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[2-1846] Harnessing the Power of Digital Valve Controllers: Introducing Valve Reliability Suite™ Solutions

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Inquiries should be directed to:
EmersonExchange@Emerson.com

JAIME ALVARADO MILLAN

Software Product Manager / Emerson

Nathan Krasnovsky

FIELDVUE™ Product Manager / Emerson

Naman Tahan

Dir. Engineering & Operations / Emerson

Introducing Valve Reliability Suite™ Solutions

Jaime Alvarado Millan	Valve Reliability Suite™ Solutions
Jaime Alvarado Millan	Plantweb Insight™ Valve Health Application
Nathan Krasnovsky	ValveLink™ Software
Naman Tahan	Valve Condition Monitoring

Valve Reliability Suite™

A Proven Response to Operational Reliability Challenges

Planned turnarounds come fast…
Do you feel prepared?

> Operating Expenses are increasing

Are you at risk of experiencing unexpected outages due to a critical valve failure?

> Sustainability is becoming increasingly more important

Valve Reliability Suite™ Benefits

- **Tailored Solutions** to compliment your valve reliability program
- **Strengthen your Workforce** with new software and expert resources
- **Ease your Transition** from reactive to predictive maintenance
- **Actions** and recommendations to quickly resolve issues related to valve maintenance or performance before they impact other equipment or the process

Valve Reliability Suite™

Valve Health Application

Access a **fleet-wide dashboard** with **near real time, read only** valve data. Automatically **prioritizes** targets and **recommends** next actions.

ValveLink™ Software

Comprehensive **diagnostic** program for control valve troubleshooting**, tuning** and **calibration.** Aids in **root-cause analysis** of **individual valves.**

Valve Condition Monitoring

Remote, online monitoring of **critical valve applications** with **diagnostic analysis,** tag-specific guidance and **periodic reports** from *the* **valve experts.**

High-level analytics done by software	Deep-dive analytics done by user	Deep-dive analytics done by Emerson experts

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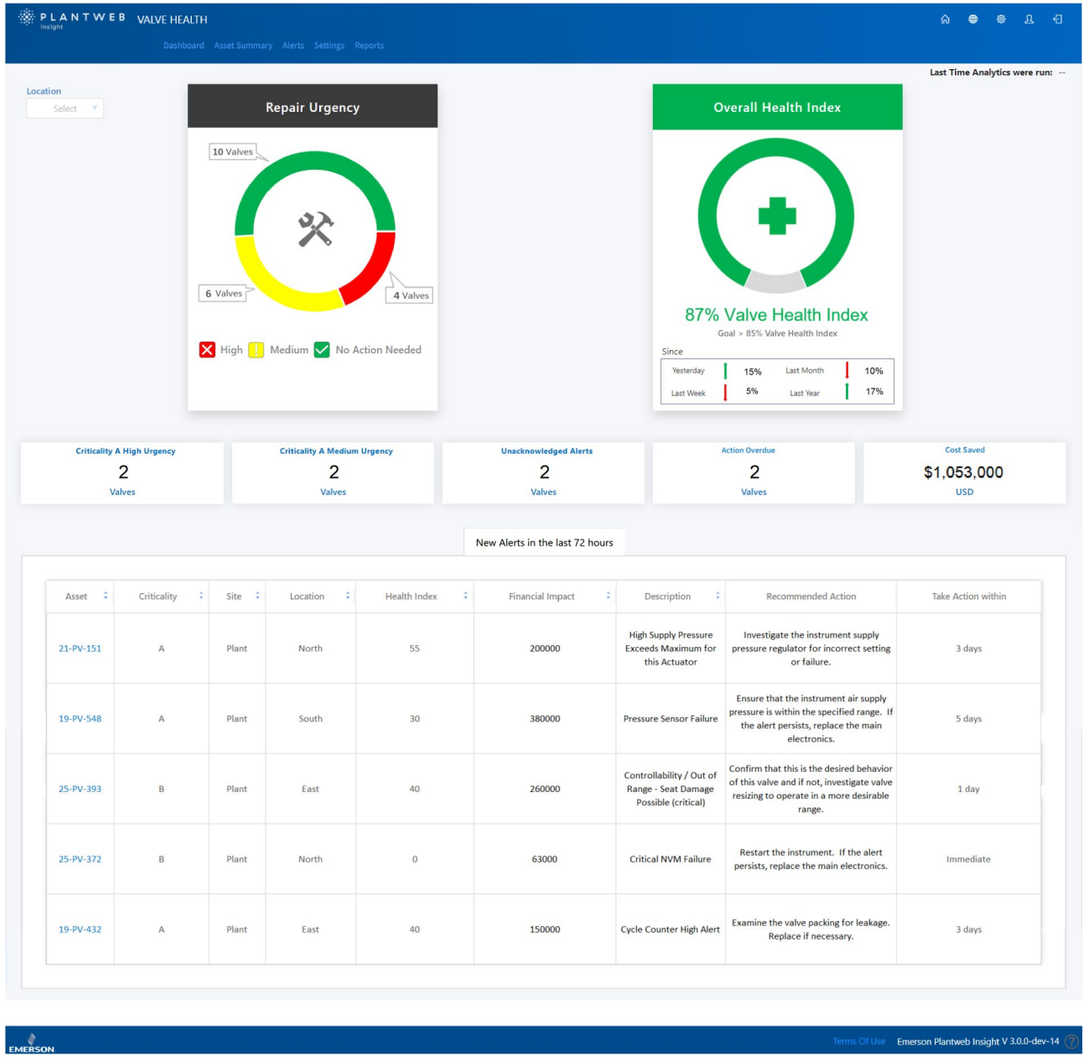
Plantweb Insight™ Valve Health Application

High-level analytics done by software

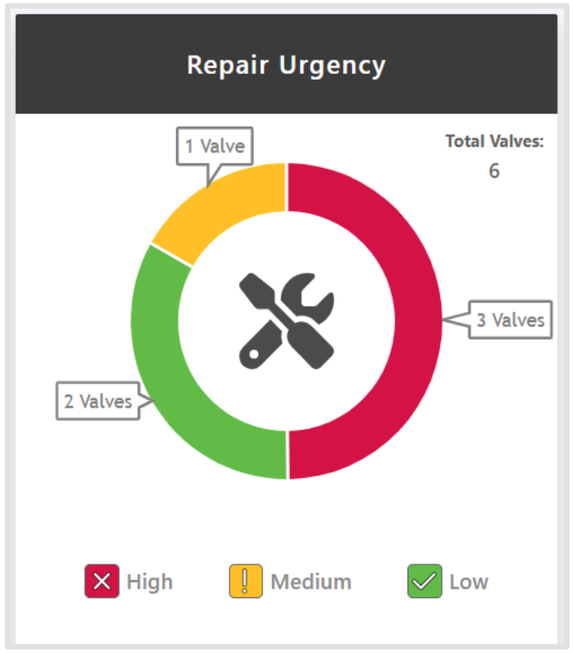
What is the Valve Health App?

- **All valves** monitored, all the time.
  - I can clearly see if my entire fleet of valves is healthy, or not. My walk arounds have been reduced, my people are safer, and I have confidence that I'll catch issues before they become critical.
- Maintenance **planning**…simplified.
  - I can quickly identify the problem valves that need to be pulled. Maintenance time is optimized around only the valves that need it.
- Valve issues are **interpreted**.
  - I'm not a valve diagnostic expert…but I can easily see what I need to do to fix them. Troubleshooting time is minimized and parts don't need to be expedited.

