Severe Service Journal

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FISHER RELEASES NotchFlo™ DST DIRTY SERVICE TRIM

The Severe Service Team at Fisher Controls announces the release of the new NotchFlo DST (Figure 1) that prevents the cavitation and clearance flow problems typical to high-pressure liquid applications within the power generation industry, in oilfield production use and in refinery recirculation and letdown services.

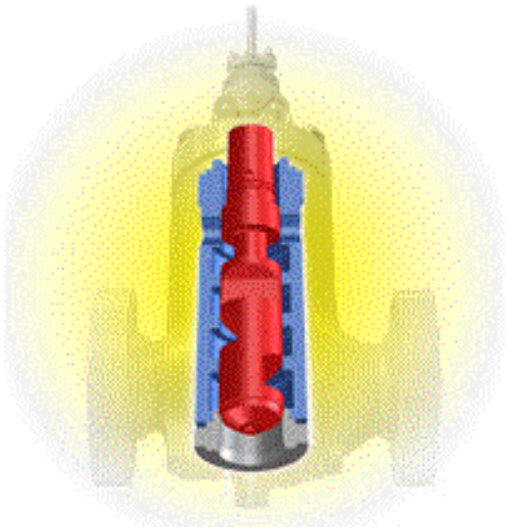

Figure 1: Fisher NotchFlo™ DST Dirty Service Trim

The NotchFlo DST control valve trim features a longitudinal flow path that incorporates a series of pressure staging notches. The notches achieve the required pressure drop while avoiding conditions that would cause cavitation and result in trim damage.

The pressure staging design and separation of shutoff and throttling locations prevent high pressure drops from occurring at the trim seat when at low flow conditions. This avoids clearance flow erosion of the seat line, thereby extending the already long-term shutoff capability of the NotchFlo DST control valve trim.

As an added benefit, the relatively large flow passage through the NotchFlo DST control valve trim design allows control of liquids with entrained solids up to ½" in diameter.

The NotchFlo DST control valve trim is pressure-balanced, which yields smoother operation and reduces actuator size requirements. The valve plug features a large-diameter stem for added rigidity against high-pressure conditions. NACE materials are available for corrosive applications.

The NotchFlo DST control valve trim is available in a variety of globe and angle style constructions.

WHISPERFLO VENT DIFFUSER ADDRESSES FAR FIELD NOISE ISSUES

A New England area pulp and paper mill was recently experiencing noise related problems with a main steam vent silencer (Figure 2). The noise level being emitted by the silencer was higher than the mandated fence line noise level. Not only was the plant concerned with far field noise, but the installation costs associated with a new silencer were also a concern.

Figure 2: Existing Silencer Arrangement

Fisher engineers sent a WhisperFlo vent diffuser (Figure 3) to the rescue. This solution incorporates the proven WhisperFlo noise abatement trim into a vent stack arrangement for main steam and sky vent applications. WhisperFlo reduces noise by up to 10 dBA more than any other noise abatement trim on the market.

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Figure 3: WhisperFlo Vent Diffuser Solution

The WhisperFlo solution not only addressed the noise levels, but also eliminated issues with installation costs. In order to install a new silencer, an off-site crane would have to be rented at a price of $30,000. The WhisperFlo solution weighed a fraction of the existing silencer arrangement.

Based on the success of this installation, the plant is in the process of replacing many of their problematic noise control devices with the WhisperFlo solution.

The WhisperFlo vent diffuser has also been successfully used in many combined cycle power plants. Not only are installation costs reduced, the need for heavy piping supports are eliminated due to the lightweight construction compared to conventional silencer arrangements.

FISHER SOLVES LEAKING RECIRCULATION VALVE PROBLEM

A Midwest power plant recently replaced their existing boiler feedwater recirculation valves with Fisher's proven CAV4 feedpump recirculation valve. The CAV4, which was designed specifically for this application, eliminates damaging cavitation and incorporates a protected seating surface to provide long-lasting tight shutoff.

The existing recirculation valves experienced ongoing leakage problems with subsequent valve damage. This required the valves to be inspected and repaired during each outage. Also, the constant leakage led to increased feedpump horsepower requirements and impacted the capacity of the unit.

Initial calculations showed that the two leaking valves were costing the plant nearly $30,000 each year in excess pumping requirements. It was also estimated that the leaking valves had nearly a two MegaWatt (MW) impact on unit output adding up to nearly $100,000 in lost revenue each year.

In order to address the repeated issues with leakage and maintenance, the plant turned to Fisher and the CAV4 solution (Figure 4). The CAV4 incorporates four stages of anti-cavitation protection that can withstand pressure drops up to 6000 psid.

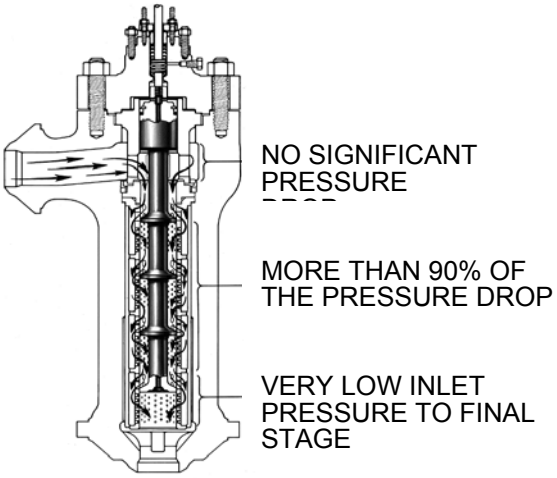

Figure 4: Fisher CAV4 for Feedpump Recirculation

A properly sized CAV4 will eliminate damaging cavitation and the resultant noise and vibration. This is accomplished through a unique expanding flow area design in which each successive stage has a larger flow area. The result is very efficient operation since more than 90 percent of the overall drop is taken in the first three stages where there is little danger of bubble formation. This allows a relatively low inlet pressure into the final stage and minimal fluid energy exiting the trim.

The pressure staging design and separation of shutoff and throttling locations prevent clearance-flow erosion. This is accomplished by a trim design that does not allow any significant pressure drop to be taken until the fluid is downstream of the seating surface. With this trim design, all clearance flow is subjected to a staged pressure drop. Unlike the linear cage-style anti-cavitation trim sets, there are no flowing conditions where pressure can go directly from P1 to P2.

Since the valves were installed, the plant has not experienced any issues with leakage or maintenance. The utility is now in the process of replacing other problematic recirculation valves with the proven Fisher solutions.