

Asset Management Produces Dramatic Productivity Improvement at Chemical Plant



RESULTS

- 78 percent reduction in lost production time
- Reduced unplanned shutdowns to 66 hours per quarter from 292 hours per quarter one year earlier
- Improved spare parts inventory and control



APPLICATION

Control valve performance is critically important to the efficient operation of acrylate production trains.

CUSTOMER

A major chemical company produces acrylic and methacrylic monomers that are the basis for widely used latex-based coatings and additives for plastics and adhesives.

CHALLENGE

Frequent production stoppages prompted the company to initiate reliability studies that revealed nearly 292 hours of lost production during each quarter of one year. These losses were attributed to a combination of equipment age, sticking and leaking control valves (some of which were 30 years old), unreliable control valve operation, poorly done repairs, and use of incorrect spare parts. In addition, there were so many safety devices installed on process equipment that an entire production line might be shut down by a sticking control valve or slowness in reaching setpoint. Maintenance and reliability personnel were challenged to improve production operations while maintaining a high level of safety.

“The results achieved here reflect the amount of time and energy we have devoted to improving the operation of critical control valves serving each production train.”

Instrument Reliability Engineer

SOLUTION

Late in 2006, Emerson and its Local Business Partner provided two asset managers to work with the plant's instrument reliability engineer to design a proactive maintenance plan to improve the operation of the control valves. The team began by identifying 32 valves in each production unit as critical to the operation.

Emerson's FlowScanner™ valve diagnostic system was used initially to evaluate these key valves and establish performance profiles on them. A review of past repair histories and regular visual inspections were also part of the renewed efforts. At the same time, the company began mounting FIELDVUE® digital valve controllers (DVC) with Performance Diagnostics (PD) on each critical valve. This enabled personnel using the AMS™ Suite: Intelligent Device Manager asset management software to view and test the performance of any valve without taking it out of service.

The newly established asset management program involved a shift to predictive maintenance based on accessing diagnostics generated by the DVCs on critical control valves. Using AMS Device Manager, reliability and maintenance personnel periodically review alarms and check valve performance to identify devices most in need of maintenance. Using this data, they are able to make informed decisions on when to make equipment repairs.

Failure investigations of shutdowns determine the root cause of each valve problem as well as other contributing factors. Failure reports are written for maximum understanding by supervisory and management personnel. One result of this initiative has been an "end-of-life" program that identifies valves beyond economical repair so they can be replaced. While valve replacement is costly, it pays off over time through dependable valve operation and uninterrupted production.

Other elements of the proactive maintenance program include standardization of control valves where possible, training of valve maintenance personnel, a strong spare parts program, and careful turnaround planning.

The asset management program made a positive impact in 2008. In fact, the reliability team was able to verify a 78 percent reduction of production losses stemming from control valve failures. There were also far fewer valve-related production stoppages.

Emerson Process Management Asset Optimization Division

12001 Technology Drive
Eden Prairie, MN 55344 USA
T 1(952) 828-3206
F 1(952) 828-3006
www.assetweb.com

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"We plan turnarounds very carefully six months in advance based on information generated by AMS Device Manager. The repair crews know exactly what has to be done."

Valve Asset Manager