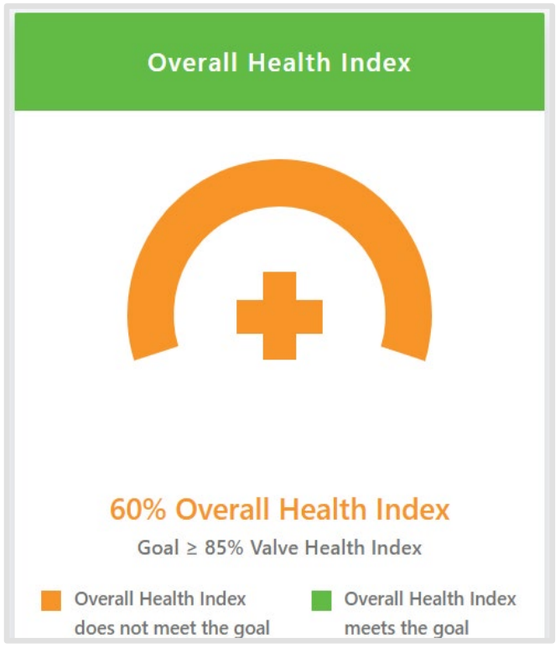


Main Functionalities of the Plantweb Insight™ Valve Health App

REPAIR URGENCY STATUS



HEALTH INDEX



EXPLANATIONS AND RECOMMENDATIONS

Recommended Action	Take Action Within
Check that the instrument supply pressure is above the minimum operating pressure needed to fully stroke the valve. Check for tubing leaks. Check for plugging of the pneumatic passages.	1 day(s) to take action

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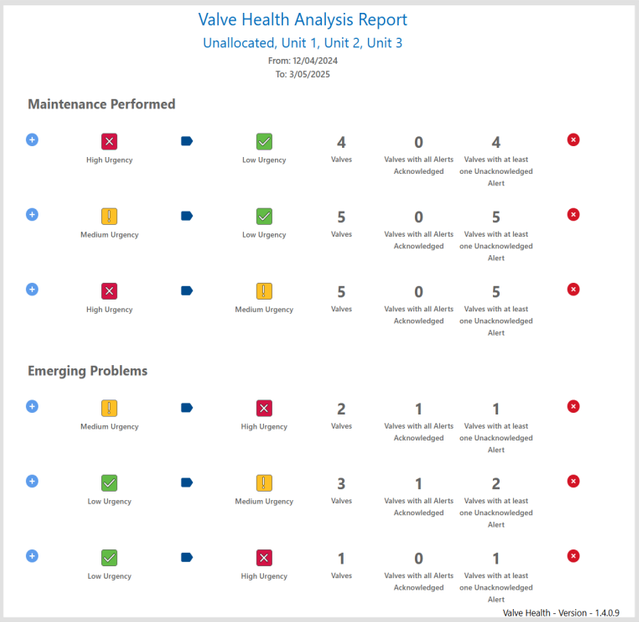
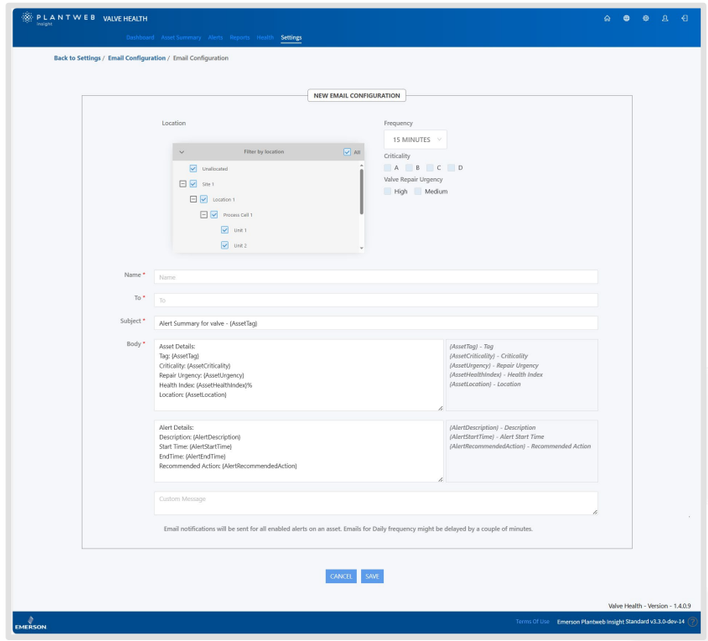
Main Functionalities of the Plantweb Insight™ Valve Health App

ON-DEMAND REPORTING



PROACTIVE EMAIL NOTIFICATIONS



DEVICE ALERTS

HART® COMMUNICATION PROTOCOL

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Main Functionalities of the Plantweb Insight™ Valve Health App

