



CUSTOMER CASE STUDY

Proactive Check Valve Monitoring with Seeq

Real-Time Leak Detection and Asset Reliability Analytics

Solution: Seeq **Industry:** Process Industries **Use Case Focus:** Asset Monitoring and Predictive Maintenance

GOALS

- Protect critical assets from reverse flow and pressure buildup.
- Ensure process safety and long-term check valve reliability.
- Clarify the primary objective described in the source.
- Align the initiative with stated business priorities.

SOLUTIONS

- Monitor API-defined leak thresholds using Seeq real-time analytics.
- Detect operational anomalies without requiring dedicated valve sensors.
- Generate automated reports linking valve performance to business impact.
- Apply the described approach to the core problem.

CHALLENGES

- Unpredictable process disruptions trigger sudden reverse flow events.
- Accelerated valve wear increases the likelihood of catastrophic failure.
- Address the key constraints noted in the source.
- Reduce manual effort across the current process.

RESULTS

- Enhanced operational safety and protected product quality.
- Prevented unplanned shutdowns through early anomaly detection.
- Achieved substantial cost savings by avoiding catastrophic valve failures.
- Improved clarity over the previous approach.

EXECUTIVE SUMMARY

Monitoring check valves is critical to preventing hazardous reverse flow and ensuring overall system safety, but limited sensor coverage in complex industrial facilities often hinders effective leak detection. By leveraging Seeq to monitor API-defined leak thresholds and analyze operational data in real time, operators can proactively detect valve anomalies before they lead to severe equipment degradation. This data-driven, continuous monitoring approach prevents unplanned shutdowns, safeguards downstream product quality, and delivers significant maintenance cost savings across the entire operational lifecycle.

The Challenge of Check Valve Reliability

Check valves are vital components designed to prevent reverse flow and maintain system safety across industrial processes. However, monitoring their performance is exceptionally difficult due to harsh operational conditions and restricted physical visibility. Unpredictable events such as compressor trips, emergency shutdowns, and sudden temperature swings subject these valves to intense stress, accelerating wear and increasing failure risks. Furthermore, standard hazard analyses treat check valves as inherently failure-prone. This risk is compounded by the fact that many valves lack dedicated flow, pressure, or temperature sensors nearby, making early leak detection nearly impossible using traditional methods.

Real-Time Monitoring and Analytics with Seeq

To overcome these limitations, operators leverage Seeq to implement proactive monitoring workflows that analyze API-defined leak thresholds. Seeq integrates existing process data to detect early signs of valve degradation, even in locations without direct sensor coverage. By analyzing subtle patterns in surrounding temperature and pressure changes, the platform identifies potential reverse flow and leakage hazards before they escalate. Additionally, the software automatically generates action-oriented reports that connect technical valve performance directly to business outcomes, enabling maintenance teams to make faster, data-driven decisions and transition from reactive to predictive maintenance strategies.

Maximizing Safety and Operational Cost Savings

Transitioning to proactive valve monitoring delivers immediate advantages in safety, reliability, and process efficiency. Early anomaly detection prevents sudden check valve failures, reducing the frequency of unplanned shutdowns and protecting downstream product quality. From a financial perspective, identifying minor leaks before they trigger catastrophic failures saves hundreds of thousands of dollars per valve in repair and replacement costs. Ultimately, this data-driven strategy mitigates operational hazards, ensures compliance with strict industry safety standards, and optimizes long-term asset lifecycle management across the entire enterprise.