Cathodic Protection System in Oil & Gas Exploration Industry

18 - 22 September 2016, Dubai
INTRODUCTION

Maintaining the ageing infrastructure such as underground pipelines is a challenge to the oil and gas industry worldwide. Corrosion is one of the major causes of ageing the industrial infrastructures. Understanding its mechanism and how to control it, can lead to a remarkable reduce in the cost of the products. Cathodic Protection (CP) is one of the most widely used methods to control corrosion control in industry. The CP is a method of that eliminates the corrosion of metals by the application of an electric current. It is a technique that has been known for 160 years, and is extensively applied to offshore pipelines and tank farms, etc with great success. However, despite this long history and broad applicability, it is a technique that is all too often inadequately, or even improperly. Applied; with the result that structures are poorly protected or, worse, adversely interfered with.

OBJECTIVES

- This course is designed to provide the theoretical basis and the practical ability necessary to operate and maintain Cathodic Protection (CP) systems in the oil and gas surface production facilities.
- The course provides understanding of the basic principles of corrosion and applications of galvanic and impressed current CP systems.
- The course provides understanding of the field equipment used to monitor CP systems and how they work.
- The course provides understanding of the various factors that impact the performance of these systems.
- The course provides understanding of increase productivity by avoiding costly shutdowns thus reducing the cost of the overall corrosion control program.

TRAINING METHODOLOGY

- The course combines sound engineering principles, methods and applicable standards
- All lectures are in colorful Power-Point presentation
- All lectures are interspersed with interactive discussion
- All lectures include group discussion, case history and exercises
- Actual major incidents as well as industry experience are reviewed
- Participants receive a multicolor course manual
- Pictures of real incidents and case history are shown
- Videos on the subject are shown

ORGANISATIONAL IMPACT

The Company will achieve improved corrosion management system through the performance of an efficient cathodic protection system based on total life cycle corrosion economy.

PERSONAL IMPACT

Participants will be more able to actively contribute towards reducing the probability of less unforeseen failures in cathodic protection systems.

Participants will enhance their competence and productivity thereby enhancing their competence and performance and making additional value added contributions to their organizations in the field of cathodic protection.

WHO SHOULD ATTEND?

Personnel who are working in technical areas related to materials, maintenance and integrity who deal directly or indirectly with cathodic protection.
Day One

Section I - Significance of Corrosion Control
  - Corrosion - Largest Single Cause of Plant Failure
  - Economic Effects
  - Environmental Effects
  - Safety Effects
  - Corrosion Management Preventive Strategies
  - Cost of Corrosion
  - Case Study: Catastrophic Corrosion Accidents

Section II - Corrosion & Its Control
  - Requirements for Corrosion to Occur
  - Metallurgical Factors
  - Forms of Corrosion
  - Corrosion Control Methods
  - Material Selection
  - Environmental Modification
  - Protective Coatings
  - Cathodic Protection

Day Two

Section III - Corrosive Environments & Construction of Materials
  - Atmospheric Environments
  - Marine atmospheres
  - Industrial Atmospheres
  - Underground Environments
  - Concrete Structure Environment
  - Corrosion Properties of Carbon Steels
  - Corrosion Properties of Cast Iron
  - Corrosion Properties of Stainless Steels
  - Corrosion Resistance Properties of Aluminum
  - Corrosion Properties of Copper
  - Corrosion Properties of Nickel

Section IV - Fundamentals of Cathodic Protection Systems
  - Galvanic Series
  - General Application of Cathodic Protection
  - Economic Considerations
  - Industry Standard & Codes

Day Three

Section V - Cathodic Protection Systems and Coatings
  - Role of Protective Coating in CPS
  - Selection Factors
  - Coating Defects
  - Coating Efficiency
  - Overvoltage
  - Cathodic Disbondment
  - Commonly used Coating in Conjunction with CPS

Section VI - Cathodic Protection System Design
  - Design Factors
  - Electrolyte resistivity survey
  - Electrolyte pH survey
  - Structure versus electrolyte potential survey
  - Current requirement
  - Coating resistance
  - Protective current required
  - Sacrificial anode (galvanic) cathodic protection design
  - Impressed current cathodic protection system design
  - Soil resistivity
  - Current requirement test
  - Typical CPS Design Parameters
  - pH TESTING PROCEDURES
  - Current Requirement Testing
Day Four