IN-APP ANALYTICS

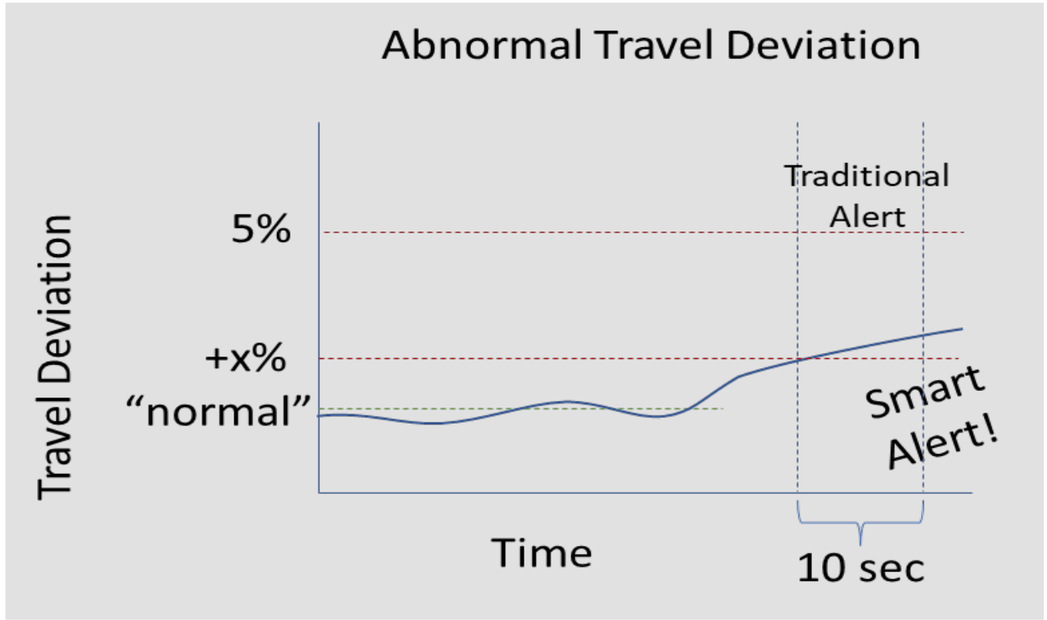
Calibration Shift,

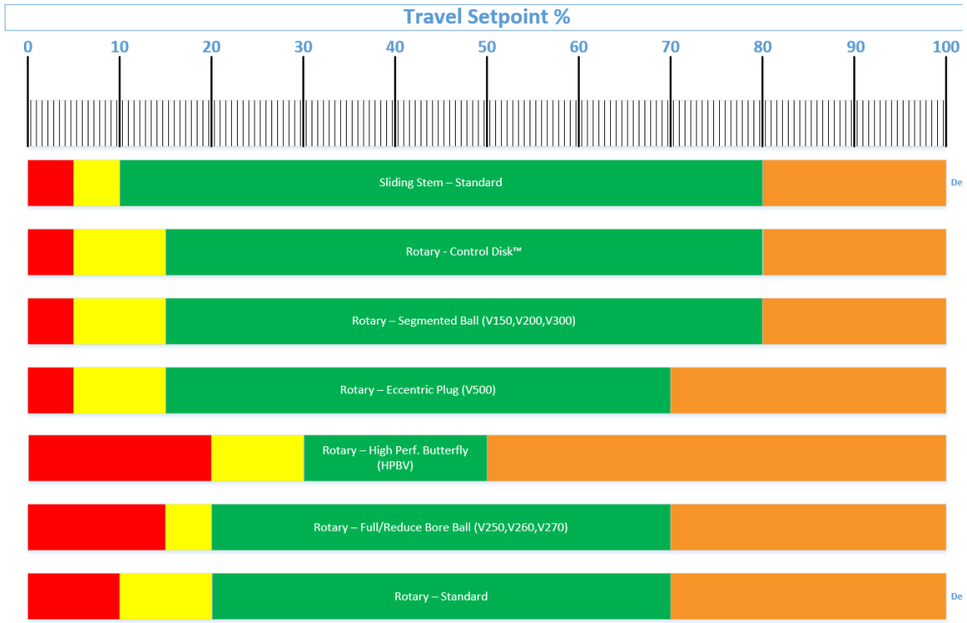
Seat Obstruction,

Plugging,

Seat Erosion,

and more …





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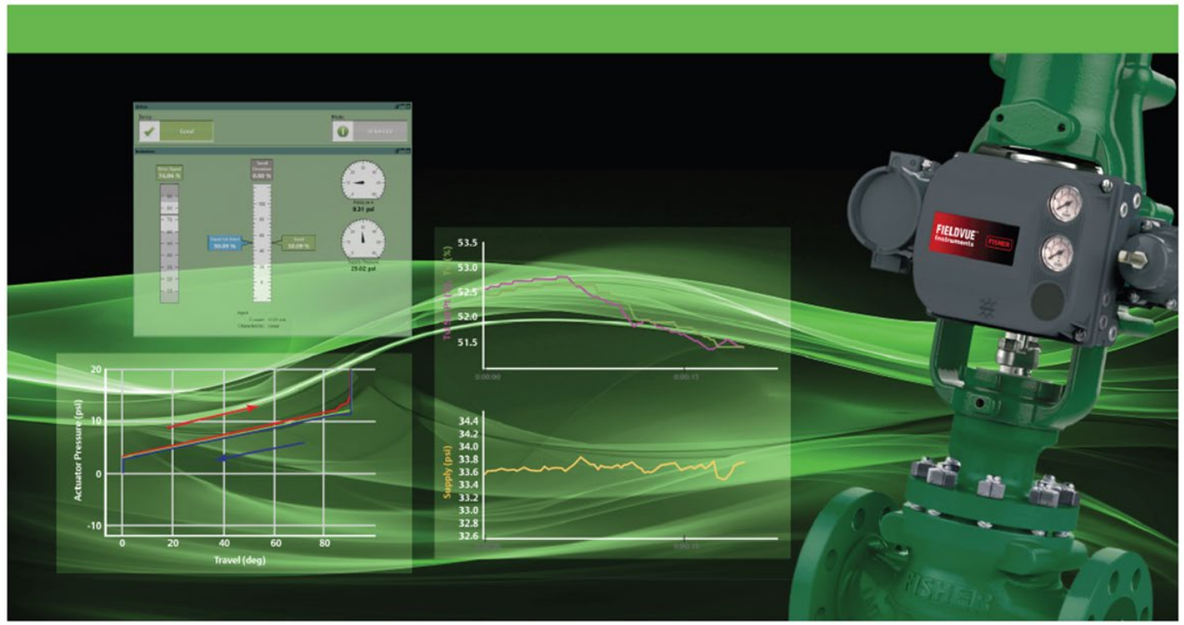
Fisher™ ValveLink™ Software

Deep-dive analytics done by user

What is ValveLink?



Configuration

Calibration

Diagnostics

ValveLink™ Solo

ValveLink™ SNAP-ON™

ValveLink™ DTM

ValveLink™ PLUG-IN for PRM®

ValveLink™ FDM

ValveLink™ Mobile

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ValveLink Software Scope

Emerson Solution

DeltaV™

Ovation™

AMS

3rd Party Host Integration

Honeywell

YOKOGAWA

ABB

invensys

SUPCON

Range of Operating Systems

Windows 10

Windows 11

Windows Server

Communication Protocols

HART COMMUNICATION FOUNDATION

Fieldbus Foundation

FIELDVUE Devices

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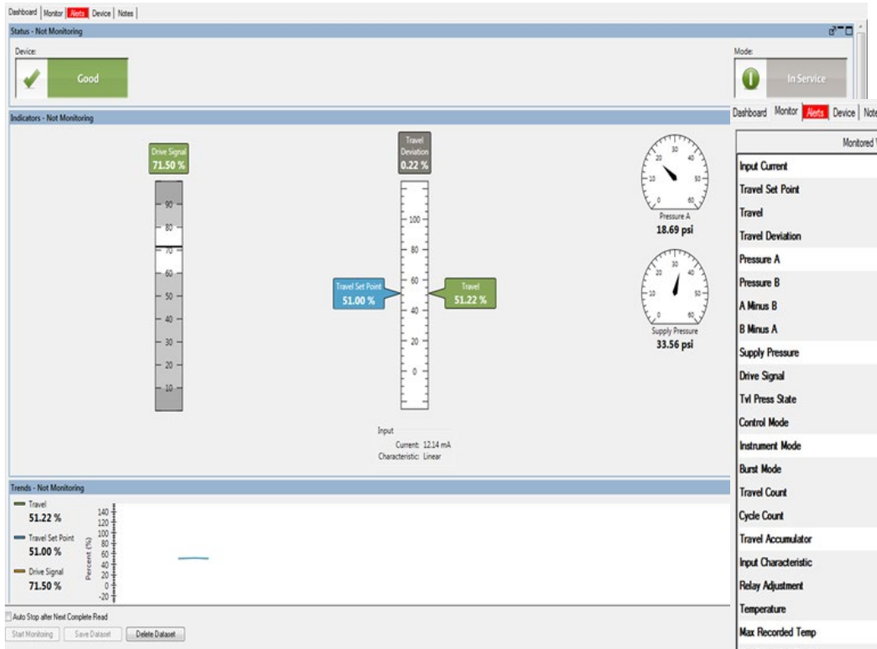
FIELDVUE Instrument Levels

