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VENT VALVE HANDLES STARTUP FOR GEORGIA PAPER MILL

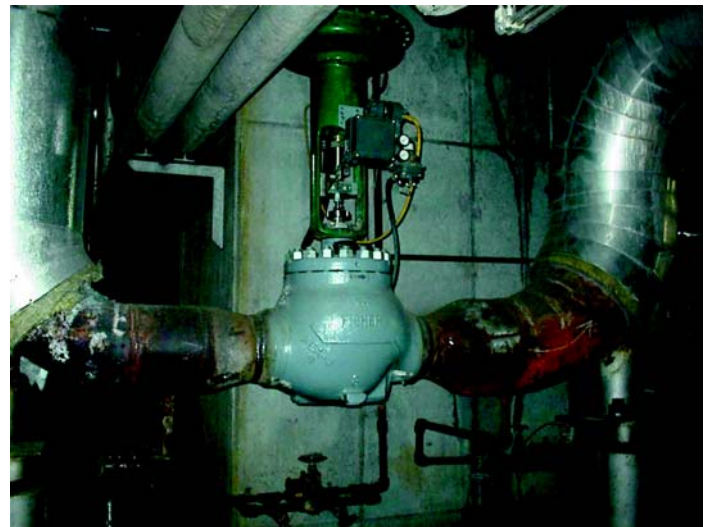
Powerhouse personnel in a pulp and paper mill in Georgia, USA, identified the need to install a steam vent valve to improve performance and to bring the unit on-line quicker. The mill generates more than 650,000 tons of paperboard each year. With this kind of production volume, the mill requires an adequate source of on-site steam and power, delivered quickly, to meet its critical operation objectives.

To improve the efficiency of its on-site powerhouse, the mill needed a steam vent valve that would facilitate startup from cold mill outages and better handle steam pressure surges. In addition, installing a vent system would allow the mill to sell its electricity when power prices were peaking or when its own steam usage was down.

Vent valve applications can be challenging because of the potential for noise and vibration, caused by increased flow and high pressure drops. Mill managers turned to the control experts within the Fisher Severe Service group for a solution that met both the capacity and noise requirements. The Severe Service group in Marshalltown, Iowa, recommended a 16-inch Design EUT vent valve with Whisper® III trim and a downstream silencer. This optimized solution minimized the size of the components within the assembly while maximizing the unit's noise attenuation capabilities.

The Whisper III trim, custom-designed for this application, provides up to 30 decibels of noise attenuation. The Whisper III trim lowers valve noise by utilizing multiple orifices of special shape, size, and spacing. These orifices break up turbulent fluid streams and thereby reduce noise-producing interactions. The trim shifts acoustic energy to higher frequencies that are not readily absorbed by downstream piping. At high frequencies, the piping radiates much less sound in the audible range, reduces strain energy, and combats piping fatigue.

The solution allowed the mill to gain immediate pay back on its initial investment. The flexibility of the Fisher® system enables faster response to operational changes.



DESIGN EH VALVES WITH Cavitrol® TRIM REDUCE NOISE, CAVITATION AND MAINTENANCE AT AEP'S BIG SANDY PLANT

In the mid-1990s, American Electric Power's (AEP) Big Sandy-2, an 800-megawatt once-through supercritical unit, was using an older superheater bypass system, which not only created operational problems but also proved expensive to maintain. The original angle-style valves used for cold-water circulation and steam control were noisy, leaky, and prone to delay startups. Big Sandy maintenance personnel turned to Fisher® valve experts for a better solution.

Local Business Partner, A. E. Ehrke Company in Columbus, Ohio worked with members of the Fisher Severe Service team in Marshalltown, Iowa to re-design the superheater bypass system. They developed a two-valve system in which two six-inch globe-style valves would operate in tandem and meet the demands of the application. The two valves were designed to handle pressure and temperature extremes ranging from the initial cold circulation (2,000 psi at 150-degrees) to superheated steam (3500 psi at 940-degrees F). The valves had to control high-capacity flow (1.3 million pounds per hour of fluid) as well as reduce the potential for damaging cavitation, noise, and flashing.

The two new Fisher bypass valves provided were six-inch Class 2500 Design EH valves with Cavitrol® trim. When the valves initially open to throttle high-pressure boiler feedwater, flow occurs through special orifices, located in the bottom section of the trim cage. These orifices or Cavitrol holes drop the pressure in three

stages, avoiding cavitation while meeting capacity needs. (Cavitrol holes feature a unique drilling pattern, exclusive to Fisher valves.) At full travel of the valve plug, the fluid flows directly through the drilled-hole cage without pressure staging. The result is a trim geometry that provides robust cavitation protection at low flows – when cavitation protection is most needed, and increased capacity as the valve strokes toward the open position and conditions that lead to cavitation are typically less severe.

The valves' other custom-designed features and accessories included:

- An extended travel for increased rangeability,
- A valve body internally overlaid with high strength alloy to prevent damage from flashing
- A large actuator that provides the high seat loads necessary to prevent leakage.

The Fisher solution significantly reduced the power plant's capital costs (compared to the other four-valve system) and has been operating successfully for many years. AEP has realized additional annual savings from reduced maintenance and shortened startup times. Startups are smooth. The Fisher valves are quiet, and the potential for trips has been greatly reduced.

