Modern Techniques for Corrosion Testing and Monitoring in Concrete Structures

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. _____
   Designation _____

2. _____
   Designation _____

3. _____
   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: TBA
Course Fee: S$1495 (GST not applicable)
Closing Date: 2 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.

Modern Techniques for Corrosion Testing and Monitoring in Concrete Structures

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

Date
TBA

Venue
TBA

Organized by:

WebCorr CORROSION CONSULTING SERVICES

Course Overview:

This one-day short course thoroughly and systematically covers the principles and applications of a wide range of the latest techniques for corrosion testing and monitoring in concrete structures. These modern techniques can provide rapid and sensitive measurements and detection of corrosion in concrete structures. An optional one-day practical will enable the participants to gain hands on experience in using the state-of-the-art equipment for corrosion testing and monitoring in concrete structures.

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

Course Contents

1. The Need for Corrosion Testing and Monitoring in Concrete Structures
   - 1.1 Assessment of the Extent of Corrosion Damage
   - 1.2 Determing the Rate of Corrosion Damage
   - 1.3 Early Warning - Monitoring the Rate of Corrosion Damage
   - 1.4 Evaluating the Effectiveness of Repair/Rehabilitation
2. The Nature of Corrosion Process in Concrete Structures
   - 2.1 Concrete Corrosion: What it is
   - 2.2 Physical Changes Due to Corrosion
   - 2.3 Chemical Changes Due to Corrosion
   - 2.4 Corrosion Rate and Current Density
3. Indirect Methods for Corrosion Testing and Monitoring
   - 3.1 Depth of carbonation
   - 3.2 Depth of chloride penetration
   - 3.3 Electrical resistance (ER probe)
   - 3.4 Concrete resistivity
   - 3.5 Half-cell potential mapping (ASTM standard C876)
   - 3.6 pH, Temperature
   - 3.7 Moisture
4. Direct Methods for Corrosion Testing and Monitoring
   - 4.1 Linear polarisation resistance measurement
   - 4.2 Potentiodynamic polarization
   - 4.3 AC Impedance measurement
   - 4.4 Electrochemical noise measurement
5. Design of Corrosion Sensors in Concrete Structures
   - 5.1 Overview of sensor designs
   - 5.2 Interfaces with sensors
   - 5.3 Advantages and limitations
   - 5.4 Cost considerations
6. Practical Sessions (optional 1-day)

Actual concrete cubes will used for the following measurements:

   - 6.1 Half-cell potential mapping
   - 6.2 pH & cabonation
   - 6.3 Linear polarization resistance measurement
   - 6.4 Potentiodynamic polarization
   - 6.5 AC Impedance measurement

Who Should Attend

This course has been structured in such a way that it is particularly suited for the architects, designers, technologists, engineers, technical service and maintenance personnel who deal with design, repair and rehabilitation of concrete structures.

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 over 120 technical papers and reports. Dr. Qiu was an invited contributing author to the latest edition of the world renowned 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), the only person in Singapore certified to the highest professional level by NACE (National Association of Corrosion Engineers, USA). He is a Chartered Engineer registered with the Engineering Council (UK), a Fellow of the Institute of Corrosion (UK) and a professional member of the Institute of Materials, Minerals and Mining (UK). Dr. Qiu is the Singapore representative in the International Corrosion Council (ICC).