

Fisher® Bore Seal Upgrade Program Improves Valve Shutoff Performance in High Steam Loss Applications

POWER

Challenge

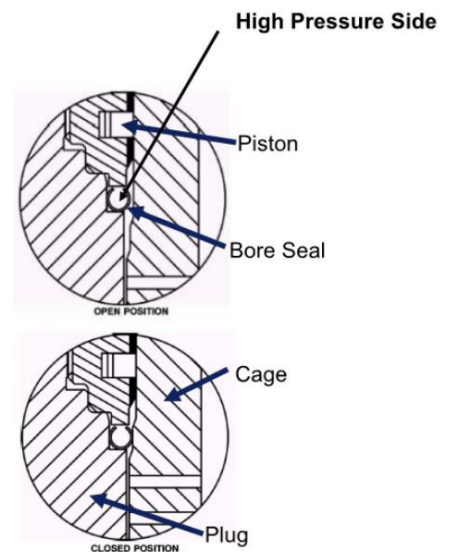
A combined cycle power plant's Fisher high pressure (HP) and hot reheat (HRH) sky vent valves experienced excessive steam loss due to high leakage with degraded shutoff performance.

Solution

The proposed solution to the valve leakage issue was the Fisher Bore Seal Upgrade Program. This upgrade provides a radial sealing force that prevents flow between the valve plug and cage clearances while in the closed position. Further, when the plug moves off the seat for modulation, disengagement between the cage ID and the Bore Seal eliminates friction, preserving integrity of the sealing surface and extending Class V performance life.

Using industry accepted steam values, Control Southern provided the customer with steam loss calculations based on the HP and HRH valves' respective shutoff class degradation. All field activities were handled by Emerson Instrument & Valve Services personnel specifically trained on the Trim Upgrade Program. The HP sky vent applications only required the trim replacement to complete the Bore Seal upgrades. To complete the HRH sky vent Bore Seal upgrades, however, Control Southern also provided resized actuators with new DVC6200 positioners, and volume tanks to handle the added capacity of the new actuators.

Shutoff Class Leakage Rate for HP Valve (Assume steam cost of \$0.01/lb)				
	Class III	Class IV	Class V	
Lbs/Hr Leakage	1223	130	0.844	
Cost of Leakage Per Hour	12.23	1.3	0.00844	
Cost of 8760 Hrs (1 Full Yr)	\$107,134.80	\$11,388.00	\$73.93	
Shutoff Class Leakage Rate for HRH Valve (Assume steam cost of \$0.01/lb)				
	Class II	Class III	Class IV	Class V
Lbs/Hr Leakage	5519	1104	111	0.48
Cost of Leakage Per Hour	55.19	11.04	1.11	0.0048
Cost of 8760 Hrs (1 Full Yr)	\$483,464.40	\$96,723.60	\$9,723.60	\$42.05



The following Fisher constructions are eligible to be reviewed for the Bore Seal Upgrade Program: CVX, TBX, FB, EU, EUD, and Easy-E designs

Results

By taking advantage of the Fisher Bore Seal Upgrade Program, the power plant achieved positive financial results due to the Class V shutoff, a significant improvement over the degraded condition, estimated at Class III or worse prior to the upgrade.