DSM Improves Plant Safety and Profitability through Alarm Optimization

PAS PlantState Integrity™ Reduces Alarms to Improve Situational Awareness and Operator Effectiveness

About DSM Fibre Intermediates

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.

In early 2015, Royal DSM announced the spin-off of DSM Fibre Intermediates as a separate company. The transaction includes a partnership with CVC Capital Partners, a leading investment advisory firm. CVC will have a controlling interest in the new venture.

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 risk in safety and profitability. Unfortunately, operators adapt to 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 their operational risk and searched for potential solutions.

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.

Business Benefits:

- Improve situational awareness and operator effectiveness
- Enable safer, more profitable plant operations
- Reduce alarms by up to 70 percent in the initial phase
- Respond to abnormal situations with greater speed and accuracy
About PAS

PAS, the OT Integrity company, delivers software solutions that prevent, detect, & remediate cyber threats; reduce process safety risks and optimize profitability; and enable trusted data for decision-making. PAS helps industrial organizations Ensure OT Integrity including 13 of the top 15 refining, 13 of the top 15 chemical, 4 of the top 5 pulp and paper, 3 of the top 5 mining, and 7 of the top 20 power generation companies.

For more information, visit www.pas.com.

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Udo Dehner: senior process control engineer at DSM Fibre Intermediates

After evaluating available solutions, DSM selected PAS to lead the comprehensive alarm management initiative and its PlantState Integrity (PSI) as the preferred software technology. DSM chose PAS for a number of reasons:

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

2. Single Source: DSM utilizes a variety of systems including Emerson DeltaV in its plants. PAS support for heterogeneous vendor systems was critical to adopting a comprehensive solution.

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

Utilizing the PAS proven 7-step implementation methodology, PAS developed a clear plan to achieve DSM’s goals and rapidly established strong relationships with operational personnel. The PAS 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, PlantState Suite was deployed within two months. DSM saw a 70 percent permanent reduction in the number of alarms generated, with goals for adding additional improvements using PAS software.

“Now that PlantState Suite 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. PSS functionality has contributed substantially to the improvement of operator working conditions.”