm system can help you run your process closer to its ideal operating point - leading to higher yields, reduced production costs, increased throughput, and higher quality, all of which add up to higher profits. Poor alarm management, on the other hand, is one of the leading causes of unplanned downtime, and has been a major contributor to some of the worst industrial accidents on record. The accidents at the Texas City refinery , Three Mile Island, and the Buncefield Oil Depot proved that poor alarm management and process safety incidents are linked . Release of the new ISA 18.2 standard on alarm management, which is expected to be adopted by OSHA and insurance agencies as good engineering practice, will increase the scrutiny on companies to demonstrate that they are following best practices.

Alarm Management to Improve Operations Performance

Many facilities show signs of poor alarm management. These rob operations of efficiency and productivity, while making it difficult to run at peak performance. They also have a significant impact on the effectiveness of your operators, whose job is to respond to alarms quickly and accurately. Exida can analyze your system and recommend the changes necessary to eliminate your alarm management issues and improve performance.

Symptom	Cause(s)
Alarms are ignored by the operator	"Nuisance" Alarms (Chattering Alarms and Fleeting Alarms), Faulty hardware, Redundant Alarms, Cascading Alarms, Incorrect alarm settings, Alarms have not been rationalized
When alarms occur, operators don't know how to respond	Lack of training and insufficient alarm response procedures
Minor plant upsets generate a large number of alarms	Average alarm load is too high. Redundant alarms, Cascading alarms, Alarms have not been rationalized
The alarm display is full of alarms, even when there is nothing wrong	"Nuisance" Alarms (Chattering Alarms and Fleeting Alarms), Faulty hardware, Redundant Alarms, Cascading Alarms, Incorrect alarm settings, Alarms have not been rationalized
Some alarms are present on the alarm display continuously for long periods of time (> 24 hours)	Corrective action is ineffective, Equipment broken or out of service, Change in plant conditions
During an upset, operators are flooded with so many alarms that they don't know which ones are the most important	Incorrect prioritization of alarms. Not using advanced alarm techniques (e.g. state-based alarming)
Alarm settings are changed from one operator to the next	Lack of Management of Change Procedures

Improve the Safety of your Plant and Reduce Risk

In a safety critical process, operator intervention and alarms are a first layer of protection for preventing a process upset from escalating into a more serious event. Optimizing the operator's performance (reducing the Probability of Failure on Demand – PFD) can reduce both your risk and Safety Integrity Level (SIL) requirements for your system. The lower the required SIL level, the less expensive and complicated the Safety Instrumented System (SIS), and the longer the proof test interval. Exida, as a leader in functional safety, can help you take a holistic and coordinated approach to the design of the safety system and the alarm system – ensuring that you minimize cost and risk. To ensure proper treatment of safety alarms we can help you take the design information generated from the safety lifecycle (HAZOPs and PHAs) and integrate it into the alarm system design.

Good Alarm Management is a Journey

Alarm management is not a one-time activity, rather it is a process that requires continuous attention. The new ISA-18.2 standard "Alarm Management for the Process Industries" provides the blueprint for effective alarm management following a lifecycle approach. The EEMUA 191 "defacto" standard provides a wealth of best practices and practical guidelines. Exida can audit your current practices and procedures, identify gaps, and help you understand what the new standard means to your company. We can also help you put in place the tools and practices / procedures to follow the standard to improved performance.

Tools & Services to Help You Deliver Benefits to your Bottom Line….

New system…Existing System…Migration of a Legacy System…No matter what your situation, the alarm management experts at exida can help you improve its performance. We offer the following services:

1. **Develop, Adopt, & Maintain an Alarm Philosophy** – Establish and document the standards for how your site or company will do alarm management (prioritization, HMI design, testing, training, alarm suppression, management of change, performance benchmarks).

2. **Alarm Documentation & Rationalization** – Review, analyze, and justify potential alarms to create the minimum set needed to keep the process safe and under control. Document each alarm's priority, classification, limit, cause, consequence, and corrective action in a Master Alarm Database.

3. **HMI Design** – Design the HMI to help operators "Detect, Diagnose, and Respond" to each alarm quickly and correctly through the optimal use of color, text, patterns, navigation, screen layout, and suppression.

4. **Operator Training** – Train the operators so they are comfortable with the system and trust it to help them do their job.

5. **Collect Data and Benchmark System Performance** – Compare alarm system data to recommended performance metrics (average alarm load, number of alarms during a flood, priority distribution, and alarm frequency).

6. **Resolve Nuisance Alarms (bad actor resolution)** – Identify nuisance alarms (chattering, fleeting, or stale alarms) and create a resolution plan.

7. **Real time Alarm Management** – Use advanced alarming methods, such as state-based alarming, to "fine-tune" the system so that operators are presented with alarms only when they are important and meaningful.

8. **Alarm System "Tuneup"** – Periodic review of the alarm system performance to keep it operating at peak performance .

9. **Alarm Audit and Enforcement** – Review alarm management practices and procedures to identify areas of improvement / nonconformance .

Training to Get the knowledge into the minds of the people who need it

Introduction to Alarm Management – (2 days): Covers the principles of alarm management following the ISA-18.2 alarm management lifecycle and best practices of EEMUA 191.

Alarm Management for Process Safety Systems – (2 days) – Covers the special considerations for the philosophy, rationalization, design, operation, and maintenance of safety alarms in conjunction with the IEC 61511 / ISA84 safety standard.

Custom courses, such as Alarm Management for Batch Processes, are available upon request.

Industry Affiliations

Exida personnel are heavily involved with the ongoing development of the key industry standards and guidelines.

For more information:

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