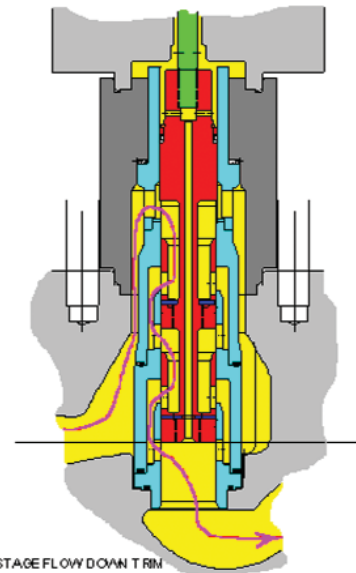


HPT Valve with Dirty Service Trim Eliminates Erosion, Plugging



RESULTS

- Trim design enables multi-stage pressure drop and eliminates cavitation, noise, and vibration.
- Valve with DST delivers two years of trouble-free service.



APPLICATION

Bypass Flow Control

CUSTOMER

Oilsands producer in Alberta, Canada

PROBLEM

Liquid hydrocarbon is one by-product of oil sands processing or refining, and one producer in Alberta stores its liquid hydrocarbon in underground sand caverns. As part of the process design, wash water is injected into these caverns using a high-pressure pump. Because this pump produces a constant flow rate, flow control is attained by recirculating wash water back to the suction side of the pump via a flow control valve.

This is a challenging application for control valves due to the entrained particulates (sand and clay) in the flow stream and the high pressure drop (inlet up to 6200 kPag and outlet as low as 106 kPag). Cavitation, vibration, noise, erosion, and trim plugging are all potential problems. Thus, the customer asked engineers at Spartan Controls (Emerson's Local Business Partner) for a rugged and reliable flow control valve.

DST provides a protected seat design where the shutoff function of the trim is separate from the throttling areas. The trim's design 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.



Severe Service

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REFINING

SOLUTION

Spartan engineers analyzed the process and recommended a Fisher four-inch 900RF (raised flange) Design HPT control valve with dirty service trim (DST).

DST is a multi-stage trim utilizing a series of flow restrictions and expansions to control the pressure drop and thereby eliminate cavitation, noise, and vibration. Valves with DST trim have a protected seating feature to provide long-lasting, tight shutoff. The DST design, combining axial and radial flow paths, features large openings that allow for the passage of particulates up to 3/4-inch in diameter. These large openings maximize flow and stability, as well as eliminate the potential for velocity-induced erosion.

RESULTS

The new Fisher valve was installed in January 2006 and has been performing well ever since. All of the potential problems, from erosion to plugging, were solved with the use of the DST design.

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