

# € TRAINING

Corrosion Control in Oil and Gas





## Corrosion Control in Oil and Gas

### Introduction:

This training program provides deep knowledge of corrosion and focuses on the examination and identification of metallurgical problems that occur in process units and methods of monitoring and damage reduction. It utilizes the application of engineering principles and procedures to minimize corrosion to an acceptable level by the most economical method.

### Program Objectives:

At the end of this program, participants will be able to:

- Explore the materials of construction used in the oil, gas, and water fields.
- Learn about the corrosion theories and mechanisms.
- Understand the typical types of corrosion-related to oil, gas, and water fields.
- Learn about the corrosion monitoring and inspection methods.
- Understand the practical methods of controlling corrosion.

### Targeted Audience:

- Petroleum Engineers, Welding Engineers, and Process Engineers.
- Inspectors and Inspection Supervisors.
- Equipment Engineers, Design Engineers.
- Maintenance Engineers and Planners.
- Service Company Representatives.

### Program Outlines:

#### Unit 1:

#### Construction Material Grades and Principles of Corrosion Engineering:

- Metallurgy and Engineering material properties.
- Materials testing destructive testing.

- Material identification according to API 5L and ASME code.
- Economic impacts of corrosion.
- Theory of corrosion.
- Corrosion rates and ways of measurements.

## Unit 2:

### Types of Corrosion:

- Galvanic corrosion.
- Localized / pitting corrosion.
- Corrosion exposed to stray currents.
- Soil corrosion.
- Crevice corrosion.
- Microbiologically Induced Corrosion MIC.

## Unit 3:

### Types of Corrosion Continued:

- Wet hydrogen sulfide H<sub>2</sub>S corrosion mechanisms.
- Corrosion Under Insulation CUI.
- Corrosion Under Supports CUS.
- Flow assisted corrosion Erosion Corrosion.
- Cl stress corrosion cracking.
- Intergranular corrosion.

## Unit 4:

### Corrosion Control in Oil, Gas & Water Fields:

- Protection by changing design.
- Active Cathodic protection Sacrifice anode.
- Cathodic protection Impressed Current.

- Passive Protection Coating.
- Types of protection paints.
- Inhibitors.

## Unit 5:

### Corrosion Monitoring in Oil, Gas & Water Fields:

- Thickness measurements using ultrasonic testing.
- Radiographic examination.
- Corrosion coupons.
- Electrical probes.
- Intelligent pigs.
- Risk-Based Inspection RBI.