Course Overview:

This extensive training program is designed to provide professionals in the oil, gas, and water industries with advanced knowledge and practical skills in corrosion prevention and management. Participants will be introduced to the key principles, modern technologies, and methods that are essential for minimizing corrosion-related issues, reducing maintenance expenses, and enhancing the longevity of critical equipment.

The ability to understand and effectively manage corrosion is paramount in the gas, oil, and water industries. This course aims to equip attendees with the expertise needed to tackle corrosion challenges, helping to protect infrastructure from potential damage, ensure safety standards are met, and optimize operational efficiency across sectors.

Corrosion, if not properly managed, can lead to significant disruptions and environmental risks, particularly in the oil and gas industries. This makes having a robust corrosion control strategy essential for ensuring asset safety, performance, and long-term sustainability. Effective management of corrosion in both oil and water systems offers a practical solution for minimizing risks and costs.

Focusing on metallurgy and corrosion prevention, this program will explore how material properties influence corrosion risks and provide in-depth coverage of techniques used to protect assets from degradation. Key strategies include selecting appropriate materials, applying protective coatings, and utilizing corrosion inhibitors and cathodic protection methods.

This course not only highlights corrosion control methods but also encourages the development of effective monitoring practices. By the end of the program, participants will be prepared to implement these techniques to achieve professional certifications and advance their careers in corrosion management.

Intended Audience:

- Petroleum Engineers
- Welding Engineers
- Process Engineers
- Inspection Supervisors
- Equipment Engineers
- Maintenance and Planning Engineers
- Design Engineers
- Service Company Representatives

Learning Objectives:

By the end of this corrosion management training, participants will be able to:

- Understand the materials commonly used in the oil, gas, and water

industries
- Identify various corrosion mechanisms and theories
- Recognize the specific types of corrosion encountered in these industries
- Explore corrosion monitoring and inspection techniques
- Implement strategies for corrosion control, including water-related corrosion management

Key Skills Developed:

- Comprehension of metallurgy and material properties
- Insights into the economic impacts of corrosion damage
- In-depth understanding of corrosion mechanisms in oil, gas, and water fields
- Development of effective corrosion control and prevention strategies
- Expertise in corrosion monitoring technologies and techniques

Course Breakdown:

Unit 1: Material Selection and Corrosion Fundamentals:

- Material properties and metallurgy basics
- Techniques for material testing, including destructive methods
- Identification and classification of materials based on industry standards
- Economic considerations related to corrosion
- Overview of corrosion theories and measurement techniques

Unit 2: Types of Corrosion and Their Impact:

- Understanding galvanic corrosion and its effects
- Recognizing localized and pitting corrosion
- Effects of stray currents on corrosion rates
- Soil corrosion phenomena and their consequences
- Microbiologically Induced Corrosion (MIC) and its impact

Unit 3: Additional Types of Corrosion and Prevention Methods:

- Mechanisms of wet hydrogen sulfide (H2S) corrosion
- Addressing Corrosion Under Insulation (CUI) issues
- Managing Flow Assisted Corrosion (Erosion Corrosion)
- Preventing stress corrosion cracking in chlorine environments
- Combatting intergranular corrosion challenges

Unit 4: Corrosion Control in Oil, Gas, and Water Industries:

- Design modifications to prevent corrosion
- Active cathodic protection methods (Sacrificial Anode)
- Using Impressed Current Cathodic Protection (ICCP)
- Passive protection through coating and protective paints
- Corrosion inhibitors and their application in control systems

Unit 5: Advanced Corrosion Monitoring and Inspection Techniques:

- Measuring material thickness through ultrasonic testing
- Radiographic testing for corrosion detection
- Using corrosion coupons for monitoring
- Employing electronic probes for corrosion tracking
- Implementing intelligent pigging systems for pipeline inspections
- Integrating Risk-Based Inspection (RBI) into corrosion monitoring