Fisher® Vee-Ball® Valve With FIELDVUE® PD Instrument Avoids a Unit Shutdown and Saves Plant $1M Per Day

RESULTS

- Avoided shutdown and saved an estimated $1M per day in direct (restart) and indirect (lost production) costs.
- Improved the ethylene oxide unit's throughput by 10% or more.

APPLICATION

Critical valve controls the flow of oxygen into the reactor

CUSTOMER

A chemical plant in Texas

CHALLENGE

Since 1998, maintenance personnel have added hundreds of FIELDVUE instruments to control valves at this plant, and in 2004, a DeltaV™ automation system with AMS ValveLink® software was brought on-line with great success. The site's preference for and consistent use of Emerson diagnostics technology has enabled operators to monitor valve performance on-line—while the valves remain in service.

In 2005, plant personnel upgraded a six-inch Fisher Vee-Ball valve's controller to a FIELDVUE DVC6025 instrument with Performance Diagnostic (PD tier) capabilities. Because this valve controls the flow of oxygen into the reactor, its performance is critical to both employee safety and end-product (ethylene oxide) quality. Using *triggered profile technology*, the PD-tier instrument captured and recorded the valve's travel deviations over time, enabling a team to analyze specific data and more easily determine the cause of process variations.

After reviewing the data, the team concluded that vibration was the

"Though it took some time to identify the root cause of our process variations, we did not have to shutdown the unit or remove and repair a critical valve, as we would have done in the past. With the on-line diagnostics data provided by the valve's FIELDVUE instrument, we were able to analyze the problem while continuing safe operations."

Maintenance Manager
Chemical Plant in Texas

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EMERSON. Process Management

most likely cause of the process variations. In fact, vibration caused the roller on the digital valve controller's feedback arm to lose contact with the cam on the 1052 lever arm. Diagnostics data showed that the feedback had reached over 100%, while flow data for the loop showed the flow dropping rather than increasing.

After taking readings on the valve and piping, a vibration technician confirmed that the installation was experiencing more than 60G's of vibration impact at 15 ft/sec velocity rates.

SOLUTION

To correct the problem, the team changed the mounting on the FIELDVUE digital valve controller's feedback to a 6035 mounting kit in order to capture the feedback arm. They also reduced vibration in the line by strengthening supports and expansion joints.

Until the readings were taken and analyzed, the plant's piping group did not realize they had a vibration problem. Now, they are confident that their products are secure.

So far, this facility has an estimated 600 FIELDVUE digital valve controllers installed plant wide. Plant personnel report excellent success and results with FIELDVUE instruments and diagnostic capabilities.

"Fisher® diagnostics technology helped us identify a piping issue early that might have eventually caused a major safety and maintenance issue. This single valve and its FIELDVUE instrument also deserve credit for improving our unit's throughput by 10% or more."

Piping Group Manager
Chemical Plant in Texas

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