



**Asia Masters Center**

## **Inspection & Corrosion Engineering**



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## Inspection & Corrosion Engineering

### ➔ Course Objective

- study steels and alloys degradation and corrosion,
- explain the operating parameters and fluid characteristics responsible of main corrosion phenomenon,
- identify field inspection recommendations on pressure equipment and piping to prevent corrosion failures.

### ➔ Target Audience

- Experienced engineers,
- managers
- technical staff involved in safe operation and integrity of pressure equipment installed in refineries,
- chemical
- petrochemical plants.



## Course Outline

### **METALLURGY USED FOR PRESSURE EQUIPMENT & PIPING MANUFACTURING**

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

### **USUAL TYPES OF CORROSION & DETERIORATIONS**

- Different types of industrial corrosion: uniform, pitting, crevice, intergranular, 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**

- Each type of corrosion is studied together with possible prevention for pressurized vessel and piping already in service, or during a new plant design.
- 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, CO<sub>2</sub> corrosion
- Specific corrosion existing in chemical industry: corrosion by mineral acids, bases, nitrates, ammonia or chlorine.



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- Many corrosion case studies observed in process industry units: identification of corrosion root cause and mitigation to apply.
- Kugftukuy

### **CORROSION PREVENTION & INSPECTION**

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

### **➤ The Feature Of Asia Master Training And Development Center**

- we pick up the clients from the airport to the hotel.
- we give the participant training bag includes all the necessary tools for the course.
- Working within groups to achieve the best results.
- All our courses are confirmed and we do not postpone or cancel the courses regardless of the number of participants in the course.
- We can assist you in booking hotels at discounted prices if you wish to book through us.
- We offer the certificate from Asia Masters Center for Training and Administrative Development.

➔ **The Cost Of The Training Program Includes The Following:**

- 1) Scientific article on flash memory.
- 2) Training Room.
- 3) Training.
- 4) Coffee break.
- 5) The training bag includes all the tools for the course.

➔ **Course schedule**

- 1) Pick up & drop from the Airport
- 2) The training hours daily 6 hours
- 3) Theoretical and practical training as needed
- 4) Professional trainer from Malaysian Petroleum Company (Petronas) and other trainers.

**Price (USD)**

**Communicate with the training department  
to know the participation fees**

➤ **There are offers and discounts for groups**

**The details of the bank account**

**Bank name: CIMB Bank Berhad  
Account name: Asia Masters Center SDN. BHD  
Bank account number: 80-0733590-5  
Swift code: CIBBMYKL  
IBAN: Null**