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Severe Service Journal

A Publication of Emerson's Severe Service Team

Volume 4 Issue 7, Oct. 2006

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EWT VALVES WITH WhisperFlo® TRIM REPLACE NOISY FLARE VALVES

Four years ago, a Middle East refinery conducted a plantwide noise survey and found more than 50 valves operating beyond acceptable noise limits. Since then, with help from the Fisher Severe Service group, the plant has been replacing these valves. Two ten-inch flare valves now incorporate state-of-the-art, noise-abatement technology.

The original flare valves possessed little in the way of noise attenuating trim and were undersized with relation to flow velocity at their outlet. A high valve-outlet velocity led to excessive vibration of the downstream piping system; a phenomenon often overlooked with compressible flows.

As in many valve installations, the flare valves were smaller sized than the immediate downstream piping. Pipe size is often driven by pre-established, average velocity limits. Control valve size is selected as a function of trim capacity and outlet velocity. These different criteria often result in a valve smaller than the pipe.

A smaller control valve means that a reducer or expander is required at the valve outlet to mate the valve with the piping. Problems occur when the velocity-related turbulence generated by the expander creates its own noise, and the noise often exceeds that of the noise-abatement trim.

To address the noisy flare valves' problems, refinery personnel installed one 20X16 inch Type EWT valve and one 16X12 inch Type EWT valve from Fisher. Both units included field-proven WhisperFlo noise reduction trim. WhisperFlo trim employs multi-path, multi-stage noise-abatement technology that can reduce noise levels by up to 40 dBA.

The combination of WhisperFlo and the correct valve-outlet size helped reduce the plant's noise problems and the vibration generated in the downstream piping. As a

result of this successful project and other subsequent valve replacements, the refinery continues to rely on Fisher's Severe Service group for help with difficult control-valve applications.

UNIQUE V260 ROTARY VALVE PROVIDES THREE-STAGE PRESSURE DROP

In the mid-1990s, a remotely-controlled throttling delivery valve in rural Saskatchewan was causing some serious noise and control problems. The valve was installed in a pipeline take-off location; heavy crude oil travels from a main pipeline through the delivery valve to nearby storage tanks. (An asphalt manufacturing plant, some 25 miles from the storage tanks, uses the crude as a raw material.) The valve's noise levels (up to 120 decibels) were disturbing a nearby farmer, and the resulting piping vibration was starting to damage gauges.

The customer needed to maximize capacity in the pipeline and, at the same time, minimize the vibration and noise caused by the high-pressure flow. The service conditions, including a 450 psig pressure drop, made this application challenging.

Globe-style valves usually meet these service requirements, but with the valve sized in proportion to capacity demands, a globe valve would be too heavy and expensive. Instead, Fisher personnel in the Engineered Products group designed a 12-inch, three-stage Design V260 rotary valve for this critical application.

The valve's unique features control the flow and enable a staged pressure-drop, resulting in reduced cavitation and noise. These features include:

• A characterized, drilled-hole, multi-stage Hydrodome™ attenuator that reduces noise and pipeline vibration.

• ANSI Class 600 flanges with face-to-face dimensions to match existing standards.

• Three-stage pressure drop capability - The different sized, drilled holes in the Hydrodome force the high-velocity crude through a series of restrictions, reducing noise while providing the required capacity.

• Pressure-balanced, self-adjusting seals that provide tight shutoff.

• A splined ball-to-shaft connection minimizes lost motion, improves dynamic control and provides superior throttling performance.

The valve's Hydrodome, seal and shaft were machined by Fisher Operations personnel in Marshalltown, Iowa. They also assembled and tested the valve to verify its capacity.

The three-stage Fisher Design V260 valve was installed in this pipeline in 1995. Its noise level was low enough that you could converse while standing next to the valve. This one-of-a kind Engineered Product is now in its eleventh year of reliable performance.

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