



Engineering
GREAT Solutions



IMI CCI solves erosion problem at 500 megawatt power plant

The challenge

A 500 megawatt coal-based power plant located in India was having problems with its boiler feedpump recirculation valves. These valves were experiencing significant leakage, which resulted in reduced plant efficiency and higher auxiliary power consumption. The boiler feedpump normally delivers feedwater from the deaerator (or feedwater bypass) to the economiser in high pressure conditions of up to 340bar/260°C (5000psi/500°F). When not providing the minimum flow at the pump suction to prevent the feedpump from overheating and cavitating, the recirculation valves must provide tight shutoff. The extreme fluid conditions and critical performance requirements make this valve one of the most important severe service valve applications in any power plant. The plant attempted multiple times to

resolve the leakage, replacing trim components and even replacing the whole valve with another competitor valve with multi-stage trim design. Despite these efforts, the valves continued to leak. With the costs of maintenance and spare parts escalating, the plant was looking for a solution.

The solution

Resolving the problem required an in-depth understanding of the root cause of the leakage. The high pressure drop resulted in high trim exit velocities and erosion potential (erosion increases with velocity). Poor initial shutoff resulted in wire cutting of the seat from small amounts of leakage. This led to induced flashing water, further eroding the shutoff sealing.

IMI CCI DRAG® valves are designed specifically to address tough design conditions and critical operational

requirements in this application. The customised IMI CCI solution installed at this site incorporated a discrete pressure-reducing, multi-path, 24 stage DRAG® technology trim to limit fluid velocities to 23m/s (75ft/s); a pressurised seat plug design to achieve MSS-SP-61 block shutoff; a snap acting control feature to protect the seat area; and a piston actuator to provide high actuator thrust for good control and tight shutoff.

By eliminating the erosion causing high trim exit velocities and providing block tight shutoff, the IMI CCI solution resolved the leakage problem, improving the plant's reliability and performance.

Buying off-the-shelf solutions may seem attractive in the short term but it can cost a plant more money in the long run. Higher maintenance costs, efficiency loss, and downtime often accompany them.

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