Global Horizon
TRAINING CENTER

Training Course

Cathodic Protection for Port Infrastructure

Description

This Cathodic Protection for Port Infrastructure course at Global Horizon provides fundamental principles, evaluations, and applications of Cathodic Protection. It covers key protection techniques such as Sacrificial Anode and Impressed Voltage systems, with a focus on port infrastructures, pipelines, storage tanks, and concrete structures.

Objectives

- Understand the principles of corrosion and corrosion protection techniques.
- Identify different types of corrosion and their impact on infrastructure.
- Comprehend the fundamentals of Cathodic Protection systems.
- Recognize the differences between Sacrificial Anode and Impressed Current systems.
- Assess coating properties and their influence on Cathodic Protection effectiveness.
- Perform basic field measurements for Cathodic Protection applications.
- Learn maintenance, rehabilitation, and corrosion inspection of concrete structures.
- Apply key corrosion test methods and interpret results.
- Evaluate the economic considerations of Cathodic Protection systems.

Who Should Attend?

- Engineers
- Inspectors
- Managers
- Metallurgists
- Technicians
- Personnel involved in pipeline, storage tank, and port infrastructure maintenance

Course Outline

Day 1: Principles and Types of Corrosion

- Introduction to corrosion fundamentals
- Electrochemical reactions and corrosion kinetics
- Forms of corrosion: uniform, galvanic, pitting, stress corrosion cracking, and erosion
- Materials selection for corrosion resistance

Day 2: Fundamentals of Cathodic Protection

- Pipe-to-soil potentials and surface potential surveys
- Soil resistivity and its impact on corrosion
- Potential surveys and line current measurements
- Cathodic Protection testing and current distribution

Day 3: Corrosion in Concrete Structures

- Defects in concrete structures and their corrosion mechanisms
- Macro-cell corrosion and chloride contamination
- Penetration, permeability, and pH effects on concrete corrosion
- Cracking and corrosion-induced damage assessment

Day 4: Cathodic Protection Design & Application

- Cathodic Protection systems: Sacrificial Anode vs. Impressed Current
- Installation of ground beds and anodes
- Pipe coatings, types, and efficiency
- Coating inspection, testing, and stray-current interference management

Day 5: Rehabilitation & Maintenance of Concrete Structures

- Rehabilitation techniques for concrete structures
- Corrosion inspection and testing methodologies
- Delamination surveys, crack detection, and chloride content assessment

Standards and compliance for Cathodic Protection systems