Best Technology Solutions (BTS)

Corrosion & Its Prevention Technologies Training program

Introduction:

This comprehensive corrosion course covers virtually every aspect of corrosion. The course is structured in a flexible modular format so that beginners will establish a strong foothold from the basic modules dealing with the necessary concepts and principles before taking advanced topics, while advanced participants will be able to choose specific modules of their interest. The smooth integration of the modules provides an excellent avenue for corrosion practitioners, designers, technical managers, inspection and maintenance engineers, quality control personnel and those involved in failure analysis to update their appreciation of corrosion and the awareness of the emerging technologies for corrosion control, prevention, testing and monitoring.

Who Should Attend?

Corrosion Control Engineers & Personnel, Process Engineers, Metallurgists, Inspection Personnel, Mechanical Engineers, Material Selection Personnel, Plant Contractors, Operations Engineers, Team Leaders & Supervisors, Maintenance Supervisors, Senior Plant Supervisors, Mechanical Engineers, Corrosion Control & Monitoring Systems Personnel, Oil and Gas Production Facilities Personnel, Chemists, Chemical Engineers, Technicians and Supervisors, New Petroleum Engineers, Asset Management Personnel, Design & Construction Engineers, Team Leaders & Coordinators, Construction Coordinators, Maintenance Engineers, Technologists, Maintenance Team Leaders & Engineers, Personnel who are / will be responsible for detecting, inspecting, monitoring, controlling corrosion in oil and gas piping, pipelines used in production operations and Personnel responsible for metallurgy, corrosion or the prevention of failures in plant and equipment

Course Objectives:

By the end of this course delegates will learn about:

- Know about electrical, chemical & electrochemical concepts
- Understand the causes of corrosion
- Gain information on the oxidation of metals & alloys
- Perform failure analysis
- Know about uniform corrosion and galvanic corrosion
- Understand the difference between crevice corrosion and pitting corrosion
- Understand Microbiologically-Influenced Corrosion (MIC)
- Set guidelines for corrosion prevention
- Understand the Applications and limitations of common corrosion inhibitors
- Understand the nature of corrosion process
- Know about the conventional methods and the electrochemical methods
- Know the emerging technologies for corrosion control, prevention, testing and monitoring

Course Outline:

- Introduction
- Electrical concepts relevant to corrosion
- Matters of Substance
- Chemical and electrochemical concepts
- Why does a metal corrode?

- How does a metal corrode? - Kinetics of corrosion
- Oxidation of metals & alloys
- Oxidation resistance of low-alloy steel
- Nature of environments
- High temperature corrosion of cast iron
- Corrosion of high-alloy steels
- Nickel and its alloys
- Corrosion of advanced ceramics
- Materials for high temperature applications
- Current development and future trend
- Uniform corrosion, Galvanic corrosion
- Dealloying and Graphitisation
- Crevice corrosion, Pitting corrosion
- Intergranular stress corrosion cracking, weld decay and knife-line attack Exfoliation
- Filiform corrosion
- Microbiologically-Influenced Corrosion (MIC)
- Environment-sensitive cracking
- Hydrogen Damage, Corrosion fatigue, Fretting
- Erosion corrosion, impingement attack & cavitations
- Stray current corrosion, Corrosion in atmospheres
- Corrosion in potable water, natural waters and seawater systems
- Corrosion in Soils, Corrosion in Concrete Structures
- Design guidelines for corrosion prevention

- Corrosion resistance properties of stainless steels and super-duplex stainless steels
- Corrosion resistance of other common materials
- Corrosion resistance of non-metallic materials
- Current development and future trend
- Metallic coatings, Organic coatings: Paints
- Composite coatings, Organic coatings and cathodic protection
- Current development and future trend
- Type, classification and inhibiting mechanisms
- Formulation of common corrosion inhibitors
- Applications and limitations
- Volatile corrosion inhibitors (VCI)
- Film-forming rust-proof materials
- Control of relative humidity
- Deaeration, Current development and future trend
- Cathodic Protection: Theory, Practice and Applications
- Anodic Protection: Theory, Practice and Application
- Cathodic or Anodic, which method to use?
- Current development and future trend
- Type and classification of corrosion testing
- The nature of corrosion process
- Conventional methods, Electrochemical methods
- Principal online corrosion monitoring techniques
- Other methods of corrosion testing and monitoring
- Current development and future trend