



Best Technology Solutions (BTS)



Advanced Cathodic Protection Techniques (Specification, Design, Commissioning, Testing & Monitoring) - Training program

Introduction:

Cathodic protection is a mature technique for controlling corrosion of steel structures immersed in waters, buried in soils and imbedded in concrete. This course thoroughly and systematically covers the fundamental principles of cathodic protection and its practical applications such as marine and offshore structures in seawater environment, storage tanks and pipelines buried in soils, and reinforcing steels embedded in concrete structures. The course will provide detailed information on cathodic protection specification, design, commissioning, testing and monitoring. The candidates will gain advanced knowledge and skills in cathodic protection of common types of steel structures immersed in waters, buried in soils and imbedded in concrete. They will learn the principles and applications of advanced sensors and monitoring systems for cathodic protection monitoring, condition survey, diagnosis and troubleshooting. Facility owners will benefit from the enhanced safety and reduced maintenance costs.

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,



Best Technology Solutions (BTS)

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:

- Learn about cathodic protection specification, design, commissioning, testing and monitoring

Course Outline:

- Primer on Chemistry, Metallurgy, Electricity & Mathematics
- Fundamentals of Corrosion
- Corrosion and Cathodic Protection
- Practical Parameters in Cathodic Protection
 - Structure potentials, Cathodic Protection Criteria
 - Is 100 mV polarizations enough? Optimization of cathodic protection
 - Current density requirements, Coatings and Cathodic Protection



Best Technology Solutions (BTS)

- Resistivity and Electrode Resistance
 - Electrical resistivity, Resistance of ground connections
 - Non-uniform electrolytes, Groundbed design
 - Long pipeline and pipe insulating joints
- Sacrificial Anode Cathodic Protection
 - How it works, Change in potential requirements
 - Anode materials, Anode design, Anode life calculation
- Impressed Current Cathodic Protection
 - How it works, Consumable ICCP Cathodic Protection Anodes
 - Permanent ICCP Cathodic Protection Anodes
 - DC Power Sources for Cathodic Protection, Cables and Connections
- Cathodic Protection Standards, Specification & Design
 - Applicable International Standards in cathodic Protection
 - Cathodic Protection Specification
 - Cathodic Protection Design Objective
 - Cathodic Protection Design Procedure



Best Technology Solutions (BTS)

- Determining Current Requirements
 - Calculating Cathodic Protection Circuit Resistance
 - Calculating System Capacity and Life
 - Calculating Number of Anodes
 - Design of Cathodic Protection Monitoring Facilities
 - Current Distribution
- Cathodic Protection of Aboveground and Buried Structures
 - Cathodic Protection of Storage Tanks
 - Cathodic Protection of Underground Pipelines
- Cathodic Protection of Structures Immersed in Sea Water
 - The nature of sea water and its impact on corrosion of steel structures
 - Cathodic Protection of pipelines, pilings and wharves
 - Cathodic Protection of jetties
 - Cathodic Protection of static floating structures
 - Cathodic Protection of ships
 - Cathodic Protection of submarine pipelines



Best Technology Solutions (BTS)

- Cathodic Protection of Concrete Structures
 - The nature of concrete structure, Sacrificial anode systems
 - Innovative Cathodic Protection systems suitable for concrete structures
 - Anodes selection for impressed current Cathodic Protection
 - Effectiveness of Cathodic Protection in concrete structures
- Stray Current & Cathodic Protection Interference & Methods of Prevention
- Instruments for Cathodic Protection & Field Measurements
- Cathodic Protection Commissioning
- Cathodic Protection Monitoring & Recordkeeping
- Cathodic Protection & Coatings
- Pipeline Inspection: Survey Methods & Evaluation Techniques