Training - Degradation and Corrosion Prevention

CICP-EN-P | Face-to-face only | 5 days

This course provides a practical knowledge of pressure equipment and piping corrosion, and explains prevention strategies

Level

Skilled

Public

Experienced inspection, maintenance, HSE, process engineers, managers and technical staff involved in safe operation and integrity of pressure equipment installed in refineries, chemical and petrochemical plants

Objectives

Attendees will be able to implement the following skills:

- Recognize the different forms of deterioration affecting industrial equipment
- Specify the elements to be taken into account to prevent corrosion
- Specify the elements to be taken into account to predict and control the evolution of an installed corrosion

Pedagogical & technical resources

- Active teaching methods are used to promote a pooling of experience, under the lead of inspection specialist
- Actual accidents in refineries and chemical plants are analyzed to be aware of the risks
- Wide use of samples, videos and pictures to develop practical case studies for pressure equipment such as piping, heat exchanger, reactor, distillation column, boiler, etc

Assessment of achievements

- Trainees are assessed throughout the training through practical application phases and interactions with the trainer
- A final on-the-spot evaluation may also be carried out at the end of the course and/or at the end of each module using tests designed to verify the learners' understanding and assimilation of the knowledge linked to the training objectives

Prerequisites

No prerequisites are necessary to follow this course

Responsable

IFP Training instructors, with expertise in the field and trained in modern teaching methods adapted to the specific needs of learners from the professional world

Program

METALLURGY USED FOR PRESSURE EQUIPMENT & PIPING MANUFACTURING — 1 day

Ferrous and non-ferrous material: microstructure, composition, mechanical properties.
Plates, forging, castings, piping, rolling, welding, post weld heat treatment.
Pressure equipment design and manufacturing.

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USUAL TYPES OF CORROSION & DETERIORATIONS — 1 day

Different types of industrial corrosion: uniform, pitting, crevice, intergranular, hydrogen embrittlement stress corrosion cracking, corrosion-erosion, galvanic, selective.
Definitions and basic mechanism: wet corrosion, dry corrosion.
Metallurgical deterioration: brittle fracture, chromium precipitation, creep, fatigue.

TYPES OF CORROSION IN OIL & GAS INDUSTRIES & PETROCHEMICAL PLANTS - API 571 — 1.5 days

Use API 571 to study each type of corrosion along with possible prevention for pressurized vessel and piping.
Application to old plants already in service, or during design of new plants.
Specific corrosion occurring in industrial installations:

- Hydrogen induced cracking, high temperature hydrogen attack, high temperature sulfur corrosion, oxidation, flue gas corrosion, naphthenic acid corrosion, polythionic acid corrosion, caustic soda stress cracking, Amines corrosion, CO2 corrosion.

Specific corrosion existing in chemical industry: corrosion by mineral acids, bases, nitrates, ammonia or chlorine.
Many corrosion case studies observed in process industry units: identification of corrosion root cause and mitigation to apply.

CORROSION PREVENTION & INSPECTION - API 510 — 1.5 days

Material selection and detailed engineering design to avoid corrosion based on API 510 principles.
Identification of operating windows.
Corrosion control by means of sampling, use of corrosion coupons and probes.
Cathodic protection with sacrificial anodes or imposed current.
Anticorrosion coatings and cladding.
Non-destructive testing.
Risk Based Inspection according to API 581.

To French entities : IFP Training is referenced to DataDock ; you may contact your OPCO about potential funding.
Please contact our disabled persons referent to check the accessibility of this training program : referent.handicap@ifptraining.com

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