Advanced Alarm Management Solutions

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ABSTRACT

Alarm systems are often the back stop for controlling process safety incidents, but are often not effective due to alarm flooding or inadequate response to alarms. The need for a sophisticated alarm management system is important; helping operators handle the most demanding and critical situations and avoiding costly downtime. Many plants operate with too many non-essential and nuisance alarms which confuse operators and obscure the real issue, which leads to the operator's inability to quickly identify the real problems and take the necessary actions. Poor alarm management often leads to lost time accident, injury or death, equipment destruction and process upset.

The ISA SP 18.2 Standard establishes terminology and practices for alarm systems, including an alarm philosophy, identification, rationalization, design, installation, operation, maintenance and modification of work processes to effectively maintain an alarm system over time. One plant (case study to be presented), faced with a degraded alarm system with hundreds of standing and nuisances alarms and an alarm system that the operators were ignoring, needed immediate help. This plant's current alarm management process could not meet the daily alarm demands. It was cumbersome to manage the alarms and the operations were at a level that posed risks to the plant's water treatment processes. Additionally, its alarm growth demand was anticipated to increase significantly in the next 2-10 years and future projects would further stress the alarm management system. After installing ABB's latest Alarm Management tools, the customer was able to reduce standing alarms to an average of just ten. The entire alarm management processes & procedures were improved which increased the plan's treatment efficiencies.

Alarm system management includes multiple work processes throughout the alarm system lifecycle. ISA SP 18.2 proposes Key Performance Indicators (KPI). These KPI are easy to measure and can be used to estimate the quality of an alarm system. The costs to implement an effective alarm management system pale in comparison to the avoided costs.

ABOUT THE AUTHORS

Thomas Maczuzak *has over 20 years of I&C experience for various types of plants in the municipal water, electric generation, and industrial sectors. His experience has spanned all types of major automation and various types of instrumentation. He currently specializes in advanced alarm management design, customer training, and customer service/modifications. Mr. Maczuzak has a JD from Cleveland Marshall College of Law, MA and MBA from Kent State University.*

Brian Heimbigner *has over 25 years of projects and applications experience in the water sector in municipal water and wastewater, electrical power generation, pulp & paper, chemical production, and mining. Mr. Heimbigner has a BSChE and a MBA, both from the University of Washington.*