Section VII - Anodes & Rectifiers
- Anode Selection
- Current output
- Driving Potential
- Anode life
- Anode Shape & Dimension
- Anode Material Cost
- Anode Efficiency
- Galvanic Anode Types
- Current Requirements for ICCP System
- Anode Materials for ICCP
- Anode Backfilling
- Installation of Sacrificial Anodes
- Anode Vent Piping
- Impressed Current Anode Beds
- Quality Control and Quality Assurance
- Impressed Current Rectifiers/DC Power Source

Section VIII - Practicing & Construction of Cathodic Protection System
- Components of Cathodic Protection Systems
- Essential Components
- Isolating joints
- Junction Boxes
- Test stations, measuring points and coupons
- Sleeve pipe
- Thermite Weld
- Earthing Systems
- Line current measurement
- Pipe Sleeves/Casings
- Concrete Encased Pipe
- Cathodic Protection Vessels & Tank Internals Vessels & Tank
- Tanks for Storage of Chemicals
- Water Circulating Systems
- Heat exchangers (tube and shell)
- Water box coatings
- Submarine pipelines
- Case Study: Construction of Cathodic Protection Systems

Day Five

Section IX - Instrumentation & Safety Aspects
- Alkalinity
- Hydrogen Evolution
- Chloride Evolution
- Installation Adjacent to Telecommunication Services
- Installation Adjacent to Railway Signal & Protection Circuits
- Interaction at Discontinuities in Cathodically Protected Structures
- Installation at Jetties & Ships
- Danger of Electric Shock
- Installations on Immersed Structures
- Installations for the Internal Protection of Plant
- Fault Conditions in Electricity Power Systems
- Stray Current Corrosion
- High Impedance Voltmeter
- Reference Cells (Half Cells) Reference Cells

Section X - Corrosion Management Systems
- Oilfield Cathodic Protection Systems
- Corrosion Economy
- Corrosion Key Performance Indicators (KPIs)
- Asset Integrity and Corrosion Management
- Corrosion Data Management
Cathodic Protection System in Oil & Gas Exploration Industry

18 - 22 September 2016
Dubai, United Arab Emirates
Course Fees - USD 4,500/ (Per delegate)

REGISTRATION DETAILS

DELEGATE NAME: ________________________________________________________

DESIGNATION: ________________________________________________________

ADDRESS: _____________________________________________________________

CITY: _________________________________________________________________

TELEPHONE: ___________________________________________________________

FAX: _________________________________________________________________

COMPANY: ___________________________________________________________

AUTHORISED BY: _____________________________________________________

DESIGNATION: ________________________________________________________

ADDRESS: _____________________________________________________________

CITY: _________________________________________________________________

TELEPHONE: ___________________________________________________________

FAX: _________________________________________________________________

COMPANY: ___________________________________________________________

PAYMENT DETAILS

☐ Please invoice my company  ☐ Please invoice me  ☐ Cheque payable to GLOMACS

CERTIFICATION

• Successful participants will receive GLOMACS’ Certificate of Completion

4 WAYS TO REGISTER

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TERMS AND CONDITIONS

• Fees – Each fee is inclusive of Documentation, Lunch and refreshments served during the entire seminar.
• Mode of Payment – The delegate has the option to pay the course fee directly or request to send an invoice to his/her company/sponsor. Credit card and cheque payments are both acceptable.
• Cancellation / Substitution – Request for seminar cancellation must be made in writing & received three (3) weeks prior to the seminar date. A US$ 250.00 processing fee will be charged per delegate for each cancellation. Thereafter, we regret that we are unable to refund any fees due, although in such cases we would be happy to welcome a colleague who would substitute for you.
• Hotel Accommodation – is not included in the course fee. A reduced corporate rate and a limited number of rooms may be available for attendees wishing to stay at the hotel venue. Requests for hotel reservations should be made at least three (3) weeks prior to the commencement of the programme. All hotel accommodation is strictly subject to availability and terms and conditions imposed by the hotel will apply.
• Attendance Certificate – a certificate of attendance will only be awarded to those delegates who successfully completed/attended the entire programme including the awarding of applicable Continuing Professional Education Units/Hours.
• Force Majeure – any circumstances beyond the control of the Company may necessitate postponement, change of seminar venue or substitution of assigned Instructor. The Company reserves the right to exercise this clause and implement such amendments.
• Fair Access / Equal Opportunities – In the provision of its services as a world-class Training Provider, the Company is committed to provide fair access / equal opportunities throughout the delivery of its courses and assessment leading to the completion of training programmes, or 3rd party qualifications/certifications.