

WebCorr Corrosion Consulting Services Presents

API 571 Damage Mechanisms Affecting Fixed Equipment in the Refining and Petrochemical Industries

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

Course Overview

API RP 571-2020 (3rd Edition) is the latest edition that describes damage mechanisms affecting equipment in the refining and petrochemical industries. A key first step in managing equipment safety and reliability is the identification and understanding of the various damage mechanisms. Proper identification of damage mechanisms is also required when implementing the API Inspection Codes (API 510, API 570, API 653) and in carrying out risk based inspection (RBI) per API 580 and API 581. When performing a fitness-for-service (FFS) assessment using API 579, the damage mechanisms need to be understood and need to be considered when evaluating the remaining life.

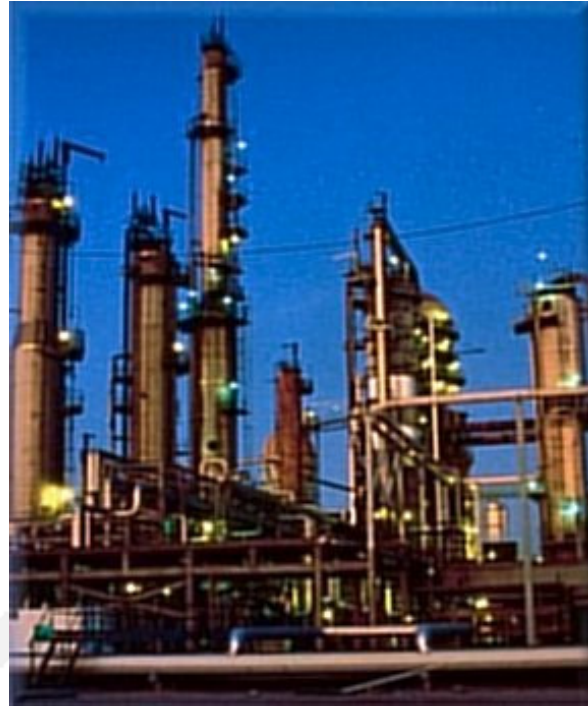
This 5-day corrosion short course aims to provide the participants with a thorough understanding of the various damage mechanisms contained in the latest edition of API RP 571-2020 (released in March 2020) that can affect process equipment, the type and extent of damage that can be expected, and how this knowledge can be applied to the selection of effective inspection methods to detect size and characterize damage. A total of 67 damage mechanisms in API 571-2020 to be discussed in this corrosion short course are common to a variety of industries including refining and petrochemical, pulp and paper, and fossil utility.

Who Should Attend

Designers, Inspection Engineers, Maintenance Engineers, Plant Inspectors, Mechanical Engineers, and Process Engineers in the refining and petrochemical industries.

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 How Do Metals Corrode: Different Forms of Corrosion
 - 1.6 General Methods for Corrosion Control

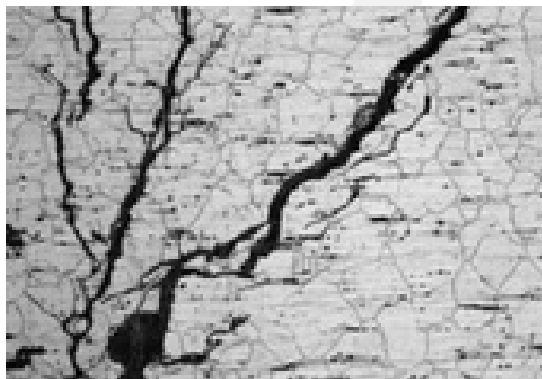


1.7 Common Alloys Used in the Refining and Petrochemical Industries

2. Overview of API RP 571-2020
 - 2.1 What's New in API RP 571-2020
 - 2.2 API 571-2011 (2nd Ed) vs. API 571-2020 (3rd Ed)
 - 2.3 Terms and Definitions
3. Damage Mechanisms
 - 3.1 885 °f (475 °C) Embrittlement
 - 3.2 Amine Corrosion
 - 3.3 Amine Stress Corrosion Cracking
 - 3.4 Ammonia Stress Corrosion Cracking
 - 3.5 Ammonium Bisulfide Corrosion (Alkaline Sour Water)
 - 3.6 Ammonium Chloride and Amine Hydrochloride Corrosion
 - 3.7 Aqueous Organic Acid Corrosion
 - 3.8 Atmospheric Corrosion
 - 3.9 Boiler Water and Steam Condensate Corrosion
 - 3.10 Brine Corrosion
 - 3.11 Brittle Fracture

Course Outline

- 3.12 Carbonate Stress Corrosion Cracking
 - 3.13 Carburization
 - 3.14 Caustic Corrosion
 - 3.15 Caustic Stress Corrosion Cracking
 - 3.16 Cavitation
 - 3.17 Chloride Stress Corrosion Cracking
 - 3.18 CO₂ Corrosion
 - 3.19 Concentration Cell Corrosion
 - 3.20 Cooling Water Corrosion
 - 3.21 Corrosion Fatigue
 - 3.22 Corrosion Under Insulation
 - 3.23 Creep and Stress Rupture
 - 3.24 Dealloying
 - 3.25 Decarburization
 - 3.26 Dissimilar Metal Weld Cracking
 - 3.27 Erosion/Erosion-Corrosion
 - 3.28 Ethanol Stress Corrosion Cracking
 - 3.29 Flue Gas Dew Point Corrosion
 - 3.30 Fuel Ash Corrosion
 - 3.31 Galvanic Corrosion
 - 3.32 Gaseous Oxygen-enhanced Ignition and Combustion
 - 3.33 Graphitic Corrosion of Cast Irons
 - 3.34 Graphitization
 - 3.35 High-temperature H₂/H₂S Corrosion
 - 3.36 High-temperature Hydrogen Attack
 - 3.37 Hydrochloric Acid Corrosion
 - 3.38 Hydrofluoric Acid Corrosion
 - 3.39 Hydrofluoric Acid Stress Corrosion Cracking of Nickel Alloys
 - 3.40 Hydrogen Embrittlement
 - 3.41 Hydrogen Stress Cracking in Hydrofluoric Acid
 - 3.42 Liquid Metal Embrittlement
 - 3.43 Mechanical Fatigue (Including Vibration-induced Fatigue)
 - 3.44 Metal Dusting
 - 3.45 Microbiologically Influenced Corrosion
 - 3.46 Naphthenic Acid Corrosion
 - 3.47 Nitriding
 - 3.48 Oxidation
 - 3.49 Oxygenated Process Water Corrosion
 - 3.50 Phenol (Carbolic Acid) Corrosion
 - 3.51 Phosphoric Acid Corrosion
 - 3.52 Polythionic Acid Stress Corrosion Cracking
 - 3.53 Refractory Degradation
 - 3.54 Stress Relaxation Cracking (Reheat Cracking)
 - 3.55 Short-term Overheating-Stress Rupture (Including Steam Blanketing)
 - 3.56 Sigma Phase Embrittlement
 - 3.57 Soil Corrosion
 - 3.58 Sour Water Corrosion (Acidic)
 - 3.59 Spheroidization (Softening)
 - 3.60 Strain Aging
 - 3.61 Sulfidation
 - 3.62 Sulfuric Acid Corrosion
 - 3.63 Temper Embrittlement
 - 3.64 Thermal Fatigue
 - 3.65 Thermal Shock
 - 3.66 Titanium Hydriding
 - 3.67 Wet H₂S Damage (Blistering/HIC/SOHIC/SSC)
4. API 571 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, 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.