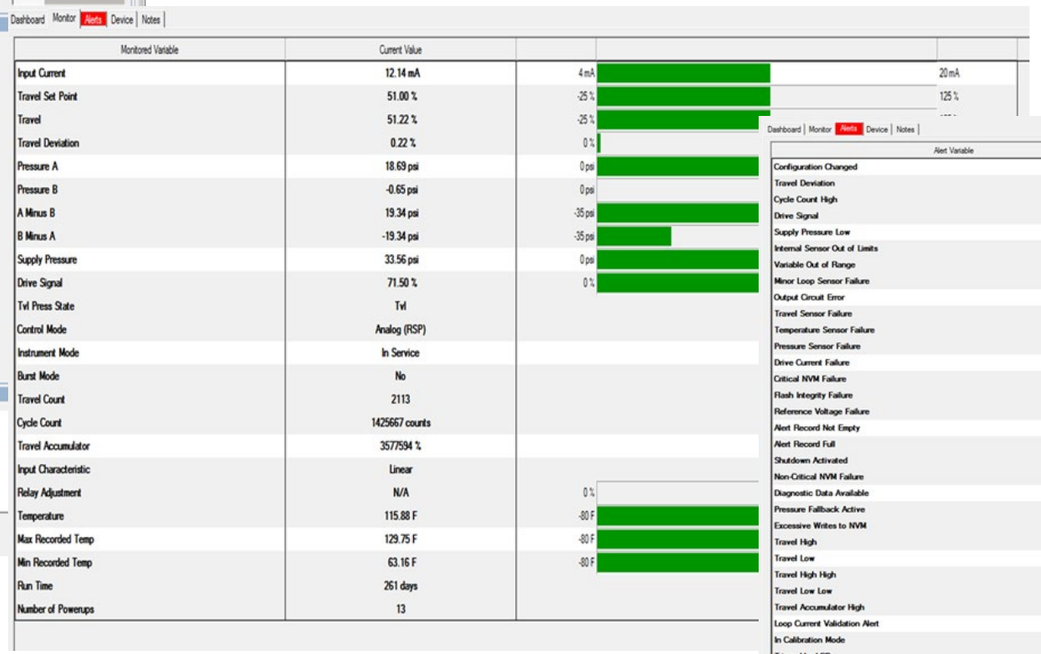
	HC	FD	AD	PD	SIS	PST	ODV
Protocol	HART	FF	HART/FF	HART/FF	HART	FF	HART
Auto Calibration	X	X	X	X	X	X	X
Stabilize/Optimize	X	X	X	X	X	X	X
Alerts	X	X	X	X	X	X	X
Status Monitor	X	X	X	X	X	X	X
Stroke Valve	X	X	X	X	X	X	X
Trending	X	X	X	X	X	X	X
Valve Signature			X	X	X	X	X
Dynamic Error Band			X	X	X	X	X
Drive Signal			X	X	X	X	X
Step Response			X	X	X	X	X
Valve Friction				X	X	X	X
Triggered Profile				X	X	X	X
PD One Button				X			X
Partial Stroke Test					X	X	X

Status Monitor

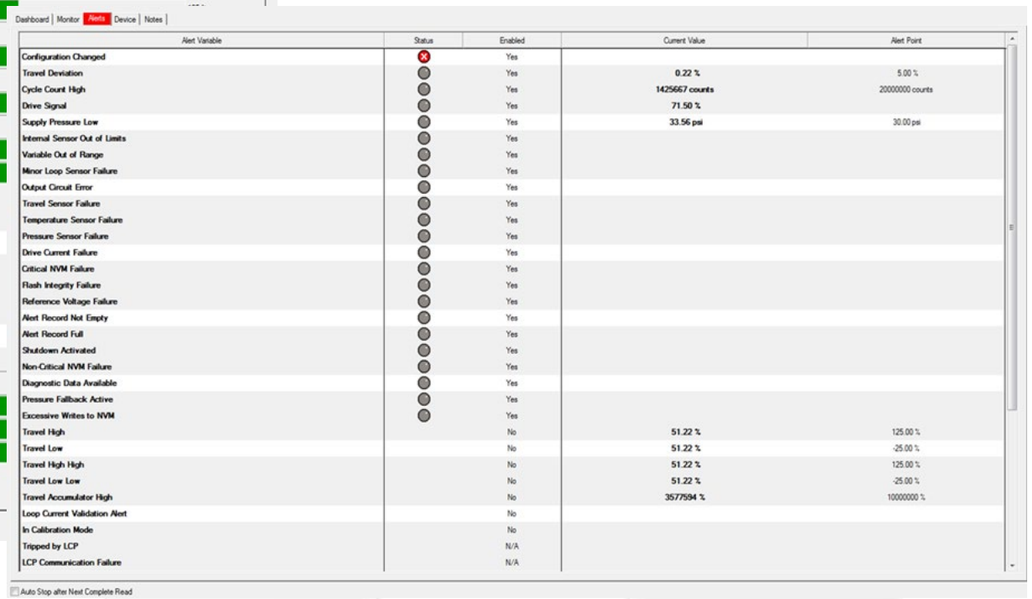
Dashboard



Monitor



Alerts



At a glance, determine what the status of the valve assembly is.

