

**Course Name:** Corrosion Control in Gas, Oil & Water

**Reference Code:** Gas 701

### About the course:

This training course provides a deep knowledge of corrosion and focuses on the examination and identification of metallurgical problems that occurs in process units and methods of monitoring and damage reduction. The equipment costs are a considerable part of the investment in the petro chemical and water industry, and for long-distance, large-diameter pipelines, they can become prohibitively high if the corrosivity of the fluid necessitates the use of corrosion-resistant alloys instead of carbon steel. Better understanding and control of the corrosion of carbon steel can increase its application range and therefore have a large economic impact. Corrosion Control is an essential requirement in Oil & Gas activities. It utilizes application of engineering principles and procedures to minimize corrosion to an acceptable level by the most economical method. It is rarely practical or economical to eliminate corrosion completely and in practice one or more of the following methods would be applied. Corrosion monitoring Provides an early warning that damaging process or conditions exist which may result in corrosion induced failures. Moreover, it indicates the correlation of changes in process parameters and their effect on system corrosion. Corrosion Monitoring is essential to evaluate the service life of pipelines and to detect when would be the nearest replacement/shutdown.

### Course Objective:

At the end of this training course, participants will have learned about:

- Materials of Construction used in the O&G and water fields
- Corrosion theories and mechanisms
- Typical Types of corrosion related to O&G and water fields
- Corrosion Monitoring and inspection Methods
- Practical Methods of controlling corrosion

### Who Should attend?.

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

#### Kingdom of Saudi Arabia

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Khobar Gate Tower  
King Fahad Street , Khobar 31952  
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## Course Methodology:

This training course is designed to be a hands-on, stimulating experience. The training course is highly interactive with many discussion and practice sessions.

- Relevant computer simulations and videos .
- Copies of all presentation material.
- Variety of Learning Methods.
- Pre-test and final test.
- Case Study
- Training Groups.
- Presentation.
- Lectures

## Course Outline:

### Day One: 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

### Day Two: Types of Corrosion

- Galvanic Corrosion
- Localized /Pitting Corrosion
- Corrosion exposed to stray currents
- Soil Corrosion
- Crevice Corrosion
- Microbiologically Induced Corrosion (MIC)

### Day Three: Types of Corrosion (Continued)

- Stress Corrosion Cracking (SCC)
- Corrosion Under Insulation (CUI)
- Corrosion under supports (CUS)
- Flow assisted corrosion (Erosion Corrosion)
- Cl Stress Corrosion Cracking
- Intergranular Corrosion

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**Day Four: 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

**Day Five: Corrosion Monitoring in Oil, Gas & Water Fields**

- Thickness measurements using ultrasonic testing
- Radiographic Examination
- Corrosion coupons
- Electrical Probes
- Intelligent Pigs
- Exam

**Time: 08:00 AM -03:00 PM Numbers of hours: 35 Hours**

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