

Cargill Saves Money, Improves Plant Reliability with AMS Device Manager

RESULTS

- 20% reduction on scrubber load by preventing nitrogen loss.
- Documented savings of hundreds of thousands of dollars since 2001 through decreased process variability and improved reliability.
- Savings through cost avoidance are even greater.



APPLICATION

Vitamin E Production Unit

CUSTOMER

Cargill Health and Food Technologies, Eddyville, Iowa

CHALLENGE

Built in 1996, the Cargill Vitamin E plant has nearly 1500 HART® smart field devices connected to its distributed control system. In addition, about 350 Fisher™ FIELDVUE™ Digital Valve Controllers, or smart positioners, are installed on control valves throughout the facility. During the early years, schedule-based preventive maintenance was supported by reactive maintenance. Nothing was done to seek out potential problems, and when a piece of production equipment failed, it was repaired as quickly as possible to prevent further downtime. However, preventive maintenance costs were excessive, and too many unexpected stoppages were reducing productivity and costing money.

SOLUTION

Emerson's AMS Device Manager software was installed in 2001 to monitor the performance of the field instrumentation and control valves and to gather diagnostic data generated by those smart devices. The plant's Asset Manager now relies on this information to predict maintenance needs and reduce or eliminate maintenance on plant assets not requiring attention. He also closely monitors the health and status of 30 Critical Control Points identified as essential to the safety and quality of the Vitamin E product.

“Our work practices have certainly changed (with AMS Device Manager). We have been able to shift our focus to prevent from correct, and the documented savings are significant.”

We intend to keep exploiting the predictive maintenance environment and avoiding unexpected stoppages. The more we can plan and schedule our work, the more efficient we will be, and that is our ultimate goal.”

Wade Howarth
Automation Manager
Cargill Vitamin E Plant

By continuously checking on these critical points for baseline and calibration certification using NIST-traceable procedures, the plant has been able to change a quality control procedure from fully analytical to a process instrumentation-based system. “The reduction of in-process testing saved us enormous amounts in analytical testing time and dollars,” according to Wade Howarth, Automation Manager in the Vitamin E Plant.

The predictive maintenance strategy now in place helps identify evolving problems before they can adversely impact quality or productivity. For example, a travel deviation alert on a control valve prompted maintenance technicians to check out the valve, where they found a plastic air supply line had melted and collapsed because it was located too close to a steam line. The situation was corrected before operators knew anything was wrong. In another case, technicians discovered a valve had “failed open”, allowing the loss of nitrogen in a scrubber system. Fixing the valve eliminated loss of the gas and reduced loading on the scrubber by about 20 percent.

Many potentially serious problems are simply avoided because the Asset Manager systematically checks every instrument on the network every day, looking for warning signs that indicate an impending failure. When he catches a transmitter before it gets too far out of calibration or expires, he is helping to maintain the reliability of the production system. Unexpected plant shutdowns are avoided along with the substantial costs associated with lost production.

As Wade Howarth has said, “The predictive maintenance program at our Vitamin E plant has yielded hundreds of thousands of dollars in documented savings since 2001 through decreased process variability and improved reliability. Estimated savings through cost avoidance are even greater. Plant shutdowns have probably been prevented by daily monitoring of the field devices and control valves, and then doing the maintenance based on the criticality of those devices.”



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