Online Diagnostics – PD One Button

Supply Pressure

Relay Adjustment

Travel Deviation

I/P and Relay Integrity

Air Mass Flow

NE107 Alert

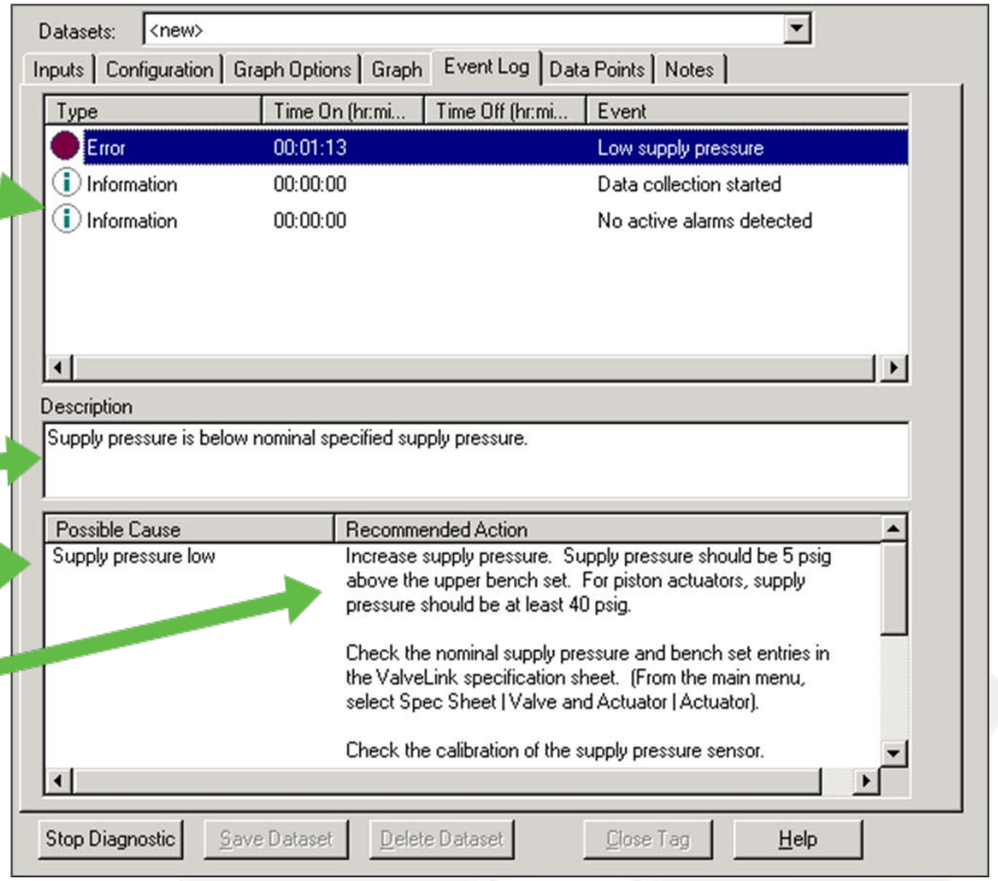
Red Yellow Green Light

Indicates issue detected and severity

Problem Description

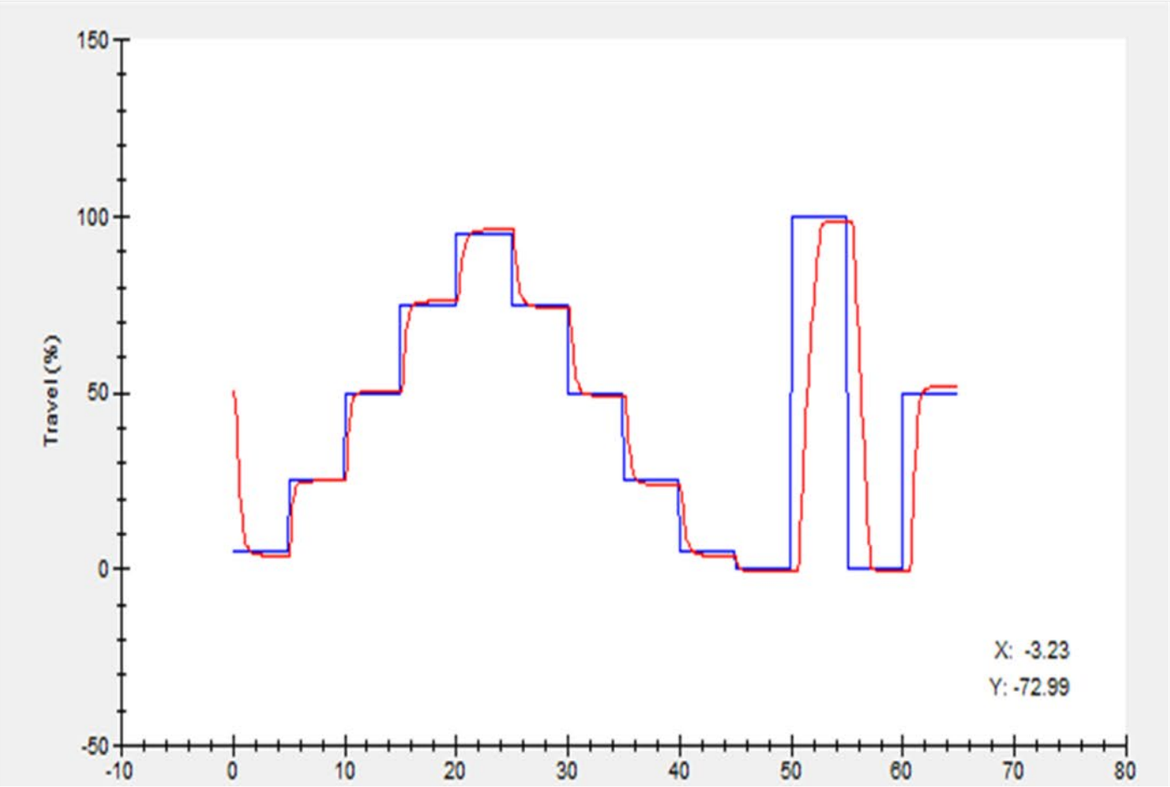
Possible Cause

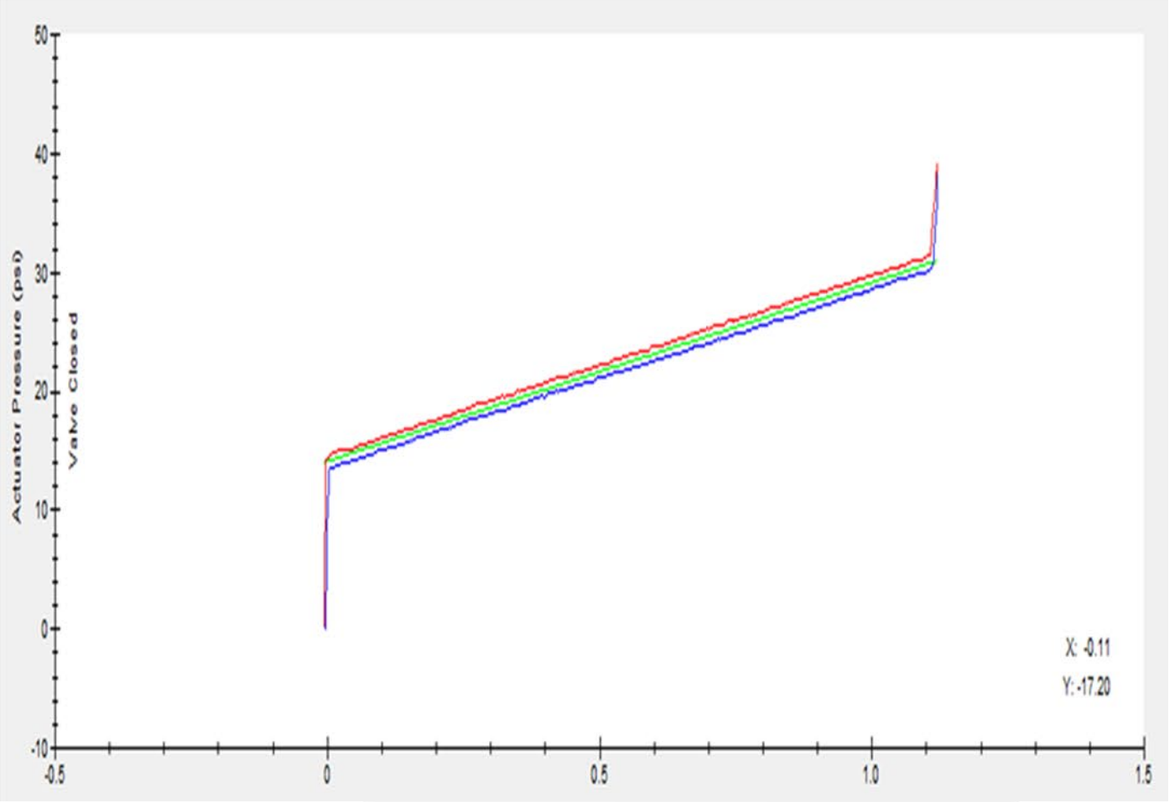
Recommended Action



Without disturbing the process, monitor the operation of the FIELDVUE positioner and detect issues before they become problems.

Offline Diagnostics – Step Response / Total Scan





Offline tests to move the valve and determine performance, friction, etc.

Effective Use of FIELDVUE™ DVC6200 Instrument Diagnostics

Effective Use of FIELDVUE™ DVC6200 Instrument Diagnostics

HART® Communication Protocol

Fisher™ FIELDVUE instruments offer state-of-the-art diagnostic tools providing a window into the health of valve assembly assets. However, crafting a maintenance strategy to take advantage of these tools can be a daunting task. These basic steps will provide immediate value and build momentum toward broader utilization.

Commissioning/Diagnostic Tools

ValveLink™ Mobile with AMS Trex Device Communicator or 475 Field Communicator

AMS ValveLink SNAP-ON™ Software

ValveLink Solo & ValveLink DTM Software

Commissioning/Diagnostic Tests by Instrument Level

HART Communicating (HC) Tier Diagnostic Tests

- Collect a detailed setup and save dataset
- Perform a status monitor while in service and save the data set
  - Save data sets for 4mA, 12mA, and 20mA

Advance (AD) Tier Diagnostics

- Run HC Tier Tests
- Run a Total Scan
- Run a Valve Step Response Tests
  - 3 Set Point Step Test*
    - 0, 100, 0
    - Ramp Time = 0
    - Collection Time = 10 seconds
  - Performance Step Test*
    - Predefined 25 step test
    - Ramp Time = 0
    - Collection Time = 10 seconds

Preconfigured tests (shown above) are available in ValveLink Software version 13.1 or greater

Performance Diagnostics (PD) Tier

- Run HC and AD Tier Tests
- Read Triggered Data (if Data Available Alert is active) and save dataset
- Run a One Button Sweep Diagnostic Test
- Run a Valve Friction Test and save dataset

