

Diagnosing and Solving Control Valve Leakage and Emergent Repair Challenges

Power plant overcomes recurring maintenance issue and achieves long-term reliability during a scheduled outage.



Prolonged leakage caused severe damage to critical control valve body casting



Identified incorrect parts listed in Bill of Materials and repaired on expedited timeline

CHALLENGE

A Midwest power plant was encountering ongoing and problematic leaks involving two critical control valves over an 8-year period. The performance of these valves is essential for managing steam flow and ensuring efficient power generation.

The continual and prolonged leakage had caused severe damage to the valve's body casting. A replacement valve body casting was not immediately available upon discovery of the damage and replacement options had lengthy lead times. Plant management had no alternative but to focus on expedited repair strategies.

SOLUTION

Plant staff had planned to inspect these two valve assemblies themselves during a scheduled 12-week outage, but as the weeks progressed, they realized they were getting behind schedule and wouldn't be able to complete the work in time. They turned to Midwest Valve Services (MVS), a Novaspect company, who was already on-site performing service, to handle the repairs so they could meet their deadline.

Upon inspection, MVS technicians uncovered a critical problem: the wrong parts were being used to assemble the valves and had been listed that way in the Bill of Materials (BOM) for the past 8 years. Even though the parts fit together, and the valves were able to operate, the assembly was not configured correctly. That, along with damaged components found within the actuator accessory package, resulted in inadequate seat load, and ultimately led to severe metal erosion downstream of the seating surfaces in the valve body. These valves were within the ASME B31.1 Boiler Boundary and therefore the necessary repairs required a certified

R-Stamp weld repair procedure. Midwest Valve Services coordinated and executed the required repairs on an expedited timeline so as not to extend the planned outage duration. As part of the on-site reassembly procedure, the correct parts and assembly configuration were utilized. The damaged actuator components were replaced, and the entire air supply system was replaced using stainless tube and fittings to further stop the leaks.

Once assembly was completed, Midwest Valve performed post assembly diagnostics using the Fisher DVC6200 positioner and AMS ValveLink software. These diagnostic tests will serve as the baseline to monitor future health and performance of the valve.

OUTCOME

By partnering with MVS, the damaged valve body casting was repaired to like-new condition while maintaining the original outage schedule.

Additionally, the discrepancies identified with the bill of materials were corrected so future repairs will be completed using the correct components. All the issues related to the actuator accessories were corrected.

Following these repairs, the plant has reported the valves to be operating better than they had in years. For the first time in many years, operations did not write new work orders for reported leak-by in these valves immediately following repairs.



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