Cathodic Protection of Underground Pipelines

Registration Form

Photocopies of this form may be used for registrations.
You can also register online at www.corrosionclinic.com

Please register the following person(s) for the above course (please TYPE or PRINT clearly):

1. Dr/Mr/Ms _____
   Designation _____

2. Dr/Mr/Ms _____
   Designation _____

3. Dr/Mr/Ms _____
   Designation _____

*delete where inappropriate

Enclosed is a cheque / bank draft No. _____ for S$ _____(payable to "**WebCorr Corrosion Consulting Services"**) being Registration Fee for the above person(s).

Organization _____
Contact Person _____
Contact Dept _____
Telephone _____ Fax _____
Email _____

Crossed cheques should be made payable to "**WebCorr Corrosion Consulting Services"** and mailed together with the registration form to:

WebCorr Corrosion Consulting Services
Toa Payoh Central,, PO Box 225,
Singapore 913108
Tel: (65) 64916456 Mobile: (65) 97110759
Fax: (65) 64916456
Email: webcorr@corrosionclinic.com
http://www.corrosionclinic.com

Course Details

Date: TBA
Time: 9:00 am to 5:00 pm
Venue: PUB WaterHub
Course Fee: S$1495 (GST not applicable)
Closing Date: 4 weeks before course date
Discount:
Group: (3 or more people): 10%
Early-bird: N% **if paid** "N" months before the course commencing date

Withdrawal/Refund Policy:

Withdrawal or replacement should be conveyed to the organizer in writing (email or fax). An administration charge of 50% of the course fee will be levied if the withdrawal notice is received less than 7 working days before the course commencing date. No refund will be made for withdrawal notice received 3 working days and less.

Certificates:

Certificate of attendance will be given to participants with at least 75% attendance of the course.

Cancellation:

WebCorr reserves the right to cancel the course and fully refund the participants should unforeseen circumstances necessitate it.

Cathodic Protection of Underground Pipelines

Conducted by
Dr. Qiu Jianhai *BEng PhD CEng MIM FICorr*
NACE Certified Corrosion Specialist

Date
TBA

Venue
PUB WaterHub
80 Toh Guan Road East
Singapore 608575

Organized by:

WebCorr CORROSION CONSULTING SERVICES

Course Overview:

Maintaining the ageing infrastructure such as underground pipelines is a challenge to the oil and gas industry worldwide. Understanding why and how cathodic protection works or fails can help the operator formulate appropriate strategy in managing the pipeline corrosion problems. This two-day course covers both the fundamentals and practices in designing, operating and maintaining cathodic protection of underground pipelines. An overview of the NACE standard on "Pipeline External Corrosion Direct Assessment Methodology" will also be presented.

This course is available for in-house training, online and distance learning worldwide. It can also be customized to meet the specific needs of your organization.

Course Contents

1 Primer on Chemistry and Metallurgy
2 Fundamentals of corrosion
  2.1 Why do metals corrode
  2.2 How do metals corrode
  2.3 General methods of corrosion control and prevention
3 Cathodic Protection
  3.1 Introduction
    3.1.1 How it works
    3.1.2 Why it works
    3.1.3 How effective it is
  3.2 Sacrificial Anode Cathodic Protection
    3.2.1 Anode materials
    3.2.2 Anode design
  3.3 Impressed Current Cathodic Protection
    3.3.1 Consumable ICCP Anodes
    3.3.2 Permanent ICCP Anodes
    3.3.3 Power Sources
    3.3.4 Cables and Connections
  3.4 Criteria for Cathodic Protection

4 Instrumentation for Cathodic Protection of Underground Pipelines
  4.1 Reference potential devices
  4.2 Potential measuring instrument
  4.3 Soil resistivity test instruments
  4.4 Wall thickness and pit gages
  4.5 Current interrupters
  4.6 Test rectifiers
  4.7 Holiday detectors
5 Cathodic Protection of Underground Pipelines
  5.1 Electrical resistivity
  5.2 Resistance of ground connection
  5.3 Non-uniform electrolyte
  5.4 Groundbed Design
  5.5 Long pipelines and pipe insulating joints
6 Stray Current Corrosion and Methods of Prevention
  6.1 Stray current corrosion and electrolysis
  6.2 Practical stray current problems
  6.3 Interference from other CP installations
7 Pipeline Coatings
  7.1 Effectiveness of coatings
  7.2 Specification and Inspection
  7.3 Type of pipeline coatings
  7.4 Coating failures and analysis
8 Cathodic Protection and Coatings
9 Pipeline Inspection: Survey Methods and Evaluation Techniques
  9.1 Survey methods for pipeline not under cathodic protection
  9.2 Survey methods for pipeline under cathodic protection
  9.3 Overview of NACE Standard on "Pipeline External Corrosion Direct Assessment Methodology"

Who Should Attend

This course has been structured in such a way that it is particularly suited for pipeline owners and operators, inspection and maintenance engineers who are concerned with corrosion of the underground pipelines.

Course Lecturer

Dr. Qiu Jianhai *BEng PhD CEng MIM FICorr*

Dr Qiu obtained his BEng and PhD degrees both in the field of corrosion. He has 27 years of industry, university teaching, research and consulting experience in areas of corrosion and its prevention. He has been working closely with both local and overseas companies and has been an active consultant to governmental agencies, multinational companies and private organizations on corrosion and materials related issues such as corrosion design review, materials selection and life prediction, corrosion inspection and condition assessment, plant process optimization, corrosion training, corrosion testing and monitoring, trouble-shooting and corrosion failure analysis. Dr Qiu has recently completed the design of a cathodic protection system for the upcoming Marina Coastal Expressway (MCE) Tunnels. Dr. Qiu is also experienced in providing expert witness and assistance in litigation and arbitration matters related to corrosion and materials. He has authored about 120 technical papers and reports. Dr. Qiu was an invited contributing author to the latest edition of ASM Handbook Vol.13C Corrosion: Environments and Industries. His biographical profile was included in the 7th edition of Marquis Who's Who in Science and Engineering.

Dr. Qiu is a NACE certified Corrosion Specialist (USA) and a Fellow Member of the Institute of Corrosion (UK). He is a Chartered Engineer registered with the Engineering Council (UK), a professional member of the Institute of Materials, Minerals and Mining (UK).