

# With On-Site Diagnostic Services, a Power Plant Avoids Costly Trips and Saves \$1 Million USD

## RESULTS

- Identified cause of gas turbine trips
- Saved about \$140,000 USD per trip event, times ten
- Reduced the OEM's hardware warranty back charges
- Improved reliability of steam-injection valves
- Avoided both downtime and gas emissions



## APPLICATION

Steam injection control valves in a Heat Recovery Steam Generator (HRSG)

## CUSTOMER

1,200 megawatt (MW) combined-cycle plant in the Midwest, USA

## CHALLENGE

This facility uses four gas turbines in a one-on-one configuration with steam injection control valves in its HRSG system. By contract, the original equipment manufacturer (OEM) warranted the turbine components based on unit starts and run time. Turbine trips resulted in costly penalties per the contracted, allowable wear-and-tear on the components. Each trip costs about \$140,000 USD in repairs (labor and materials) and downtime (lost MW production).

The OEM blamed a series of ten trips on two Fisher™ CV500 control valves in the steam-injection system. According to them, the valves' slow response, once steam-injection was initiated, was causing the unit to trip. The OEM told plant managers that the valves on units 1 and 3 needed to be replaced, immediately.

The plant manager called Novaspect engineers and Emerson repair experts to verify that the valves were the problem. With two days notice, the Emerson team arrived on site to perform Advanced Diagnostics on both valves, which were equipped with Fisher FIELDVUE™ DVC6200 digital valve controllers.

***“Our local Emerson sales and services personnel came through. Their diagnostic tests proved that the valves were working fine. Their data-driven results enabled us to avoid valve replacement costs and trip penalties. They saved us up to a million dollars on the warranty alone.”***

**Operations Manager**  
Midwest Power Plant

**SOLUTION**

Emerson technicians performed diagnostic tests on each valve, generated signature curves, and compared their findings to good valve performance specifications from Fisher product manufacturing sites. Diagnostic tests provided data-driven results, proving that the Fisher CV500 valves were in excellent working condition and did not need to be replaced.

The root cause of the problem was determined to be a software upgrade, initiated by the turbine OEM for units 1 and 3, during a previous outage. Ten trips were attributed to the software issue. Based on the diagnostic test results, Emerson personnel calculated that the customer had lost up to 50,000 pounds of natural gas during the ten trip events—plus lost production revenue.

Emerson’s on-site services and diagnostics saved the plant up to \$1 million USD and improved the reliability of its steam-injection system. Though difficult to quantify, the plant increased overall mass flow through the turbine, reduced gas emissions, and improved its generating capacity.

**RESOURCES**



**Lifecycle Services Flyer: On-Demand Services**  
<http://www.documentation.emersonprocess.com/groups/public/documents/brochures/d350983x012.pdf>

*Adding FIELDVUE DVC6200 digital valve controllers to critical control valves enabled plant operators to monitor valve performance, predict maintenance, and avoid costly downtime.*



*This Fisher CV500 rotary control valve features a contoured, segmented V-notch ball for throttling or on/off applications. The assembly also includes a Fisher 2052 size 2 actuator and a Fisher FIELDVUE DVC6200 digital valve controller.*

 <http://www.Facebook.com/FisherValves>

 <http://www.YouTube.com/user/FisherControlValve>

 <http://www.Twitter.com/FisherValves>

 <http://www.Linkedin.com/groups/Fisher-3941826>

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