

Cathodic Protection (CP) Design For Pipelines And Storage Tanks



Why: The Cathodic Protection (CP) course is offered as a 2-day course that covers corrosion principles and CP concepts as they apply to pipelines and storage tanks. This course addresses the identification and mitigation of corrosion on buried piping systems. Course topics include corrosion basics, corrosion mechanisms, CP concepts, CP criteria, CP design principles, CP design examples, monitoring CP systems, and CP measurement techniques. This course utilizes a combination of theory and practical information and is designed to provide in depth coverage of CP used in the pipeline and storage tank industries.

Pipeline, storage tank, utility, and consulting engineers, inspectors and other technical individuals with the responsibility of corrosion control on pipelines and storage tanks.

What: The objective of this course is for each student to understand the basic fundamentals of corrosion and cathodic protection, corrosion control methods, and field testing procedures, so the student will have a technical foundation on which to build corrosion expertise. The course is designed to provide the student with knowledge of CP system design, operation, and maintenance and help the student understand, analyze, and develop CP problem-solving techniques. The course will also provide design calculations with examples using a computer application.

Instructor: Mr. Willoughby has 26 years of experience in engineering, design, corrosion control, and management in the petroleum and utilities industries. His experience includes gas transmission and distribution systems, petroleum facilities, and water/sewer facilities from conception through design, construction and testing, economic evaluation, and project field supervision. Mr. Willoughby is a NACE

certified cathodic protection specialist and maintains other active NACE and API certifications. During his career Mr. Willoughby has gained significant experience and training in the corrosion and cathodic protection of pipelines and facilities. His primary areas of expertise include performing engineering feasibility studies; performing corrosion evaluations and assessments; and recommendation and design of corrosion control measures for storage tanks and pipeline facilities. He has a B.S. degree in Petroleum Engineering and has affiliations with the American Society of Petroleum Operations Engineers, American Society of Mechanical Engineers, Petroleum Equipment Institute, National Association of Corrosion Engineers, and the Society of Petroleum Engineers.

Where: Technical Toolboxes
3801 Kirby Dr. #501
Houston, TX 77098

Price: \$1,295.00 per student

2 day course on cathodic protection (CP) design for pipelines and storage tanks

Day 1:

Corrosion Basics

- Corrosion as an Electrochemical Process
- Driving Force
- The Electrochemical Cell
- Components of the Electrochemical Cell
- Reactions in an Electrochemical Cell
- The Electrochemical Basis for Cathodic Protection

CP Concepts

- Potentials Required for Cathodic Protection
- Practical Application of Cathodic Protection
- When Cathodic Protection Should Be Considered
- Functional Requirements for Cathodic

Protection

- Continuity
- Electrolyte
- Source of Current
- Connection to Structure

- ⇒ Sacrificial Anode Systems
- ⇒ Impressed Current Systems

Criteria for CP

CP Design Principles

- ⇒ CP Fundamentals
- ⇒ General Design Procedures
- ⇒ Drawings and Specifications
- ⇒ Choice of Sacrificial or Impressed Current System
- ⇒ Basic Design Procedure for Sacrificial Anode Systems
- ⇒ Basic Design Procedure for Impressed Current Systems
- ⇒ Total Current Determination
- ⇒ Total Resistance Determination
- ⇒ Voltage and Rectifier Determination
- ⇒ Analysis of Design Factors
- ⇒ Determination of Field Data

Day 2:

CP Design Examples

- ⇒ Pipelines
- ⇒ Tanks

Monitoring CP Systems

- ⇒ Required Periodic Monitoring and Maintenance
- ⇒ System Data
- ⇒ Design Potentials
- ⇒ Current Output
- ⇒ System Settings and Potential Readings
- ⇒ Rectifier Instructions
- ⇒ Basic Maintenance Requirements
- ⇒ Guidance for Maintenance
- ⇒ Agency Maintenance and Operations Manuals
- ⇒ DOT Regulations
- ⇒ NACE Standards

Instrumentation used in CP evaluation

Measurement Techniques



**Please complete the attached form
and fax to TTI at 713-630-0560**

Course Cost: \$1295.00 per student

Course Date:

Name

Company

Address

Address

City, State, ZIP

Country

Phone/Mobile

Fax

E-mail

Payment by Credit Card

Circle One: VISA MasterCard AMEX

CC Number

Expiration Date

Signature*

*** By signing above I commit to paying the course fee when invoiced**

Terms and Conditions: One registration is required per person. Upon receipt of your above registration, an invoice will be generated for payment. Payment is due 30 days from receipt of invoice. Full price of the course fee will be refunded provided written cancellation is received 3 weeks prior to course date. A cancellation after the deadline will receive full credit towards a future date for the same course.

Technical Toolboxes

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