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Commissioning

Commissioning Steps

1. Follow the mounting and installation guidelines per the Fisher FIELDVUE DVC6200 Quick Start Guide
2. Run the setup wizard
3. Run the Auto Travel Calibration
4. Configure the instrument, per the table to the right

Setup Parameter	Factory Default Settings	Recommended Initial Settings
HART Tag	As Specified On Order	Fill in Plant Information
Message	Blank	Fill in Plant Information
Descriptor	Blank	Fill in Plant Information
Date	Factory Calibration Date	Set to Current Date
Valve Serial Number	Blank	Fill in Valve Serial Number
HC Tier / AD Tier / PD Tier		
Travel Deviation Alert Enabled	Yes	Yes
Travel Deviation Alert Point	5%	5%
Travel Deviation Time	9.99 seconds	5 seconds
Supply Pressure Alert Enable	Yes	Yes
Supply Pressure Alert Point	.345 Bar (5 psi)	Single Acting: 0.20 Bar (3 psi) above upper bench set Double Acting: 0.68 Bar (10 psi) below nominal
Drive Signal Alert Enable	Yes	Yes
Diagnostic Data Avail Enable**	No	Yes
Alert Record Enable	No	Yes
Alert Record Not Empty Enable*	No	Yes
Alert Record Full Enable*	No	Yes
Cycle Counter	0	0
Travel Accumulator	0	0
PD Tier Only		
Trigger Profile Enable**	Disabled	Enable
Trigger Profile Variables**	Travel / Travel Setpoint	Travel / Travel Setpoint / Drive Signal / Supply Pressure
Triggered Profile Events**	None	Travel Deviation
Trigger Record Length**	60 Sec	60 Sec

Requires a work practice to regularly check/clear the alert

**Functionality with Performance Diagnostics Tier*

Online Diagnostics – PD One B...

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Emerson Automation Solutions
Flow Controls
Marshalltown, Iowa, 50158 USA
Sorocaba, 18087 Brazil
Cernay, 68700 France
Dubai, United Arab Emirates
Singapore 128461 Singapore

Fisher.com
Facebook.com/FisherValves
LinkedIn.com/groups/Fisher-3941826
Twitter.com/FisherValves

To learn more, visit
Emerson.com/FisherDVC6200

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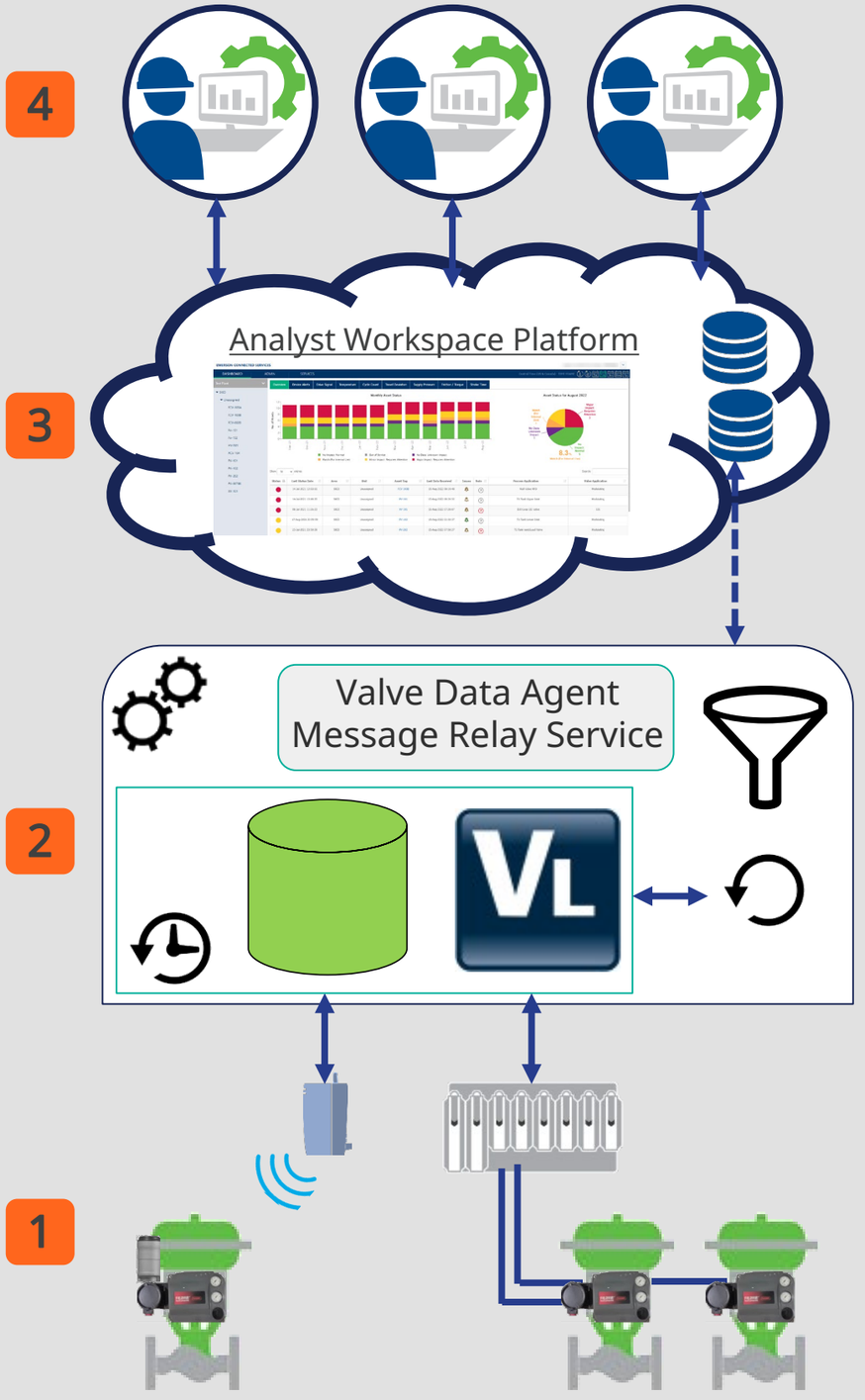
Valve Condition Monitoring

