

WebCorr Corrosion Consulting Services Presents

API 573 Inspection of Fired Boilers and Heaters

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

Course Overview

This 5-day training course covers the inspection practices for fired boilers and process heaters (furnaces) used in petroleum refineries and petrochemical plants. This training is focused to improve equipment reliability and plant safety by discussing the operating variables which impact reliability, and to ensure that inspection practices obtain the appropriate data, both on-stream and off-stream, to assess current and future performance of the equipment.

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

Course Outline

1. INTRODUCTION
2. CORROSION AND METALLURGY
3. DEFINITIONS
4. COMMON HEATER AND BOILER DESIGNS
 - 4.1 Types of Heaters
 - 4.2 Types of Boilers
5. HEATER AND BOILER MECHANICAL RELIABILITY
 - 5.1 Reliability Programs
 - 5.2 Safety
 - 5.3 Purpose of Inspection
 - 5.4 Inspection of Fired Boilers
 - 5.5 Inspector Qualifications
6. DETERIORATION MECHANISMS
 - 6.1 Deterioration of Heater Tubes
 - 6.2 Deterioration of Boiler Tubes
 - 6.3 Deterioration Mechanisms of Other Components
7. FREQUENCY AND TIMING OF INSPECTIONS
 - 7.1 General
 - 7.2 Boiler Inspection Frequency
 - 7.3 Heater Inspection Frequency
8. SAFETY PRECAUTIONS, PREPARATORY WORK, AND CLEANING
 - 8.1 Safety
 - 8.2 General Preparatory Work
 - 8.3 Precautions to Avoid Polythionic Acid Stress Corrosion Cracking in Stainless Steel Tubes
 - 8.4 Cleaning
9. OUTAGE INSPECTION PROGRAMS
 - 9.1 General
 - 9.2 Visual Inspection of Heater Coils
 - 9.3 Wall Thickness Measurements
 - 9.4 Tube Diameter/Circumference/Sag/Bow Measurements
 - 9.5 Pit Depth Measurements
 - 9.6 Intelligent Pigs/In-line Devices
 - 9.7 Radiographic Examination
 - 9.8 Borescope/Videoprobe
 - 9.9 Hardness Measurements
 - 9.10 Dye Penetrant and Magnetic Particle Testing
 - 9.11 In-situ Metallography/Replication



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- 9.12 Detailed Examination and Destructive Testing of Tube Samples
- 9.13 Testing of Tubeskin Thermocouples
- 9.14 Magnetic Test for Carburization
- 9.15 Hammer Testing
- 9.16 Inspection of Reformer Tubes
- 10. BOILER OUTAGE INSPECTION
 - 10.1 General
 - 10.2 Piping
 - 10.3 Drums
 - 10.4 Water Headers
 - 10.5 Superheater Header
 - 10.6 Tubes
- 11. ON-STREAM INSPECTION PROGRAMS
 - 11.1 General
 - 11.2 Typical Inspection Activities
 - 11.3 External Tube Cleaning
 - 11.4 Pre-shutdown Inspection

- 12. TUBE RELIABILITY ASSESSMENT
 - 12.1 General
 - 12.2 Minimum Thickness and Stress Rupture
 - 12.3 Creep Rupture Life
- 13. METHOD OF INSPECTION FOR FOUNDATIONS, SETTINGS, AND OTHER APPURTENANCES
 - 13.1 Foundations
 - 13.2 Structural Supports
 - 13.3 Setting, Exterior, and Casing
 - 13.4 Refractory Linings and Insulation
 - 13.5 Tube Supports
 - 13.6 Visual Inspection of Auxiliary Equipment
 - 13.7 Stacks
- 14. REPAIRS
 - 14.1 Heaters
 - 14.2 Boilers
 - 14.3 Materials Verification
- 15. RECORDS AND REPORTS
- 16. 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.

