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The Case for Standards-Based Alarming

Nuisance Alarms are disruptive, costly, and potentially dangerous

One of Aesop's most famous tales is about a little boy who repeatedly cried wolf when there was no wolf. Sadly, one day there was a wolf, but due to his many false alarms, no one paid any attention to his cries on the day it really mattered.

An amusing story for children, but one with real world implications for anyone managing critical processes.

Nuisance alarms can be catastrophic.

On July 24, 1994, the Texaco Milford Have refinery in Pembroke, South Wales was struck by lightning causing multiple units to shut down. For six hours, operators tried to restart the process. Lacking meaningful process control status information, the plant exploded and multiple fires broke out. The investigation revealed that lack of comprehensive alarm management was a major factor in the incident. Operators were simply overwhelmed with a flood of alarms, and ignored them as more of a nuisance than a help. Thankfully there were no fatalities, but 26 people were injured, and plant operations were completely disrupted.

Nuisance alarms can be costly.

Consider a water plant operator receiving repeated false alarms from a disinfectant pump. Annoyed by the constant interruption, she turns off the alarm. With the alarm soon forgotten, time goes by and shifts change without further disturbances until the lab reports high levels of contaminant in the finished water. Days of production go down the drain along with possible service interruptions.

This does not have to happen.

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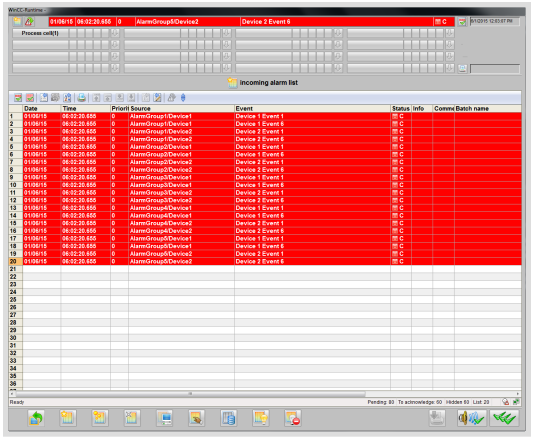
The source of nuisance alarms

Often the source of nuisance alarms is a lack of systematic planning and the absence of alarm system standards. Alarms are often “tacked on” as an afterthought to system design and implementation. Because alarms are essentially “free”, they are often added without the prudence associated with more costly additions. To make things worse, multiple parties including integrators, engineers, operators and managers may have the ability to independently determine which variables and values seem important. It is no wonder that operators can be overwhelmed with nuisance alarms.



This lack comprehensive design will also produce other alarm management problems:

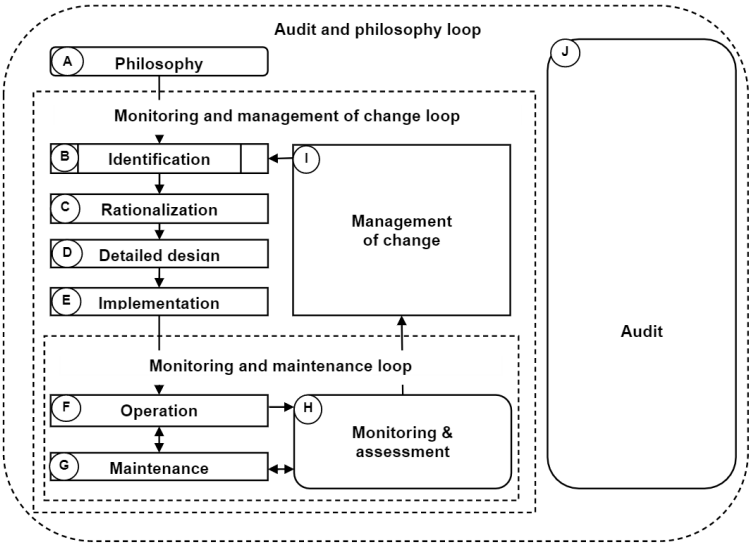
- Redundant alarms. Multiple alarms that indicate the same event.
- Alarm floods. Multiple alarms in a short time sometimes triggered by a single event that can mask a dangerous condition and overwhelm operators.
- Alarms without response. These alarms have no documented cause or required response.
- Stale alarms. Alarms that remain in alarm for extended periods of time without response and clutter the system.
- Alarms with wrong priority, often due to too many “priority” alarm designations or inconsistent use of alarm priority.
- Suppressed alarms. Alarms that are suppressed without follow up action or appropriate authorization.

The Solution to nuisance alarms

The solution to nuisance alarms is Standards Based Alarming (SBA) - a comprehensive alarm management lifecycle to manage which alarms operators receive and how they receive them.

An SBA system is designed with input from the same stakeholders; operators, engineers, integrators, and management, but is done in a manner that integrates alarms into a single cohesive and prioritized system. SBA is implemented in compliance with accepted industry practices as detailed in ANSI/ISA-18.2-2016. SBA can be retrofitted into existing plants or become part of the design of new plants and systems.

This practice follows an iterative process detailed in the diagram to the right.[1] It starts with creating an Alarm Philosophy that governs all alarm creation, keeping it consistent. This is followed by identification of potential alarms, team rationalization (or justification) of the actual alarms that will be implemented, and then detailed design and implementation. Once in operation alarms are subject to periodic assessment and updates.



Alarm Management Lifecycle

Let Instrulogic help.

With over 25 years of measurement and control experience, Instrulogic brings a wealth of expertise to alarm management. Let us help you:

- Develop and document a customized Alarm Philosophy based on ANSI/ ISA-18.2-2016
- Create a Master Alarm Database with all identified potential alarms listed
- Decide which potential alarms will be implemented
- Produce a detailed alarm design
- Perform the implementation
- Monitor and assess alarm effectiveness
- Manage and implement necessary changes.

Minimizing the potential for nuisance alarms maximizes the effectiveness of authentic alarms.

[1] The Alarm Management Lifecycle diagram is taken from ANSI/ISA -18.2-2016. Management of Alarm Systems for Process Industries. Copyright 2016 by ISA. Used with permission. All rights reserved.