



HARNESS THE POWER
OF KNOWLEDGE

**Corrosion and Cathodic
Protection: Mastering Principles,
Techniques, and Applications**

TRAIN



Course Overview:

Corrosion is a pervasive and costly problem that affects various industries, including oil and gas, power generation, and infrastructure

Cathodic protection (CP) is a widely used technique to mitigate corrosion and protect metallic structures from deterioration

This comprehensive 5-day professional training course will provide a thorough understanding of corrosion principles, CP mechanisms, techniques, and applications for preventing corrosion and ensuring asset integrity

Course Objectives:

By the end of this course, participants will be able to:

1

Grasp the fundamental principles of corrosion, including electrochemical mechanisms, types of corrosion, and factors influencing corrosion rates

2

Identify the different types of metallic structures susceptible to corrosion and the associated costs

3

Understand the principles and mechanisms of cathodic protection, including cathodic polarization and current distribution

4

Select appropriate CP techniques, such as sacrificial anodes, impressed current systems, and galvanic protection

5

Design and implement CP systems for various applications, including pipelines, underground storage tanks, and marine structures

6

Conduct CP surveys and perform measurements to monitor and optimize CP system performance

7

Integrate CP into asset integrity management plans and risk assessment strategies

Course Agenda:

Day 1: Introduction to Corrosion and Its Impact

- Delve into the history and evolution of corrosion and its significance in various industries
- Explore the regulatory framework and operational standards governing corrosion control practices
- Discuss the economic impact of corrosion and the role of CP in minimizing downtime, maintenance costs, and environmental risks
- Analyze the fundamentals of corrosion, including electrochemical mechanisms, types of corrosion, and factors influencing corrosion rates

Day 2: Types of Corrosion and Metallic Structures

- Identify the different types of corrosion, such as uniform corrosion, pitting corrosion, and galvanic corrosion, and their characteristics
- Discuss the factors influencing corrosion rates, such as electrolyte conductivity, pH, temperature, and stress
- Analyze the susceptibility of various metallic structures to corrosion, including pipelines, storage tanks, and marine structures

Day 3: Cathodic Protection Principles and Mechanisms

- Understand the principles and mechanisms of cathodic protection, including cathodic polarization and current distribution
- Discuss the different types of cathodic protection systems, such as sacrificial anodes, impressed current systems, and galvanic protection

- Analyze the factors influencing the selection of appropriate CP techniques for different applications

Day 4: Design and Implementation of CP Systems

- Learn the design principles of CP systems, including current density requirements, anode placement, and potential monitoring
- Implement CP systems for various applications, including pipelines, underground storage tanks, and marine structures
- Conduct CP surveys and perform measurements to monitor and optimize CP system performance

Day 5: CP Maintenance, Troubleshooting, and Integration into Asset Integrity Management

- Discuss CP maintenance procedures, including anode replacement, potential monitoring, and interference mitigation
- Troubleshoot common CP problems, such as overprotection, underprotection, and stray current interference
- Integrate CP into asset integrity management plans, including risk assessment, maintenance scheduling, and recordkeeping

Who Should Attend:

- Corrosion engineers, cathodic protection specialists, and asset integrity personnel involved in corrosion control and CP implementation
- Field supervisors, operators, and technicians responsible for overseeing CP operations and maintaining asset integrity
- Cathodic protection equipment manufacturers and service company personnel engaged in CP design, implementation, and monitoring technologies

Course Benefits:

- Develop a comprehensive understanding of corrosion principles, CP mechanisms, techniques, and applications for preventing corrosion and ensuring asset integrity
- Gain hands-on experience in selecting appropriate CP techniques, designing CP systems, and conducting CP surveys and measurements
- Enhance your ability to troubleshoot CP problems, integrate CP into asset integrity management plans, and optimize CP performance for various applications
- Stay updated on the latest advancements in CP technologies, methodologies, and standards
- Network with other professionals from diverse backgrounds within the oil and gas, power generation, and infrastructure industries to share knowledge and experiences in corrosion control and CP