Deep-dive analytics done by Emerson experts

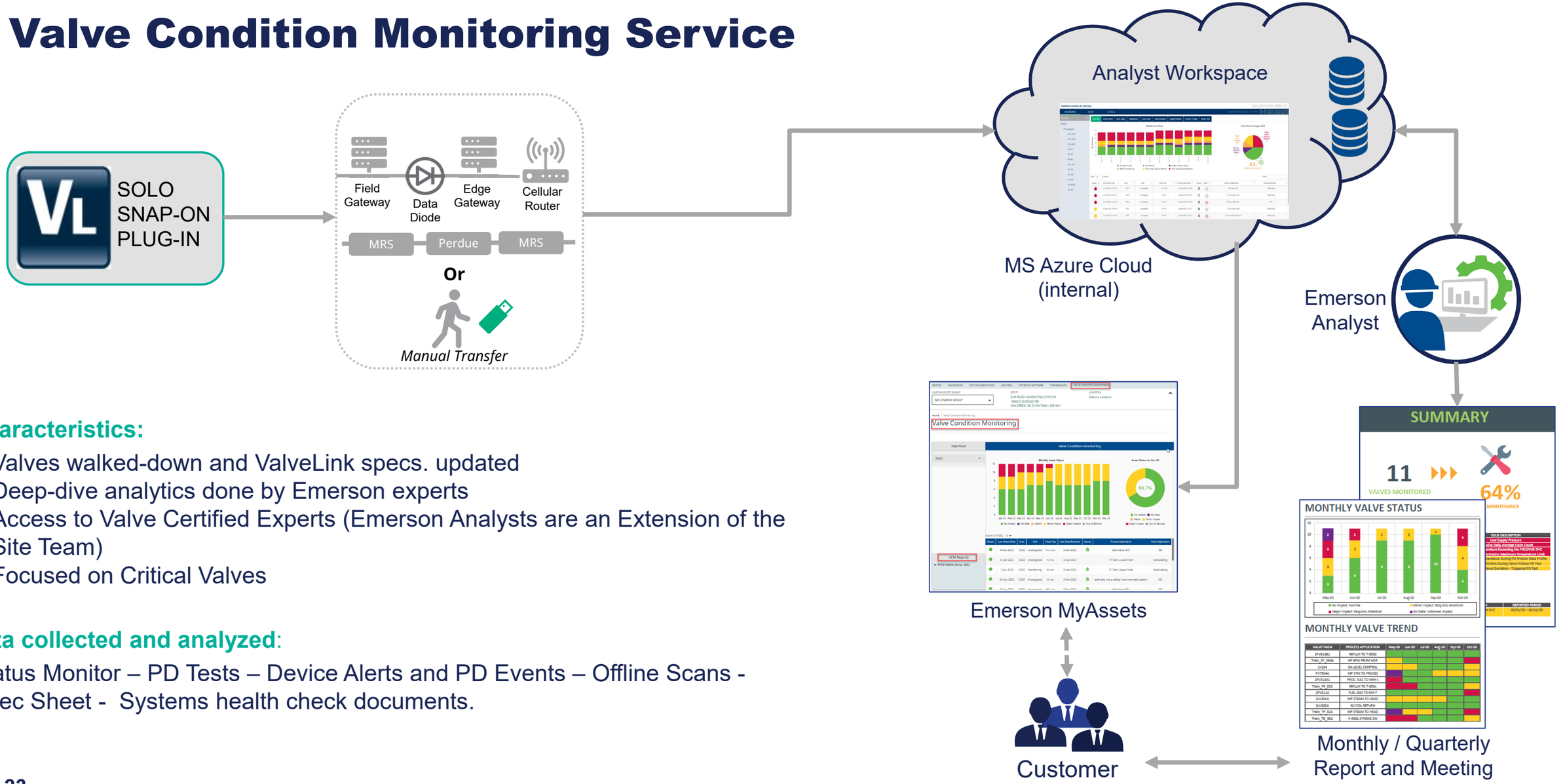
What is Valve Condition Monitoring ?

A **service offering** that provides customers access to Emerson Valve **Experts** for reviewing, **analyzing**, and recommending actions based on control valve data.

1. Customer's Host System: **FIELDVUE™** positioners connected via HART or FF protocols.
2. Valve Data Agent: Generates and records **valve data**, filters, transforms, and sends it to the Azure cloud application.
3. **Analyst Workspace** Platform: Receives and processes data from On-Premise.
4. Emerson Valve **Experts:** Review data, **report** findings, and **discuss** recommendations with customer.



Valve Condition Monitoring Service



Characteristics:

- Valves walked-down and ValveLink specs. updated
- Deep-dive analytics done by Emerson experts
- Access to Valve Certified Experts (Emerson Analysts are an Extension of the Site Team)
- Focused on Critical Valves

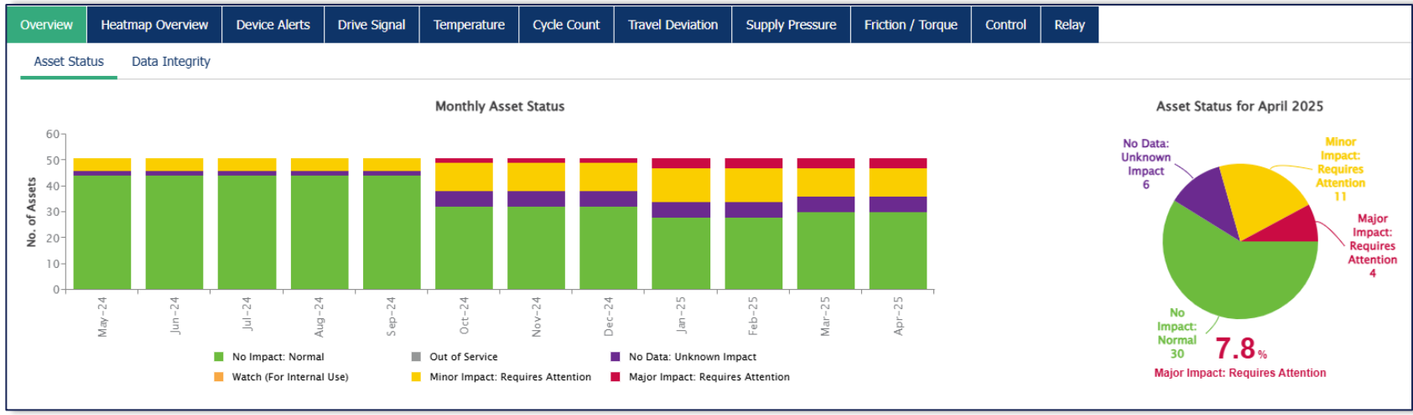
Data collected and analyzed:

Status Monitor – PD Tests – Device Alerts and PD Events – Offline Scans - Spec Sheet - Systems health check documents.

How Is Data Analyzed?

Analyst Workspace is an Emerson **cloud-based** application for reviewing and analyzing **massive** amounts of online diagnostics information.

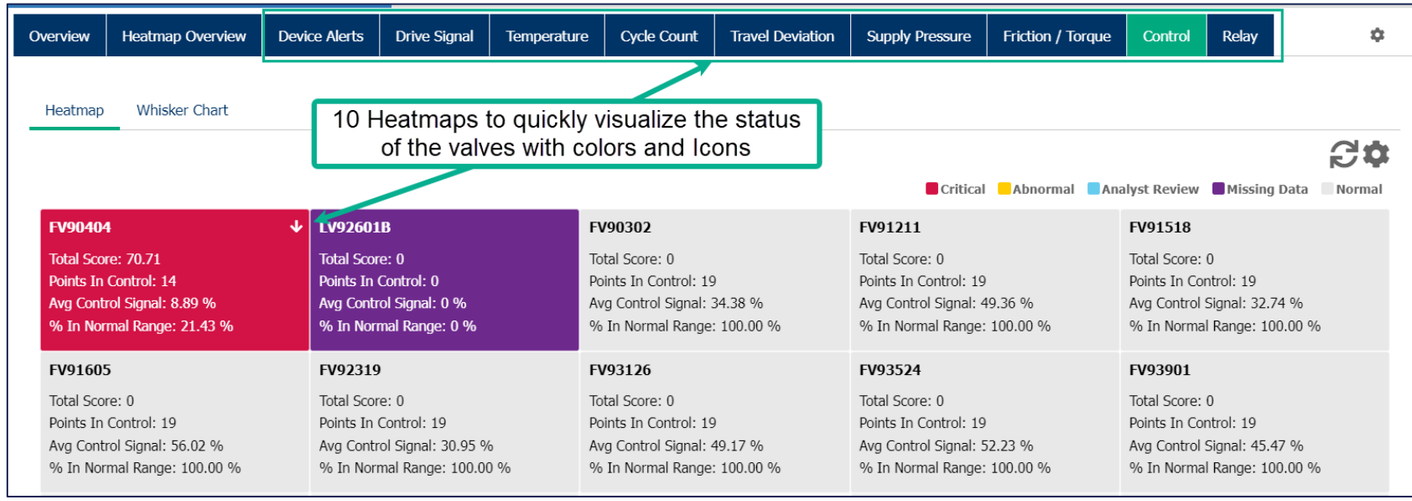
- Used internally by Emerson Lifecycle Services analysts



