

# Alarm

## Management

An alarm system is a critical tool for managing the operation of process plants. Even well designed and maintained systems may become ineffective, leaving many plants vulnerable in terms of safety and financial loss. In order for an alarm system to be an effective tool, alarms must be relevant, unique, timely, prioritized and understandable. Kenexis helps our clients to make alarm systems more effective by assisting in the design and ongoing mechanical integrity programs. This assistance includes alarm prioritization and rationalization studies, mechanical integrity program / test plan development, and alarm performance assessment.

### Symptoms of Poor Alarm System Design:

- ◆ Minor upsets generate a significant number of alarms
- ◆ When some alarms activate, the operator is unsure how to respond
- ◆ There are active alarms the process is operating normally
- ◆ Alarms occur that do not require any operator response
- ◆ Routine operations result in numerous alarms to do not seem to serve any purpose
- ◆ Alarms remain active for very long periods of time
- ◆ There are no plant-wide guidelines for how alarms should be implemented



**The *Kenexis Alarm Management Solution*™ helps to ensure the ongoing integrity of your alarm systems by risk based design, mechanical integrity programs, and continuous performance assessment**

**✓ Alarm Prioritization and Rationalization**

A good alarm system design begins with a prioritization and rationalization study. The purpose of this study is to determine which of the proposed alarms are truly necessary and what priority should be assigned. The priority of the alarms then serves as a basis for subsequent mechanical integrity programs and the design of annunciation systems.

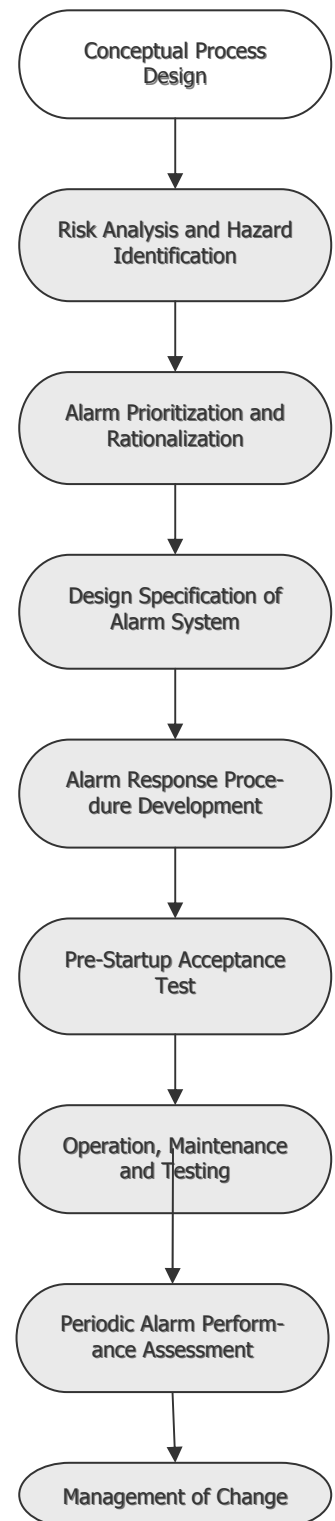
**✓ Mechanical Integrity Program Development**

In addition to being an operational tool, alarm systems are a critical process safeguard. They are so important that process safety regulations, such as the OSHA Process Safety Management Standard require that a mechanical integrity program be developed to ensure their safe operation. A mechanical integrity program should include written test procedures for testing the alarm system including both the field sensors and annunciation equipment.

**✓ Alarm System Performance Assessment**

Even a well designed alarm system may not provide optimum performance. Unforeseen operating conditions or inadequate equipment performance may result in the generation of excessive alarms or the inhibition of necessary alarms. In addition, alarm systems tend to degrade over time as a result of poor change management and the addition of numerous alarms without following a rigorous alarm prioritization and rationalization process. Poor performance manifests itself in detectable patterns that can readily be identified using software tools. These detectable patterns include alarm floods, nuisance alarms, chattering alarms, standing alarms, correlated alarms, and disabled alarms. Kenexis helps to identify alarm system problems by using a variety of data mining software tools and then to assist in developing solutions to the root causes of alarm problems. Kenexis is a full service process risk management company with expertise in process engineering. Because we know process design, equipment performance limitations, and process hazards, we can offer more comprehensive solutions than simply deleting or re-ranging alarms that may have a safety critical purpose.

Kenexis provides alarm management services in a variety of ways to best serve our clients. We offer project-by-project assistance for prioritization studies and mechanical integrity program development. Alarm system performance assessment can be executed on a single "snapshot" in time to quickly improve performance, or a long-term contracts where quarterly performance assessments are performed in order to provide the highest value and best performance for alarm systems. Periodic assessment allows alarm system performance to always be at its peak and ensure that any problem developments are addressed quickly.



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