DSM improves plant safety and profitability through alarm optimization

Tempo Control System Effectiveness reduces alarms to improve situation awareness and operator effectiveness

Key facts:

Company: DSM Fibre Intermediates

Website:
www.dsm.com

Industry: Chemical

Octave products used:
Tempo Control System Effectiveness *(PAS PlantState Integrity)*

DSM Fibre Intermediates, a subsidiary of Royal DSM, is the leading global producer of caprolactam, a raw material used in making nylon. With production facilities in Asia, Europe and North America, DSM produces nearly 900 kilotons of caprolactam per year. The company is also the leading supplier of the chemical acrylonitrile in the European merchant market and ranks third globally. DSM facilities produce a range of other products, including ammonium sulfate, cyclohexanone, diaminobutane, pyrrolidine and sodium cyanide.

The challenge

Plant operators in complex operations rely on the alarm system as the primary means of detecting abnormal situations. When the alarm system underperforms, plants incur unnecessary risks in safety and profitability. Unfortunately, operators adapt a status quo, never fully realizing the extent of that risk. This was not the case at DSM Fibre Intermediates. At the caprolactam facilities, the alarm systems were not optimized, which prevented operators from effectively performing their job and handling abnormal situations. This resulted in alarm performance issues such as alarm flooding during normal operations and plant upsets, standing alarms and various nuisance alarms.

Ultimately, the alarm systems were more of an impediment to good operator performance and a source of stress than systems for managing processes well. DSM recognized its operational risk and searched for potential solutions.

Key benefits:

- Improve situation awareness and operator effectiveness

- Enable safer, more profitable plant operations

- Reduce alarms by up to 70% in the initial phase

- Respond to abnormal situations with greater speed and accuracy

The solution

With a goal of enhancing operator performance as well as plant safety and reliability, the DSM Fibre Intermediates Optimization and Controls Department initiated an alarm system improvement project. The objective was to optimize the alarm systems by implementing a solution that integrated proven best practices, leading technologies and company-specific procedures.

After evaluating available solutions, DSM selected Octave to lead the comprehensive alarm management initiative and Tempo Control System Effectiveness as the preferred software technology. DSM chose Octave for a number of reasons:

1. **Experience:** Over the last two decades, Octave has worked with hundreds of customers in the chemical and other process industries revitalizing alarm systems. In fact, this experience is codified in the definitive industry guide called The Alarm Management Handbook.

2. **Single source:** DSM uses a variety of systems including Emerson DeltaV in its plants. Octave support for heterogeneous vendor systems was critical to adopting a comprehensive solution.

3. **Expert services:** Octave scores highly in its after-sale capabilities. Octave consulting practices and deployment methodology are architected to expose opportunities for alarm management improvement. Octave also provides responsive maintenance and support services, which means DSM has a long-term partner available to support future alarm management needs.

Utilizing the proven seven-step implementation methodology, Octave developed a clear plan to achieve DSM's goals and rapidly established strong relationships with operational personnel. The Octave team identified the bad actor and nuisance alarms that were causing alarm floods and placing undue stress on the operators.

After completing initial alarm analysis, documentation and rationalization phases, Tempo Control System Effectiveness was deployed within two months. DSM saw a -70% permanent reduction in the number of alarms generated, with goals for adding additional improvements using Octave software.

"Now that Tempo Control System Effectiveness is up and running, we have been able to analyze the alarm and event statuses in our plants in a very efficient way," said Udo Dehner, senior process control engineer at DSM Fibre Intermediates. "The result is fantastic. Operators, as well as plant management, are unanimously positive about this achievement and look forward to further advances. The functionality has contributed substantially to the improvement of operator working conditions."

About Octave

Octave is a leader in enterprise software, turning data into decisive action and intelligence into your edge. Our software solves for and simplifies complexity, from the design and build to operations and protection of people, property, and assets– for any scope, at any scale. For decades, we've partnered with customers to sharpen performance, elevate efficiency, and amplify results. From factory floors to entire cities, our solutions are tuned to scale up what's possible from day one onward.