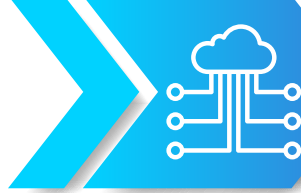# NECI

Leveraging the Industrial Internet of Things to Monitor Valve Health

STEP ONE

Digital Field Networks

For existing plants, incorporating an IIOT solution needs to be backwards compatible with the existing network. Fieldbus-compatible and wireless instruments are a requirement, and deploying WirelessHART (IEC 62591) is a good place to start.

Adding wireless sensors and integrating them with the existing control system makes the plant more efficient and reliable by covering measurements left out of the original design. When the correct protocols are applied, gateways connect to the distributed control system (DCS), historian and condition monitoring software.

STEP TWO

Instrument Assets

If a plant is using fieldbus, the valve positioners are already intelligent, and sensors for condition monitoring of other equipment can be added easily to the same fieldbus networks.

If a plant is built on 4-20 mA, a good step forward is to modernize all control valves with smart valve positioners, starting with the most critical valves. A discovery session should be conducted to identify critical control valves, see if they are digitally integrated with valve diagnostic software and ascertain if the HART communication is still working.

STEP THREE

On-Premise Analytics Software

Many plants don't capture much equipment data. Those that do often only analyze a small amount of that data. By implementing on-premise analytics software, data analysis is made more accessible through a simple dashboard offering an at-a-glance view of the overall health of the valve package. This will be the first place to access instrument readings, and instrument technicians can zoom into greater levels of detail, such as valve diagnostics. With special software, the plant can ensure high availability, reduce maintenance time, and reduce energy consumption.

STEP FOUR

Review Work Processes

Once the smart positioners, sensors and software are in place, the standard operating procedures (SOPs) can be modified to proactively use the software in the daily operation and maintenance of the plant, rather than require manual inspection of valves and equipment. Rewriting SOPs is an important step that should not be missed.

STEP FIVE

Internal IIOT

Attracting experienced employees for a job that requires extensive time spent on the road in remote areas can be a challenge. By connecting the valve and equipment condition monitoring systems to an enterprise intranet, the data from the site can be accessed across the internet by employees anywhere in the world, such as an onshore office or a global center of excellence with valve, vibration analysis, and corrosion experts.

STEP SIX
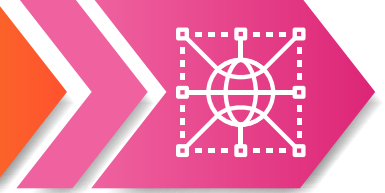
External IIOT

A plant may have fieldbus valve positioners and wireless sensors, but an internet connection is required for remote monitoring. Without an internet connection, a remote expert must request site personnel to run tests, take photos, and make screen captures, then send them across available communications channels, which could take days. By connecting the systems to a secure internet, access to data from the site can be granted to selected external vendors and service providers anywhere in the world. This is the full Internet of Things architecture.

This infographic is based on an article published in Valve Magazine by Jonas Berge, "Monitoring Valve Health Via the Internet."
Read the full article here: http://valvemagazine.com/magazine/sections/features/8578-monitoring-valve-health-via-the-internet.html