

Pipeline Integrity and Corrosion Management

Pipeline Integrity Management

A comprehensive Pipeline Integrity Management Program (IMP) provides for the maintenance of safe and reliable oil and gas pipelines through a foundation of inspection, assessment, mitigation and communication. It places a special emphasis on external and internal corrosion, perhaps the most prevalent threats to the pipeline system. IMP follows guidelines established by the U.S. Department of Transportation, governmental agencies and local regulators.

Integrity Assessment

Wood Group's IMP team begins its process by conducting a risk assessment to determine the priorities required in determining the best mitigation techniques. Our team gathers data and identifies high consequence areas with risk potential. After developing a baseline plan, we utilize proven modeling tools to comprehensively examine potential pipeline anomalies, both externally and internally. Our team incorporates geo-referenced databases, such as Global Positioning Systems (GPS) to provide an accurate, ongoing record of pipeline condition for developing post-assessment strategies.

Based on the priorities determined by risk assessment, an integrity assessment shall be conducted using the appropriate integrity assessment methods:

- In-Line inspection
- Hydrostatic testing
- Direct assessment

External Corrosion Direct Assessment (ECDA) – ECDA is a direct assessment process for improving pipeline safety and its primary purpose is preventing future external corrosion damage. Our team has the experience to provide guidelines and strategy to integrate data from multiple field examinations, and from pipe surface evaluation with the pipeline's physical characteristics and operating history. Our integrated approach follows NACE RP0502 guidelines.

Internal Corrosion Direct Assessment (ICDA) – This approach is designed to accomplish two purposes – enhance the assessment of internal corrosion to gas pipelines and ensure pipeline integrity. It follows the same phases as external assessment but utilizes sophisticated tools for hydraulic modeling to define the location where corrosion is most likely to occur.

Corrosion Management

Corrosion is the loss of metal from an exposed surface in a corrosive environment. Most pipeline failures are due to localized corrosion. Its mechanism can be induced by many different variables such as: flow, metallurgy, deposits, internal stresses, microbiologically influenced corrosion (MIC) among others. Our corrosion management approach provides early warning signs of impending failures, develops correlations between processes and effects on system corrosivity, diagnoses a specific problem for cause and effect and evaluates the effectiveness of corrosion control/prevention techniques.

Contact us

For further information please contact:

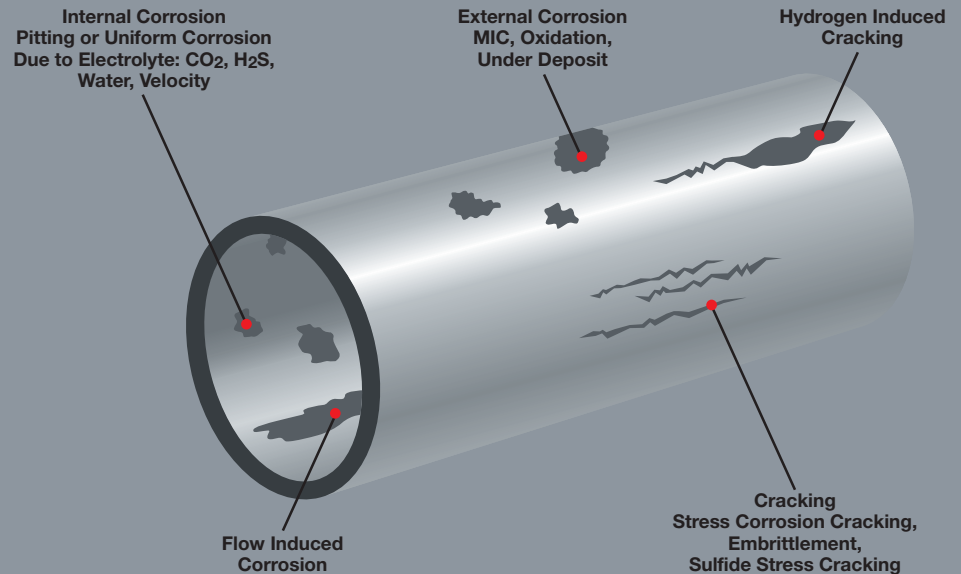
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Corrosion Mechanism in Pipeline



We provide technical services in corrosion control methods suitable for specific issues. This includes selection and evaluation of the chemical treatment for internal corrosion control and cathodic protection and coating specification for external corrosion control. We also provide technical guidance in cathodic protection design, specifications, providing the following engineering services:

- Soil resistivities
- Close interval over-the-line potential
- Direct current voltage gradient (DCVG)
- Alternating current voltage gradient (ACVG)
- Design of cathodic protection system

Failure Analysis

We provide a full complement of solutions to trace pipeline corrosion, metallurgical and mechanical failures to their root causes. Root cause analysis should be performed in many instances so that the damage cause can be identified and mitigation measures can take place to prevent reoccurrence.

Effective mitigation is a proactive process that involves an integrated view of operating conditions and potential threats as well as pipeline specific characteristics such as age, location and products being transported. We provide solutions based on the analysis of:

- Metallography
- Mechanical testing
- Chemical testing
- Scanning electron microscopy (SEM)
- Energy dispersive spectroscopy (EDS)
- X-Ray diffraction (XRD)

Our IMP strategy includes material selection and specifications based on NACE, API, ASTM and ASME standards and codes. It evaluates pipeline fitness-for-service (API579) and remaining life. Our experienced inspectors develop and review welding procedures in accordance with ASME, ANSI and API fabrication codes. NACE-certified specialists specify external and internal coatings for corrosive service and specify metals, alloys and non-metals for appropriate applications.