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Let's Solve Water

Why High Performing Utilities Choose Strategic Valve Rehabilitation

FOCUS: LARGE VALVE

In anticipation of a critical utility line inspection, one Oklahoma utility company took a proactive approach and had the 10 large diameter valves inspected along the water main. Thankfully, only one valve was found inoperable. The valve rehabilitation team was able to free the components, clean and lubricate the gears and return this large diameter valve to operability, saving the utility $150,000 in replacement costs.

Critical valves are the backbone of transmission and distribution systems, enabling control of water networks and reducing the consequence of failure when a main break does occur. Some of these valves are enormous assets with the power to control pipelines over six feet in diameter; they can weigh up to several tons and withstand operating pressures of up to 500 psi. When they are in good working order, critical valves allow a utility to respond effectively to crises by isolating any issues, limiting the duration and impact of any required downtime.

But in utilities around the world, these critical valves are in poor repair, or even inoperable. When critical valves fail, managers have effectively lost control of their system, increasing vulnerability to water main breaks or any other system hazard. Once valves have failed, utilities have traditionally sought to replace them, often at great cost, both in terms of time and expense.

But what if there were another way to restore system control without the time, expense, risk and inconvenience of a full replacement? It turns out there is a far more economical, less risky, and more sustainable option: preventative maintenance, repair and rehabilitation. High performing utilities are turning away from the wasteful practice of replacing valves that can be restored to full function, instead engaging experts in asset renewal to extend the life of those assets at substantially lower cost.

Nearly every utility in the world faces this choice…and at your utility, hundreds of thousands, if not millions of dollars are at stake. By adopting the habit of asking the question: Do I need to replace this asset, or can I restore to full operability and extend its useful life for a fraction of the cost, utility leaders can save their communities substantial amounts of money, reduce the need for unaffordable rate increases or financing arrangements, and improve the environmental sustainability of their operations – all while maintaining and enhancing system control. **This is the power of decision intelligence.**

Repairing vs. Replacing Critical Valves

According to the AWWA Manual of Water Supply Practice M44, 3rd edition, valves that are deemed critical should be inspected and exercised on an annual basis. Critical asset assessment introduces unique logistical, training and data challenges.

The problem is that many utilities lack the internal resources and expertise to manage these large and complex assets and perform necessary inspections on their own. Some lack the equipment to properly free frozen valves while others are unwilling to conduct these assessments on assets larger than 12" as they may not have the processes, procedures and experience to conduct the work successfully.

Rehabilitation can typically restore nine critical valves to full operability for the cost of replacing just one valve.

Rehabilitation which restored eight critical valves to full operability was achieved for less than the cost of replacing just one valve. In addition to the cost savings, the City of Grand Rapids realized the benefit of critical information and avoided potential negative social impact associated with valve replacements.

CLICK TO VIEW CASE STUDY

What to look for when hiring an outside valve assessment partner

When utilities lack the resources to sustain a successful critical valve assessment and rehabilitation program and seek a partner with this specific expertise and related qualifications, they are able to stretch capital dollars and take advantage of innovative solutions that deliver the data they need to make smarter decisions regarding their infrastructure.

1 Experience

How many large valves have they assessed?
What is the failure rate during assessment?

The national average of operable valves is 60% – which means 40% are inoperable, unlocatable or in the wrong position.

2 Solutions

A turn-key solution to reduce the labor and equipment burden to the utility client, including services such as:

- Asset identification
- Asset evaluation including multiple levels of inspections

  Level 1 General Assessment: Visual inspection with lowest torque application (if gearbox intact)

  Level 2 Internal Gearbox Assessment: Inspection of all moving parts within gearbox

  Level 3 Internal Valve Assessment: Requires manned pipeline entry to assess butterfly valve disc, disc stops, seat and seat gasket. Shut down and draining necessary
- Testing & Diagnostics
- Scientific Application of Controlled Torque
- Rehabilitation & Repair

3 Services

Ability to offer design and fabrication services that can add even more value and cost savings.

By choosing rehabilitation, Oklahoma City saved upwards of $300,000 of replacement costs and recommendations for an ongoing monitoring and maintenance plan.

The true cost of purchasing and installing new water valves

- Research time, capital equipment cost and cost of tying up working capital
- Decommissioning and disposal cost of the existing asset
- Installation cost including labor, parts and supplies
- Loss of service during installation and commissioning
- Ancillary impacts of significant civil work including traffic disruption
- Environmental concerns such as dewatering chlorinated lines, breaching a potable water line (potential contamination)
- Training and safety costs

DID YOU KNOW?

Some replacement and restoration costs have been estimated at **more than 10 times the cost of rehabilitation**.

After inspecting a critical 60" valve, the Region of Peel in Ontario, Canada was able to rehabilitate the valve, generating a 10X ROI compared to the cost of replacement.

Benefits of a critical valve assessment and rehabilitation program

- Rehabilitation can often be done for a **fraction of the cost**; as low as 10% of replacement
- Collection of valuable **asset information**
- Verification of operability for **when it matters most**
- Identification of **maintenance triggers**
- **Prioritization** of work orders – which valves get rehabilitated or replaced first

Entrust initial large valve assessment and rehabilitation programs to a company that will save time, resources and the unnecessary expense of replacement costs.

DID YOU KNOW?

Critical valves on average are built to last, but due to the lack of routine maintenance, they are inoperable long before their end of life expectancy.

Conclusion

Critical valves protect the water supply and the most essential pipelines in any transmission or distribution system. Uncontrolled failure events are hugely disruptive and costly, as is simply replacing critical valves. By prioritizing, assessing and rehabilitating valves with remaining useful life, Xylem can help a high performing utility dramatically lower their capital investment and take control of these essential assets.

By implementing a valve assessment rehabilitation program, a utility can save substantial dollars, allowing them to invest in additional proactive asset management activities - such as comprehensive leak detection - with the same money initially earmarked for valve replacement. This reduces the need for rate increases and improves sustainability while improving overall system control.

That’s the power of decision intelligence.

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1) The tissue in plants that brings water upward from the roots;
2) a leading global water technology company.

We're a global team unified in a common purpose: creating advanced technology solutions to the world's water challenges. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. Our products and services move, treat, analyze, monitor and return water to the environment, in public utility, industrial, residential and commercial building services settings. Xylem also provides a leading portfolio of smart metering, network technologies and advanced analytics solutions for water, electric and gas utilities. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise with a strong focus on developing comprehensive, sustainable solutions.

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