

FIELDVUE™ Instrument Diagnostics Monitor Valves and Avoid Costly Downtime at Polysilicon Plant

RESULTS

- Identified valve problems early, before startup
- Enabled two unit expansions to startup on-time
- Avoided production delays and downtime, costing more than \$1 million per day
- One unit has operated 1 1/2 years without any, valve-related problems.



Team Fisher engineered a two-valve solution (like the one used in a differentiation lab (above) to meet severe-service requirements in a silane unit. Two eight-inch, Design ED valves with Inconel body-trim, full bellows, and FIELDVUE DVC6000-PD tier instruments serve a plant producing silicon wafers.

APPLICATION

FIELDVUE digital valve controllers at polysilicon plant

CUSTOMER

Polysilicon plant in the Pacific Northwest, USA

CHALLENGE

One of world's largest producers of solar grade silicon wafers has undergone several expansions to meet increasing market demand for solar cells. With support from its engineering contractor and equipment suppliers like Emerson Process Management, one plant in the Pacific Northwest has invested more than \$600M to increase production by 6,500 metric tons/year.

The facility represents one of the largest installations of FIELDVUE digital valve controllers in North America. Having standardized on Fisher® products years ago, the plant has an installed base of 1,200 Fisher control valves and 4700 FIELDVUE instruments, providing FOUNDATION™ fieldbus, Safety Instrumented Systems (SIS), and Performance Diagnostic capabilities.

For the Plant 3 and Plant 4 expansion projects, Emerson Process Management sales engineers from Seattle, Washington (PCE Pacific) and Glendora, California (Caltrol) worked closely with the engineering contractor and end-user to specify valves and instruments, to ensure their interoperability with an existing Yokogawa host system, and to maximize the use, functionality, and benefits of diagnostics. Team Emerson not only established a Main Instrument Vendor (MIV) agreement with this customer, but also proved the value of its technical expertise and local support.

“Of all the contract and service decisions made for the Plant 3 expansion, seeking the Fisher division’s support for control valve commissioning was the best decision of all. Emerson personnel’s willingness and ability to identify valve problems and implement solutions not only kept this startup on track but also saved us thousands of dollars that would have been lost to delays or downtime. The estimated cost of downtime for Plant 3 was \$1.2M per day.”

Commissioning Manager
Polysilicon Plant



SOLUTION

The Plant 3 expansion project was based on fluidized bed technology and completed in Summer 2009. The Fisher division provided technicians to support the installation. They performed baseline diagnostics and identified valve problems early, using the combined capabilities of FIELDVUE instruments and ValveLink™ software.

Team Fisher discovered, for example, a problem with resilient-seated butterfly valves, which had accessories including EPDM-coated seats and disks, FIELDVUE DVC6000 instruments, and actuators that exhibited incorrect torque output. The valves were installed in lined piping that resulted in un-even load on the flanged area of the resilient seat and the creation of pinch points, where the disk would catch and stick in the EPDM seat. When plant personnel bumped the air pressure to move the valves, the result was torn EPDM seats.

This problem was un-known until Team Fisher ran baseline diagnostics, which indicated friction during the valve stroke. Catching the problem early enabled the team to repair the valves, verify their performance, and avoid problems later.

RESULT

At the end of 2010, Plant 3 had been operating without any valve-related downtime for 1 ½ years. It produces high-purity silicon beads used to manufacture photo electric cells.

The Plant 4 expansion project began operating two weeks ahead of schedule in mid-June 2010. Again, with Emerson's support and diagnostics, the startup was smooth, with no valve-performance issues.

The site's maintenance team said they found added value and operational benefits from working, side by side, with valve experts. One said, "We have a better understanding of our FIELDVUE instruments' functionality, and we plan to take full advantage of diagnostic capabilities in our day-to-day operations. The powerful combination of FIELDVUE instruments and ValveLink™ software has increased up-time, improved safety, and enabled more predictive maintenance."

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"Plant 4, too, is operating and providing enough silane to run Plant 3 at full production. We are grateful to Team Fisher for the FIELDVUE instruments and valve diagnostic services they provided that kept this startup on track and trouble-free."

Commissioning Manager
Polysilicon Plant

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