



MAESTRO
CONSULTANTS

**CATHODIC
PROTECTION
SYSTEMS- THEORY,
DESIGN,
INSTALLATION,
OPERATION & REPAIR**

COURSE OUTLINE 2020

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TRAINING TITLE

CATHODIC PROTECTION SYSTEMS- THEORY, DESIGN, INSTALLATION, OPERATION & REPAIR

VENUE

Dubai, UAE

DURATION

5 Days

DATES

28 June - 02 July 2020

PRICE

US\$4,000 per attendee including training material/handouts, morning/afternoon coffee breaks and Lunch buffet daily.

TRAINING INTRODUCTION

Corrosion is the cancer of the industry. 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. Whether for supervisors or for those working in the field a complete understanding of CP principles are essential to avoid costly shutdowns thus reducing the cost of the overall corrosion control program.

TRAINING OBJECTIVES

A course based on field studies with minimal theoretical discussions. Ideally suited for those involved in Cathodic Protection business such as contractors, suppliers, supervisors, technicians, and Project Managers. The course deals with the importance of CP for old and new structures. Design, material selection, sourcing, costing installation trouble shooting and maintenance are discussed. Spotlight on meaningful interpretation of field data and pitfalls in design installation and monitoring. Case histories and economic considerations included.

A value based, information packed seminar tailored by a CP specialist. This course will provide you with the basic principles of corrosion and applications of galvanic and impressed current CP systems. Participant will learn the most common methods and techniques used in field, and gain an understanding of the field equipment used to monitor CP systems and how they work. Considerable time is devoted to

interpreting operating data by focusing on polarization factors and circuit resistances.

TRAINING AUDIENCE

It is suitable for persons new to the field of CP but with some experience in corrosion control, as well as for those who have heavy engineering and scientific background and working knowledge. It is also perfect for supervisors, management, consultants, contractors, engineers and sales/marketing personnel in broad spectrum of industries. Ideally suited for those involved in Cathodic Protection business such as contractors, suppliers, supervisors, technicians, and Project Managers.

COURSE OUTLINE

Day 1

What is Cathodic Protection and why is it necessary? Corrosion Basics made easy – Possible and the impossible. How it works and how is it measured?– The four components at work –Factors that affect corrosion- velocity pressure temperature affects CP as well- soil, marine and water affect steel in different ways. Cathodic Protection measures and methods for each is different- Great discoveries of Galvano Faraday Ohms and Pourbaix explain the theory of Corrosion and fit into principles of cathodic protection.

Day 2

Two broad classifications of CP –impressed and Galvanic- merits and demerits of each where to use which –application economics- anodes for soil and submerged- Basic parameters of design- current requirement –system design for ocean going vessels; oil platforms- pipelines- storage vessels- case studies for discussion

Material selection - Simple galvanic systems- anodes types compositions- fabrication problems- efficiency calculations- backfill- cables connections- mountings- bracelet anodes for offshore and underwater pipelines-ballast anodes for tankers- string anodes – wire anodes-bayonet anodes for water boxes heat exchangers-

Day 3

Simple impressed anode CP system- anode types and specifications- merits and demerits of Ferrosilicon; magnetite; lead silver - Ti/MMO; ceramic anodes- anode bed design- backfill- cable specifications- splicing and header connections- Anode

bed resistance and T/R requirements- Deep anode bed- ICCP for ships- for internal

of storage tanks- AG storage tank bottoms and UG storage tanks- case studies – gas station- water storage tanks- pumps internals- band screens- water treatment plants

Day 4

Power sources- Tr/R- solar panels- wind turbines- installation for pipelines- coated and uncoated –step by step project evolution-sheet piles and bridge decks- concrete structures. –outfalls and intakes- storage tank bottom- jetties –

Day 5

Encountering problems-Failure analysis- components- anodes-cable and joints- faulty design- below protection- rod and river crossings- new diggings- interference from foreign lines- A.C mains – dynamic current and stray- loading terminals- dry docks- failure analysis- redesign and upgrading- economics – safety issues-decision making.

TRAINING CERTIFICATE

MAESTRO CONSULTANTS Certificate of Completion for delegates who attend and complete the training course

METHODOLOGY

Our courses are highly interactive, typically taking a case study approach that we have found to be an effective method of fostering discussions and transferring knowledge. Participants will learn by active participation during the program through the use of individual exercises, questionnaires, team exercises, training videos and discussions of “real life” issues in their organizations. The material has been designed to enable delegates to apply all of the material with immediate effect back in the workplace.