Key Benefits:

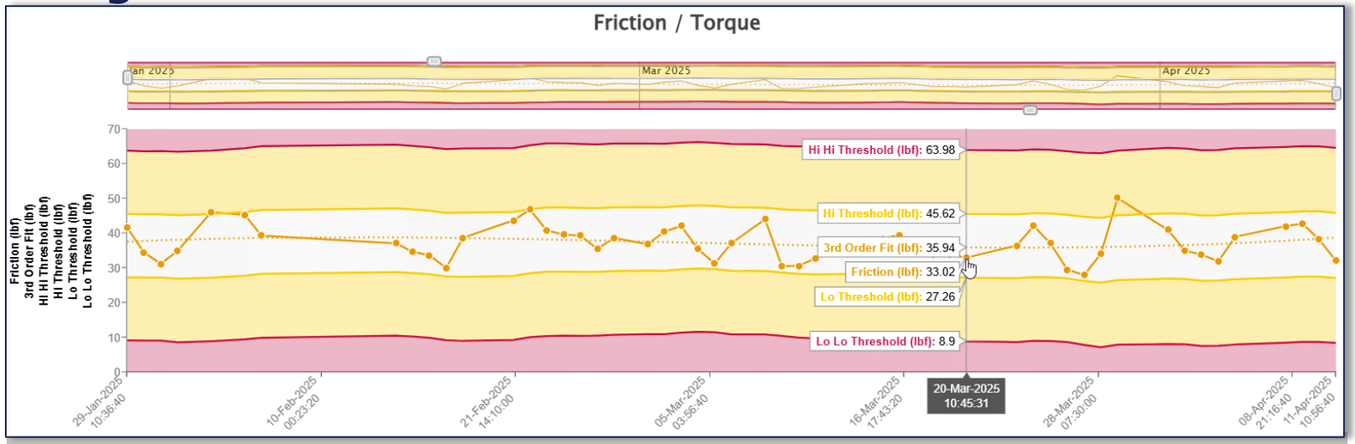
Indicates where the problem is (Anomaly Detection) using **Heatmaps** tiles:

Device Alerts – Drive Signal – Temperature – Cycle Count – Travel Deviation – Supply Pressure – Friction/Torque – Stroke Time – Control - Relay

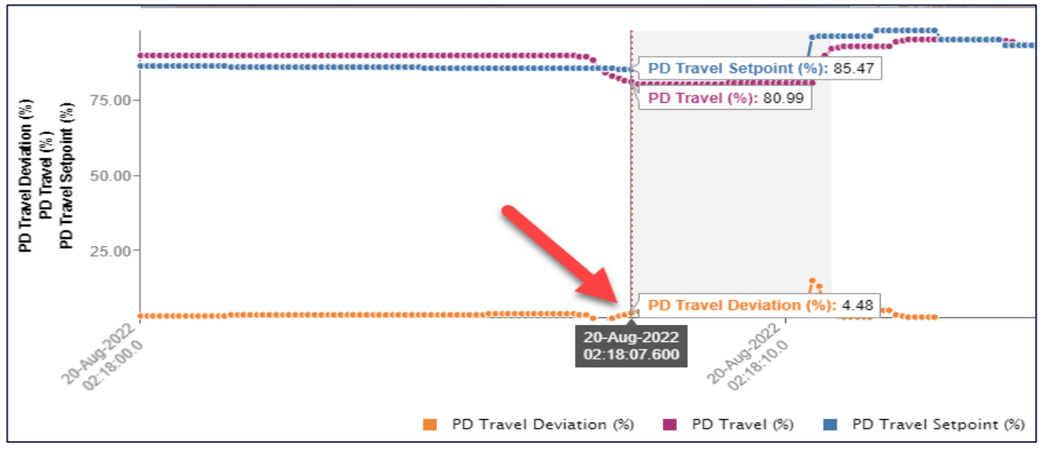


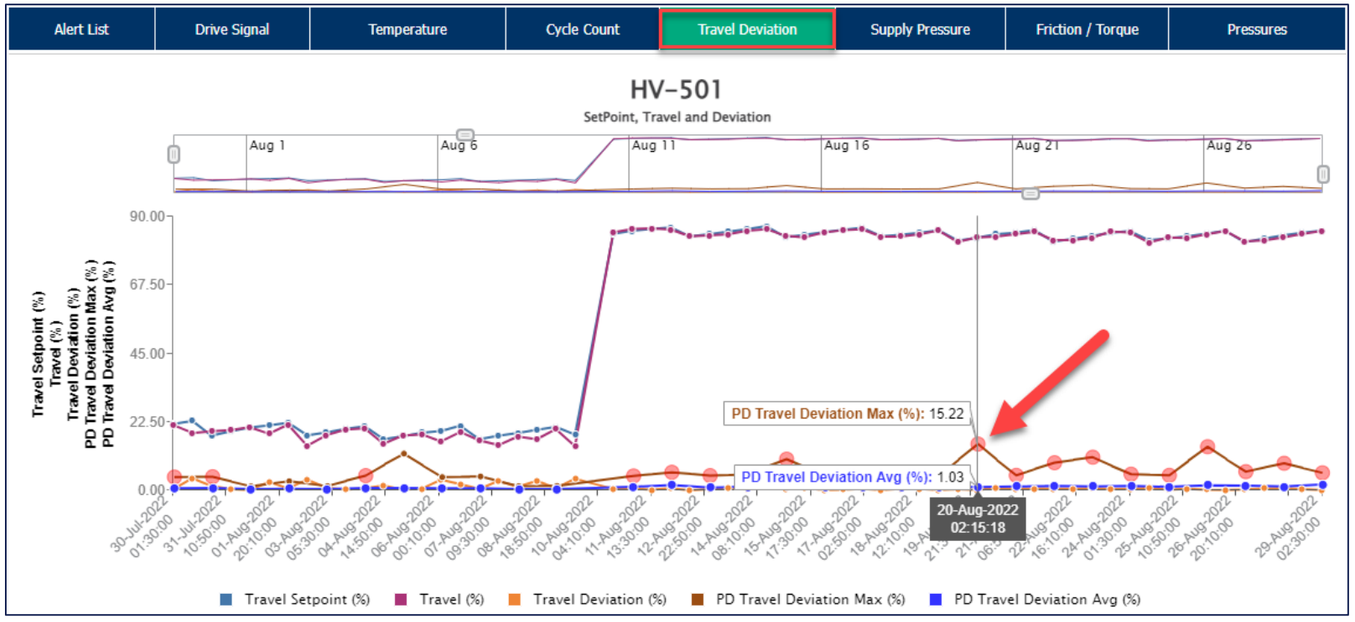
Trending Charts / Time-Series Analysis

- **Dynamic thresholds:** See beyond the data points - Detect behaviors that only appear with a large data pool.
- Option to **trend multiple parameters**
- Performance Diagnostics **(PD) Data:** See and analyze the high-resolution data.
- Issues reporting and tracking with **PIR** (Problem-Impact-Recommendation) Library



Determine a Normal ➔ Set Thresholds Based on Normal ➔ Detect Deviations From Normal





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Visit the Valve Health App, ValveLink, and Valve Condition Monitoring Exhibits

Find More Information

Emerson's Valve Reliability Suite™ Solutions | Emerson GB

Contacts

jaime.alvaradomillan@emerson.com

naman.Tahan@emerson.com

nathan.krasnovsky@emerson.com

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Thank You