



PROCESS MANUFACTURING

Data Sources

- Process Data Historian: OSIsoft PI
- Maintenance Records: SAP

Data Cleansing

- Remove data recorded while the controller was in Manual mode
- Use Agile Filter to smooth noisy data
- Suppress downtimes from alerts and warnings

Calculations & Conditions

- Formula to identify valve reversals/cycles
- Signal from Condition to quantify cycle counts and durations
- Composite Condition of find when multiple conditions were present

Challenge

Valves are one of the most common assets in the process industry, spanning all verticals. Chemicals, refineries, and petrochemicals, however, will find improved valve health diagnostics useful for critical valves and controllers in their plants, while upstream and midstream oil and gas companies may be focused on much larger, critical valves like pipeline or subsea valves.

It's difficult to characterize valve performance to anticipate valve health in near real-time. Process manufacturing operations are in need of a balance to know when maintenance is actually needed, as calendar-based maintenance can lead to unnecessary effort and costs, while neglecting maintenance tasks leads to unplanned downtime. This leads to lost revenue and increased environmental and safety risk.

Solution

Using Seeq, process manufacturers are able to implement a condition-based monitoring analysis to monitor valve health across an entire fleet. Engineers can utilize the historical data to accurately create a predictive maintenance forecast and preemptively detect valve failures before they occur. The state of overall valve health is created by monitoring the valve performance with various key metrics, like stroke time, and static friction, which leads to identifying bad actors, risk identification, and prioritization of maintenance activities.

Results

Companies are able to reduce the likelihood of valve failure, saving massive costs due to lost production and manpower per event, per asset. Seeq's advanced analytics application can reliably provide context and insight into alerts received from other alerting software.

Reporting & Collaboration

- Treemap in an Organizer Topic to show overall health scores of valves within the fleet
- Subsequent documents in the report to show detailed trends of all the valve health KPI's

FIC1 Overall Valve Health Score Maximum: 0.0021 Value at End: 0	FIC106 Overall Valve Health Score Maximum: 0 Value at End: 0	FIC5 Overall Valve Health Score Maximum: 0.0114 Value at End: 0	FIC8 Overall Valve Health Score Maximum: 0.154 Value at End: 0.0278	LIC103 Overall Valve Health Score Maximum: 0.0345 Value at End: 0	LIC110 Overall Valve Health Score Maximum: 0.1093 Value at End: 0	LIC4 Overall Valve Health Score Maximum: 0.0022 Value at End: 0
FIC104 Overall Valve Health Score Maximum: 0.0361 Value at End: 0	FIC2 Overall Valve Health Score Maximum: 0.0771 Value at End: 0	FIC6 Overall Valve Health Score Maximum: 0 Value at End: 0	FIC9 Overall Valve Health Score Maximum: 0.0398 Value at End: 0	LIC108 Overall Valve Health Score Maximum: 0 Value at End: 0		
FIC105 Overall Valve Health Score Maximum: 0.3365 Value at End: 0	FIC3 Overall Valve Health Score Maximum: 0.0011 Value at End: 0	FIC7 Overall Valve Health Score Maximum: 0.0375 Value at End: 0.0066	LIC101 Overall Valve Health Score Maximum: 0.0175 Value at End: 0	LIC109 Overall Valve Health Score Maximum: 0.1458 Value at End: 0	PIC107 Overall Valve Health Score Maximum: 0.0207 Value at End: 0	

Treemap to show the current valve health according to the Overall Valve Health Score
One valve time-series trend of its Overall Valve Health Score





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