

This course can be adapted to virtual classroom mode

Corrosion Prevention in Oil & Gas Production

5 days
Overview

CORR-EN-A

LEVEL

Knowledge

PURPOSE

This course provides in-depth understanding of corrosion phenomena specific to Oil & Gas production facilities and the main corrosion prevention techniques.

LEARNING OBJECTIVES

Upon completion of the course, participants will be able to:
list the main characteristics and types of corrosion of metallic materials used in the Oil & Gas industries,
describe the means of protection against each type of corrosion,
select the most appropriated material for a given Oil & Gas application,
explain the available ways of monitoring the state of corrosion of a metallic equipment.

WAYS AND MEANS

Highly interactive teaching by experienced lecturers.
Several applications and illustrations.

LEARNING ASSESSMENT

Written test upon training course completion.

PREREQUISITES

Provide evidence of a professional experience of at least 1 month, related to the concerned field.

Agenda

DEFINITION & MECHANISMS OF CORROSION

Ferrous and non-ferrous metals: structure, composition, mechanical properties, metallurgy.
Definitions: wet corrosion, dry corrosion.
Cost of corrosion: financial and human.
Basics: electrochemical mechanisms, polarization, passivity, diffusion.

1 d

COMMON TYPES OF CORROSION

Analysis of the origin and development process of each form of corrosion and possible methods of prevention.
Forms of corrosion studied: uniform, galvanic, pitting, crevice, inter-granular, selective, corrosion-erosion and cavitation, stress corrosion, contact corrosion.

1 d

TYPES OF CORROSION ENCOUNTERED IN THE OIL & GAS INDUSTRY

Each type of corrosion is studied together with possible remedial treatment:
Corrosion by hydrogen sulfide.
Corrosion by carbon dioxide.

1 d

Corrosion due to oxygen in aqueous environment.

Caustic soda corrosion.

Corrosion in acid gas treatment units.

Atmospheric corrosion or corrosion by sea water.

Corrosion by mercury.

Corrosion of reinforced concrete.

Case studies of corrosion observed in Oil & Gas installations: identification of the types of corrosion and suggested remedial treatments.

CORROSION PREVENTION

1 d

Design of equipment aimed at avoiding certain types of corrosion.

Choice of the materials best suited to the environment.

Corrosion inhibitors, filming, passivating, neutralizing, absorbing the oxygen.

Anticorrosion coatings and systems.

Cathodic protection with sacrificial anodes or imposed current.

Methodology and control of processes. Control of process and environmental parameters.

Analysis of the means of prevention implemented in the units.

CORROSION MONITORING - FUNDAMENTALS OF INSPECTION

1 d

Corrosion coupons and probes.

Non-destructive testing of the state of walls.

Corrosion monitoring plan.

Fundamentals of inspection.