

*WebCorr Corrosion Consulting Services Presents*

# Corrosion Under Insulation (CUI): Detection, Mitigation and Prevention

Date: As published on website Venue: As published on website

## Course Overview

Corrosion under insulation (CUI) is a major worldwide problem faced by many industries such as chemical process, food and beverage, oil and gas, refining, petrochemical, power, onshore and offshore industries. A leak can cause safety and environmental concerns. CUI may account for up to 10% of a plant's maintenance budget. This one-day corrosion course aims to provide the participants with a thorough understanding of the causes of corrosion under insulation and the technical know-how of CUI detection, mitigation and prevention. Upon completion of this short course the participants will be able to identify different forms of corrosion under insulation, analyze the root causes of corrosion failures, apply appropriate methods and strategies for detection, mitigation and prevention of corrosion under insulation. This corrosion short 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.

## Who Should Attend

Designers, engineers, inspection and maintenance personnel who are concerned with corrosion under insulation in the various industries such as chemical process, refining, petrochemical, power, onshore and offshore industries.

## Course Outline

1. Introduction to Corrosion Under Insulation (CUI)
2. Corrosion: Basic Concepts and Terminology
3. Why Does CUI Occur -The Causes of Corrosion Under Insulation (CUI)
  - 3.1 The Corrosivity of Water and Moisture
  - 3.2 The Sources of Water
  - 3.3 How Much Water Is Required for CUI to Occur
  - 3.4 The Effect of Contaminants on Corrosion Under Insulation
  - 3.5 The Effect of Temperature on the Rate of Corrosion Under Insulation
  - 3.6 The Effect of Insulation Type and Insulation Characteristics on CUI



- 3.7 Other Factors Influencing the Rate and Form of Corrosion Under Insulation
4. How Does CUI Occur -Common Forms of Corrosion Encountered Under Insulation
  - 4.2 General Corrosion
  - 4.3 Pitting Corrosion
  - 4.4 Crevice Corrosion
  - 4.5 Chloride External Stress Corrosion Cracking (Cl-ESCC)
5. Methods and Strategies for CUI Detection
  - 5.1 The Risk-Based Inspection (RBI) Methodology for Corrosion Under Insulation (CUI)
  - 5.2 Inspection Activities and Strategy
  - 5.3 Non-Destructive Examination and Testing Screening Techniques for CUI
  - 5.4 Examples of Risk-Based Inspection Plan
6. Recommended Best Practice to Mitigate Corrosion Under Insulation (CUI)
  - 6.1 Key Parameters to Be Considered
  - 6.2 Current CUI Prevention Methods
  - 6.3 Long Term (Service Life > 25 Years) CUI Prevention Methods and Strategies
  - 6.4 Thermally Sprayed Aluminium on Carbon Steels
  - 6.5 Stainless Steel for Small Diameter Piping
  - 6.6 Use of Aluminium Foil to Mitigate Chloride External Stress Corrosion Cracking (Cl-ESCC)

- 6.7 Use of Personnel Protective Cages or Guards
- 6.8 Dry Air Injection: How Does It Work?
- 7. Design for the Prevention of Corrosion Under Insulation (CUI)
  - 7.1 The Need for Insulation
  - 7.2 Design Against CUI in Equipment and Tanks
  - 7.3 Design Against CUI in Piping

- 7.4 Materials Selection
- 8. Monitoring Corrosion Under Insulation (CUI)
  - 8.1 Linear Polarization Resistance (LPR)
  - 8.2 Electrochemical Impedance Spectroscopy (EIS)
  - 8.3 Electrochemical Noise (EN)
  - 8.4 Zero Resistance Ammetry (ZRA)
- 9. Case Studies

**Course Registration**

Please register online at [www.corrosionclinic.com](http://www.corrosionclinic.com)  
Or use the form below (photocopies of this form may be used for multiple bookings).

Dr/Mr/Ms \_\_\_\_\_  
Organization \_\_\_\_\_  
Contact Person \_\_\_\_\_  
Contact Dept \_\_\_\_\_  
Telephone \_\_\_\_\_ Fax \_\_\_\_\_  
Email \_\_\_\_\_

Payment should be made by TT or online banking. Currencies in Australian Dollar, Canadian Dollar, US dollar, Euro and Sterling Pound can be transferred directly without conversion. Our bank details:

**BANK:** Oversea-Chinese Banking Corporation Limited  
**ADDRESS:** 65 Chulia Street #01-00, OCBC Centre, Singapore 049513  
**BANK CODE:** 7339      **BRANCH CODE:** 524  
**SWIFT CODE:** OCBCSGSG  
**Beneficiary Name:** WebCorr Corrosion Consulting Services  
**Account No.:** 524-721453-001  
**Beneficiary Address:**  
WebCorr Corrosion Consulting Services  
Toa Payoh Central, PO Box 225, Singapore 913108  
**Bank Branch Address:**  
Alexandra Village Branch  
123 Bukit Merah Lane 1, #01-98/100  
Singapore 150123

**Course Fee and Discount**

**Standard:** \$795      **Discount:** \$715

The fee includes a hardcopy of course note, certificate, light lunch, coffee breaks each day during the course.

Discount applies to a group of 3 or more persons from the same organization registering at the same time, or early-birds making payment at least 8 weeks before the course commencing date.

**Cancellation and Refunds**

Cancellation or replacement should be conveyed to WebCorr in writing (email or fax). An administration charge of 50% of the course fee will be levied if the cancellation notice is received from 14 to 7 days before the course commencing date. No refund will be made for cancellation notice received 6 days and less. No refunds will be given for no-shows. Should WebCorr find it necessary to cancel a course, paid registrants will receive full refund. Refund of fees is the full extent of WebCorr's liability in these circumstances.



WebCorr has NACE certified Corrosion Specialist (#5047) providing customized in-house training, online and distance learning corrosion courses, corrosion seminars and workshops on corrosion, materials, metallurgy, paints and metallic coatings. Our corrosion courses are developed and taught by NACE certified Corrosion Specialist with over 30 years practical experience in the field. Our training success is measured by your learning outcome.

