

Vibration Eliminated in Gland Steam System using Fisher™ Valve with Whisper Trim™ III

RESULTS

- Noise was reduced and damaging vibration eliminated when a non-Fisher™ valve was replaced by a Fisher EHS valve with Whisper Trim™ III.



APPLICATION

Superheated steam control in gland steam system

CUSTOMER

1,000 Megawatt coal-fired power plant in China

CHALLENGE

This coal-fired power plant was experiencing a serious vibration problem with a non-Fisher gland steam control valve used to control the supply of superheated steam to the gland steam system. The gland steam system acts as a seal, keeping the process steam in and air out of the steam turbine to optimize its efficiency and prevent corrosion damage.

The gland steam control valve plays a critical role in maintaining the superheated steam flow in the system. High pressure steam from the main header undergoes a large pressure drop across the valve and steam velocity at the valve outlet can become very high, creating the noise and vibration energy being experienced by the plant. Left unchecked, the vibration poses a risk of stress or fatigue damage both to the control valve and the adjacent piping. Plant personnel were concerned that the vibration they were experiencing could lead to a possible plant shutdown.

The Fisher™ EHS valve with Whisper Trim™ III has an unbalanced valve plug and provides up to Class V shutoff while providing significant noise and vibration reduction.

SOLUTION

With exception of the gland steam control valve, the majority of control valves in the plant are Fisher and plant personnel are pleased with their performance. This led them to contact their local Emerson sales office to provide a solution to the vibration problem. Emerson engineers evaluated the application and recommended a Fisher 2-1/2 inch EHS control valve with a special forged block and Whisper Trim III for the application.

The Whisper Trim III cage breaks the steam flow into small jets to reduce the resulting noise energy. As the pressure drop takes place across the Whisper Trim III cage in a flow up configuration, the majority of the turbulence occurs at the cavity outside the cage and away from the plug. This design protects the plug and stem that are susceptible to damage from vibration.

To accommodate the high temperature, the valve employs a hung cage design that allows thermal expansion of the cage without affecting the seat ring gasket loading.

The Fisher valve has been in operation for over a year and the plant is experiencing lower noise, no vibration, and good control of steam flow.

RESOURCES

Product Webpage: Fisher EH Series Globe Valves

<https://www.emerson.com/en-us/catalog/fisher-hp-eh>



Fisher EH Series Valve with 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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