

# **CORROSION AWARENESS CONTROL AND MONITORING**



**FMC226  
Facility Integrity,  
Inspection,  
Metallurgy and  
Corrosion  
Engineering**

**COURSE TITLE**

**CORROSION AWARENESS CONTROL AND MONITORING**

**COURSE DATE/VENUE**

12 - 16 April 2021

London, UK

**COURSE REFERENCE**

FMC226

**COURSE DURATION**

05 Days

**DISCIPLINE**

Facility Integrity, Inspection, Metallurgy and Corrosion Engineering

**COURSE INTRODUCTION**

In order to proactively improve and enhance the safety reliability and profitability in chemical plants and oil field related plant and machinery, it is necessary to understand where why and how the corrosion related mechanisms cause damage which eventually lead to sudden failures. Such an understanding of failure mode helps to establish plant reliability and safety at optimal cost.

**COURSE OBJECTIVE**

- To understand the fundamentals of material failure at normal and plant operating condition and why different material behave differently - strategic maintenance methods
- To understand how plant aging can cause catastrophic failures and the methodology of inspection
- Importance of monitoring and modern methods

- Case studies from plant failures and failure analysis to reinforce understanding of theory
- To understand corrosion in other structural materials as concrete fiberglass and non-metals

### **COURSE AUDIENCE**

Candidates who intends taking certification- For those interested in learning fitness for service of plant and equipment- for Managers and staff interested in health safety and environment of unintended plant failure-for planning Managers interested in MRO and plant maintenance and know all about inspection and monitoring

This five-day intensive Short Course is intended for Engineers, Technicians, Managers, Supervisors, Salespersons, Inspectors, anyone needing a basic understanding of corrosion.

### **COURSE CONTENT**

#### **Corrosion**

- The need for corrosion awareness
- The cost of corrosion
- Why metals and materials deteriorate
- The impact of environment
- The school textbook definition of corrosion
- The modern definition of corrosion
- The atomic theory
- Setting up a corrosion cell in the lab.
- Why different materials react in different ways and rates
- More definitions of corrosion – spontaneous, unseen, irreversible
- The mistaken common notion, anode, cathode
- Polarization – the slowing down process
- Tafel's slope – a clue to control corrosion



Understanding corrosion – forms – causes –soil, water, bacteria, atmosphere, gases and vapours, and steam-operating conditions as pressure, temperature, velocity, stress, product input variations

Avoidance and control of each – explained through

Case studies.

Four-way method of controlling corrosion

What is cathodic protection – how it works – principles

Typical examples of CP

The galvanic and impressed.

The components

### **Coating – types**

- limitations
- failure and detection
- how it works with CP

### **Inhibitors - types**

- limitations
- case studies

### **Material selection and design**

- cost of overdesign
- new materials
- S Steel, High Ni alloys, fibre glass

### **Estimating corrosion loss**

- Faraday's law
- Weight loss, coupon
- ER
- Polarization techniques
- NDT – Eddy – UT, PT, RT
- Microscopy / lab techniques

### **Corrosion monitoring - coupon**

- Pig

- Endoscopies
- Acoustic
- CP
- Coating failure

#### **Corrosion of - SS**

- Concrete
- Fiberglass and plastics
- Bacterial
- Non-ferrous Al, Cu alloy

High temp. Corrosion.

#### **COURSE CERTIFICATE**

**TRAINIT ACADEMY** will award an internationally recognized certificate(s) for each delegate on completion of training.

#### **COURSE FEES**

\$6,150 per Delegate. This rate includes participant's manual, Hand-Outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

#### **COURSE METHODOLOGY**

The training course will be highly participatory and the course leader will present, guide and facilitate learning, using a range of methods including formal presentation, discussions, sector-specific case studies and exercises. Above all, the course leader will make extensive use of real-life case examples in which he has been personally involved. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Case studies & Practical Exercises

- 10% Role Play
- 10% Videos, Software or Simulators (as applicable) & General Discussions

