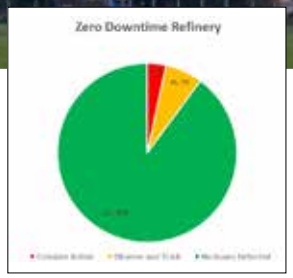
Valve Lifecycle Management



Control Valve Health Monitoring for Improved Plant Performance

Valve Lifecycle Management (VLM) is a service offered by **Baker Hughes**™ global Service Partner network focused on optimizing the maintenance and performance of all valves. VLM captures and analyzes maintenance records, valve design data, offline test data, and online valve performance data providing plant operators with information to prioritize and optimize valve maintenance activities. Armed with detailed guidance provided by VLM application specialists, Plant Maintenance and Reliability Teams are able to better improve valve performance and prevent unplanned downtime, eliminating the need to wrestle with understanding how friction reports and step tests map to actual valve performance.

Valve Lifecycle Management by Baker Hughes can:

- Improve plant safety by diagnosing packing leaks and control valve seating issues
- Improve plant uptime by diagnosing and validating the health of control valves without disturbing the process
- Improve plant performance with key performance indicators that show valve or system tuning issues
- Verify proper installation and calibration before plant start-up
- Leverage currently deployed digital positioner and **HART®/ FIELDBUS®** infrastructure (no need to buy more sensors)
- Conduct long-term performance trending with automated data collection and analysis
- Enhance information management with a built-in database
- Better manage your resources with timely valve health reports
- Access Baker Hughes ValvKeep™ maintenance and repair valve management system providing detailed test reports for all valve types regardless of manufacturer

Valve Name	Noted Concerns	Suggested Actions
610LV025	• Very high friction - more than 30% • Stick Slip is causing the valve to move more than 1% from the setpoint	• Evaluate packing, may need replacement • Consider increasing deadband on positioner to 1% to eliminate cycling
620LV041	• Valve is following the set point • Valve has calibration error - it is closed at -6%	• Inspect and adjust the valve/positioner linkage and perform find stops
610FV063A	• Valve works in fully open or in fully closed position during this period • There is a consistent calibration error - more than 10%	• Inspect and adjust the valve/positioner linkage and perform find stops
620LV047_1	• Valve recently works at the range of 3% and closed position • Valve closes at about -5% • Recalibration of the valve will move the valve working position and improve the valve performance • When outside of the near closed range, valve performs OK.	• Inspect and adjust the valve/positioner linkage and perform find stops • Next outage, consider trim replacement and adjusting Cv to match process requirements

Key features

- Data driven valve maintenance guidance
- Identify valves that are over maintained as well as those valves that are under performing
- Cyber-secure, mission focused, online monitoring tools incapable of process command override
- No additional hardware required, works with any HART and Foundation FIELDBUS valve positioner and most DCSs
- Access to valve application expertise along with a single statistical modeling interface applied to all brands of valves
- Patented analytics for valve health prediction
- Facilitated planning of shutdowns with Baker Hughes global service partners
- Valve spares inventory tracking and visualization

Technical Specifications

Valve Aware Communication Protocol support

- HART (revision 5, 6, 7)
- FOUNDATION Fieldbus (H1, HSE)

Digital Valve Positioners Support

Valve Lifecycle Management works with any HART or Foundation Fieldbus Digital Positioners

Tested Valve Positioners:

- Masoneilan™ SVI™ Series
- Masoneilan FVP™ Series
- Yokogawa YVP Series
- Fisher DVC5000 Series
- Fisher DVC6000 and DVC6200 Series
- Valtek Logix Series
- Siemens SIPART
- Metso ND9000 Series
- Azbil SVP Series

Supported Interface Infrastructure

- GE Mark™ VIe Control System
- Yokogawa PRM
- Honeywell FDM
- Emerson AMS (OPC integration required)
- Most systems with OPC DA interface
- MTL Multiplexer
- Phoenix Contact HART Multiplexer
- Pepperl+Fuchs Wireless Gateway
- Emerson Wireless HART Gateway
- Direct HART Modem
- Direct FOUNDATION Fieldbus Modem

Languages

Valve Aware online condition monitoring software has been designed to support multiple languages.

- English (United States)
- French (France)
- Spanish (Spain)
- Portuguese (Brazil)
- Dutch (Netherlands)
- Chinese (PRC)

Computer Specifications

Supported Browser Requirements

Valve Aware Services supports the following browsers:

- Mozilla Firefox
- Google Chrome
- Microsoft Edge

Servers 32 or 64 bit

- Intel Core 2.7 GHz processor or above
- 4 GB memory or above
- 500 GB hard disk drive
- Ethernet network interface card

Operating System

- Microsoft Windows 10
- Microsoft Windows 10 virtual machines
- Microsoft Windows Server 2012 (64 bit)
- Microsoft Windows Server 2016 (64 bit)

Security

- Integrated Windows Authentication
- Read Only communication

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