

WebCorr Corrosion Consulting Services Presents

Software Solutions To Industrial Corrosion

Course Overview

This 3-day course covers 47 predictive modeling software solutions to industrial corrosion. Attendees will learn how predictive modeling software can provide smart solutions to materials selection, process optimization, condition assessment, maintenance planning, and corrosion life prediction in various industries.

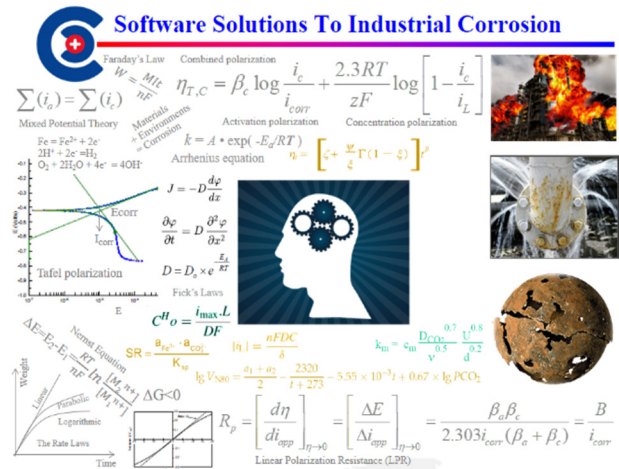
In this course, 47 predictive modeling software are discussed with their specific applicability to the many damages mechanisms in API 571, the different types of corrosion, corrosion in the various industries, and corrosion in different service environments.

Who Should Attend

Design engineers, process engineers, reliability engineers, QA/QC personnel, maintenance and inspection engineers, researchers, and consultants who are concerned with corrosion and are interested in predictive modeling software for solutions to various corrosion challenges they face in their daily work.

Course Outline

1. Introduction To Corrosion
 - 1.1 Definitions of Corrosion
 - 1.2 Different Types of Corrosion
2. Corrosion Testing vs. Predictive Modeling
 - 2.1 Coupon Testing vs. Product Testing
 - 2.2 From Laboratory To Field:
 - X hours of lab test = Y years of actual service life?
 - Can accelerated lab tests be used for life prediction?
 - 2.3 The Need for Predictive Modeling



Software Solutions To Industrial Corrosion

Faraday's Law: $\sum (i_c) = \sum (i_a)$, $W_c = \frac{M_i}{nF} i_c t$

Combined polarization: $\eta_{r,c} = \beta_c \log \frac{i_c}{i_{corr}} + \frac{2.3RT}{zF} \log \left[1 - \frac{i_c}{i_{L,c}} \right]$

Mixed Potential Theory: $Fe = Fe^{2+} + 2e^-$, $2H^+ + 2e^- = H_2$, $O_2 + 2H_2O + 4e^- = 4OH^-$

Arrhenius equation: $k = A \cdot \exp(-E_a/RT)$

Activation polarization: $i = i_0 \left[\exp\left(\frac{\alpha_a F}{RT} \eta\right) - \exp\left(-\frac{\alpha_c F}{RT} \eta\right) \right]$

Concentration polarization: $i = i_{L,c} \left[1 - \frac{i_c}{i_{L,c}} \right]$

Tafel polarization: $J = -D \frac{dc}{dx}$, $\frac{\partial c}{\partial t} = D \frac{\partial^2 c}{\partial x^2}$, $D = D_0 \times e^{-\frac{E}{RT}}$

Fick's Laws: $C^u_0 = \frac{i_{max} \cdot L}{DF}$

Normal Equations: $\frac{\Delta E}{R_p} = \frac{E_c - E_a}{nF}$, $\frac{\Delta E}{R_p} = \frac{E_c - E_a}{nF}$

Logarithmic: $R_p = \frac{d\eta}{di_{app}} \Big|_{\eta \rightarrow 0} = \frac{\Delta E}{\Delta i_{app}} \Big|_{\eta \rightarrow 0} = \frac{\beta_a \beta_c}{2.303 i_{corr} (\beta_a + \beta_c)} = \frac{B}{i_{corr}}$

Linear Polarization Resistance (LPR)

SR = $\frac{a_{ox} \cdot a_{red}}{K_{eq}}$, $\lg V_{SR} = \frac{a_1 + a_2}{2} - \frac{2320}{1 + 273} - 5.55 \times 10^{-3} i + 0.67 \times \lg PCO_2$

$k_m = c_m \frac{D_{CO_2}^{0.7} V^{0.5}}{d^{0.5}}$

3. Predictive Modeling Software Solutions To Damage Mechanisms in API 571
4. Predictive Modeling Software Solutions To Different Types of Corrosion
5. Predictive Modeling Software Solutions To Corrosion in Various Industries
6. Predictive Modeling Software Solutions To Different Service Environments
7. Introduction to Extreme Value Statistics (EVS)
8. Application Examples of EVS - Compass: Seeing the Bigger Picture from Limited Data -EVS Extrapolation in Space and in Time
 - 8.1 EVS Extrapolation of Pit Depth from Small Area Samples to Larger Industrial Structures For Service Life Prediction
 - 8.2 EVS Extrapolation of Pit Depth from Short-Term Test Data For Long-Term Service Life Prediction
 - 8.3 Applications of EVS Extrapolation in Partial Coverage NDT Inspection
9. End-of-Course Examination

Course Registration

Please register online at 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.
Our bank details can be found at the link below:
<https://www.corrosionclinic.com/payment.html>



Course Fee and Discount

Standard: \$4,950 **Discount:** \$4,455

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 of practical experience in the field. Our training success is measured by your learning outcome.