xylem
Let's Solve Water

How to Build a Flexible, Risk-Based Approach to Condition Assessment of Transmission Mains

FOCUS: METALLIC PIPE

Buried beneath residential areas and busy transportation corridors, a critical, large diameter steel pipeline was ready to feed a newly-constructed treatment plant. Not knowing the condition of the pipeline, a California utility set about to do all they could do to ensure the pipeline would continue to operate without failures.

Transmission mains typically make up about **25% of a utility's water pipeline infrastructure** while the majority of the pipelines live within the distribution system. Distribution systems often get the most attention from utility management because of frequent main breaks. However, transmission mains are often the most critical pipes within a system and are worth proactively investing in assessment.

Today, new advancements in technologies and data analytics are helping utilities build asset management programs using a risk-based approach to condition assessment of metallic transmission pipelines with the lowest financial impact. In many cases, undertaking a risk-based asset management approach **costs 80-90 percent less*** than traditional full-scale replacement programs.

Taking an approach that included condition assessment and engineering analysis on their critical pipe, the California utility was able to make confident decisions on the operation of their asset and **save over $20 million** by not pursuing full-scale replacement of the pipe.

*2018 Pure Technologies data

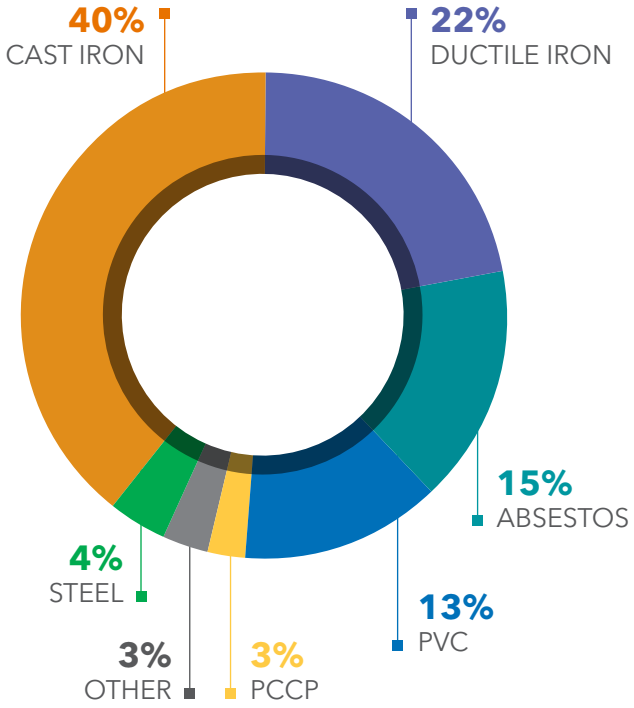
Managing Metallic Transmission Mains

Metallic pipes make up 65% of all pipelines within water systems. By implementing a data-driven approach to asset management and condition assessment, the following benefits can be realized:

1. Extend Remaining Useful Life
2. Optimize Capital Expenditure by Guiding Repair and Replacement Plans
3. Reduce Waste and Prevent Failures
4. Increase Confidence and Level of Service

PIPES IN NORTH AMERICA

WATER NETWORKS



Developing a Proactive Risk-Based Condition Assessment Program

Reducing risk is the goal of most condition assessment programs and is a key to a focused and balanced management strategy. Implementing a strategy that focuses on gathering data through condition assessment is crucial to not only the safe operation of your water pipeline infrastructure, but the optimization of your capital expenditures.

Understand

COLLECT
PRIORITIZE
PLAN

Assess

INSPECTION
ANALYSIS
RISK EVALUATION

Address

RISK MITIGATION
REMEDIATION
STRATEGIES

Manage

CONDITION MONITORING
ASSET MANAGEMENT
CAPITAL PLANNING

Depending on the history, context, and risk associated with a pipeline, different levels of Assessment are available, either on a pipeline of concern or as part of a comprehensive program.

Approaching Condition Assessment

There is no one-size-fits-all approach to assessing metallic pipelines. An approach should be tailored within the context of your risk tolerance while taking into consideration the material, diameter and past failure history. Many different methods and technologies can be combined to provide data and information to make decisions and prioritize pipelines.

The approaches can range from do nothing to a full in-line inspection making targeted repairs. Here are three general approaches for varying degrees of risk and effort; from low effort yielding lower confidence results to high effort yielding higher confidence results.

APPROACHES

- Health Check
- Pipeline Screening
- Engineering Assessment

Health Check

When you want to:

- Justify more action
- Prioritize a pipe within your system or section of a long pipeline
- Reduce consequence of failure

Actions

COULD INCLUDE THE FOLLOWING:

- Review maintenance and failure history
- Design check for today's loading conditions
- Monitor for transient pressures
- Assess critical control valves
- Perform external leak detection

Click here to schedule your Health Check

"Park City, UT saves $160,000 a year and eliminates water loss of 200 gallons per minute by actively monitoring their distribution system for leaks using acoustic leak detection technology"

CLICK TO VIEW CASE STUDY

Effort

Outcome

Pipeline Screening

When you want to:

- Identify any red flags which may indicate problems
- Reduce risk through obtaining actionable data
- Understand if your pipeline might need more attention
- Take first steps toward condition assessment inspections

Actions

COULD INCLUDE THE FOLLOWING:

- Review maintenance and failure history
- Design check for today's loading conditions
- Monitor for transient pressures
- Assess critical control valves
- Perform inline, high resolution leak detection

Click here to schedule your Pipeline Screening

"Champlain Water District gained confidence in the condition of a critical transmission main, allowing them to reallocate repair funding to other capital work projects."

CLICK TO VIEW CASE STUDY

Effort

Outcome

Engineering Assessment

When you want to:

- Make a high confidence decision
- Identify today's problems
- Prevent tomorrow's failures
- Make repair-replacement decisions
- Make long-term capital plans

Actions

COULD INCLUDE THE FOLLOWING:

- Review maintenance and failure history
- Design check for today's loading conditions
- Monitor for transient pressures
- Assess critical control valves
- Perform inline, high resolution leak detection
- Perform inline, pipe wall assessment
- Advanced structural assessment
- Remaining Useful Life (RUL) projections

Click here to schedule your Engineering Assessment

"Flower Mound, TX maintains asset integrity for a fraction of their estimated replacement cost after performing a proactive assessment of a critical steel pipe."

CLICK TO VIEW CASE STUDY

Effort

Outcome

Conclusion

To address the issue of aging infrastructure and the associated funding gap, utilities are now looking for ways to effectively manage their transmission pipelines while maintaining a high level of service to their customers. Implementing risk-based programs that involve a customized, phased-approach are the most effective ways to reduce risk and optimize capital spending. **That's the power of decision intelligence.**

Xylem |ˈzīləm|

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.

For more information on how Xylem can help you, go to www.xylem.com

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Let's Solve Water

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