

WebCorr Corrosion Consulting Services Presents

WRC 490 Damage Mechanisms Affecting Fixed Equipment In Fossil Electric Power Industry

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

Course Overview

There are significant economic benefits in continuing the operation of aging pressure vessels, piping, and tankage. API 579 Recommended Practice for Fitness-For-Service was developed to provide a central reference for flaw evaluation and damage assessment of aging equipment. The first step in a fitness-for-service assessment performed in accordance with API RP 579 is to identify the flaw type and the cause of damage. Proper identification of damage mechanisms for components containing flaws or other forms of deterioration is also the first step in performing a Risk-Based Inspection (RBI) in accordance with API RP 580. One factor that complicates a FFS assessment or RBI study for fossil fuel electric power plant equipment is that material-environmental condition interactions are extremely varied. Fossil electric power plants contain many different processing units, each having its own combination of aggressive process streams and temperature/pressure conditions.

This 5-day training course provides participants with a thorough understanding of the various damage mechanisms contained in the latest edition of WRC 490 that can affect process equipment, the type and extent of damage that can be expected, and how this knowledge can be applied to the selection of effective inspection methods to detect size and characterize damage.

Who Should Attend

Design Engineers, Inspection Engineers, Maintenance Engineers, Plant Inspectors, Mechanical Engineers, and Process Engineers in the fossil electric power industry.

Course Outline

1. Introduction to Corrosion
 - 1.1 Corrosion: Definition and Examples
 - 1.2 Basic Concepts in Electrochemistry
 - 1.3 Why Do Metals Corrode



- 1.4 Kinetics: the Rate of Corrosion
- 1.5 Kinetics: Corrosion Affected by Diffusion
- 1.6 How Do Metals Corrode: Different Forms of Corrosion
- 1.7 General Methods for Corrosion Control
2. Introduction to WRC 490
3. Definition of Terms and Abbreviations
4. General Damage Mechanisms – All Industries Including Refining and Petrochemical, Pulp and Paper, and Fossil Utility
 - 4.1 General
 - 4.2 Mechanical and Metallurgical Failure Mechanisms
 - 4.3 Uniform or Localized Loss of Thickness
 - 4.4 High Temperature Corrosion [400°F (204°C)]
 - 4.5 Environment – Assisted Cracking
5. Fossil Utility Industry Damage Mechanisms
 - 5.1 General
 - 5.1.1 Uniform or Localized Loss in Thickness
 - 5.1.1.1 Erosion (Coal)

Course Outline

- 5.1.1.2 Flow Accelerated Corrosion (FAC)
- 5.1.1.3 Ammonia Grooving
- 5.1.1.4 Down-Time Corrosion
- 5.1.1.5 Hydrogen Damage
- 5.1.1.6 Computer Software for Corrosion Modeling and Prediction

- 5.2 Boiler Tube Damage Matrix
 - 5.2.1 Common Heater Tube Damage Mechanisms in Fired Boilers & Steam Generating Equipment
- 5.3 Process Unit PFD's
 - 5.3.1 Boiler Steam Condensate
- 6. 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. Currencies in Australian Dollar, Canadian Dollar, US Dollar, Euro and Sterling Pound can be transferred directly without conversion. Our bank details can be found at the link below:

<https://www.corrosionclinic.com/payment.html>



Course Fee and Discount

Standard: \$3,500 **Discount:** \$3,150

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, on-demand, online, and offline distance learning courses 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.