WebCorr
CORROSION CONSULTING
SERVICES

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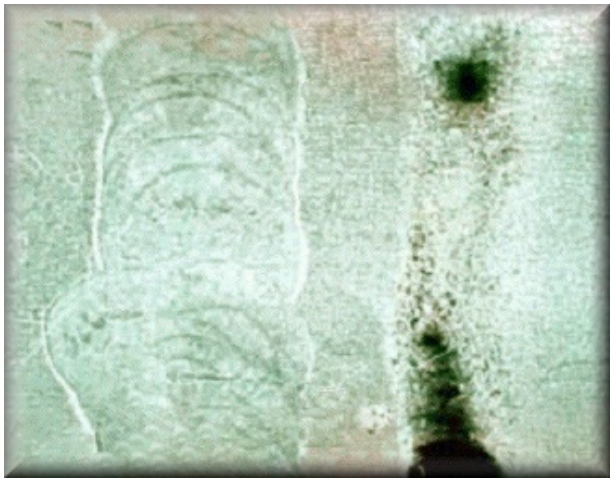
WebCorr Corrosion Consulting Services Presents

Preferential Weld Corrosion: Causes and Prevention

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

Course Overview

Welding plays an essential role in the fabrication of components and structures such as reactor vessels, pipe work, heat exchangers etc. The associated local heating and cooling can significantly affect the corrosion resistance of the material. A welded joint constitutes a significant discontinuity in a structure from the compositional, metallurgical, and mechanical viewpoints. In many situations it is the performance of welded joints that determines the useful service life of the component or structure. This 3-day advanced course covers the causes of different forms of preferential weld corrosion and the practical methods of prevention.



Who Should Attend

Corrosion practitioners, failure analysis personnel, designers, technical managers, inspection and maintenance engineers, reliability and integrity engineers, coatings and weld inspectors, quality control personnel.

Course Outline

1. Introduction to Corrosion
2. Overview of Preferential Weld Corrosion
3. Weldment Metallurgy and Preferential Weld Corrosion
   - 3.1 Effect of Welding on Corrosion
     - 3.1.1 Factors affecting weldment corrosion
     - 3.1.2 Methods of welding
     - 3.1.3 Welding austenitic SS vs carbon steel
     - 3.1.4 Residual stress and stress concentration
     - 3.1.5 Weld defects
     - 3.1.6 Weld metallurgy
     - 3.1.7 Weld metal composition
     - 3.1.8 Iron contamination: its effects & removal
     - 3.1.9 Heat tint: its effects & removal
     - 3.1.10 Summary of fabrication defects
   - 3.2 Precipitation of intermetallics (sigma, chi & Laves phases) in stainless steels
     - 3.2.1 Microstructural features in SS
     - 3.2.2 Precipitation of delta ferrite and Schaeffler Diagram
     - 3.2.3 Alpha prime phase and 475°C embrittlement
     - 3.2.4 Precipitation of intermetallics: submicroscopic sigma, chi and Laves phases
     - 3.2.5 Chemical compositions of various intermetallics and phases
     - 3.2.6 Time-Temperature-Precipitation diagrams for sigma, chi and Laves phases and carbides
     - 3.2.7 Effect of chemical composition on sigma precipitation
     - 3.2.8 Effect of Nitrogen on sigma precipitation
     - 3.2.9 Effect of cold working on sigma precipitation
     - 3.2.10 Invisible (submicroscopic) sigma/chi phases and their effects on corrosion
     - 3.2.11 Time-temperature-precipitation curves for various austenitic stainless steels: precipitation of carbides, sigma, chi and Laves phases
   - 3.3 Intergranular corrosion, weld decay and knifeline attack
     - 3.3.1 Sensitization of austenitic stainless steels
     - 3.3.2 Cr profile along the grain boundaries
     - 3.3.3 Effect of carbon, molybdenum and nitrogen on time-temperature- precipitation diagrams
     - 3.3.4 Effect of cold working and applied stress
     - 3.3.5 Sensitization of Ferritic Stainless Steels
     - 3.3.6 Sensitization of Duplex Stainless Steels
     - 3.3.7 Effect sulfide inclusions in stainless steels
     - 3.3.8 Ferritic and duplex stainless steels

Course Outline

- 3.3.9 Nickel-chromium alloys
- 3.3.10 Aluminum alloys
- 3.3.11 Weld decay and knifeline attack on austenitic stainless steels
- 3.4 Why is weldment particularly susceptible to microbiologically influenced corrosion?
- 3.5 Weldment corrosion of various alloy systems
  - 3.5.1 Austenitic stainless steels
  - 3.5.2 Ferritic stainless steels
  - 3.5.3 Nickel alloys
  - 3.5.4 Duplex stainless steels
  - 3.5.5 Carbon steels
  - 3.5.6. Aluminum
- 3.6 Preferential Weld Corrosion in CO2 and H2S Environment
- 4. Guidelines for the Prevention, Control, and Monitoring of Preferential Weld Corrosion
- 5. Case Studies
- 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: $2,500 **Discount**: $2,250

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.