

WebCorr Corrosion Consulting Services Presents

Protective Coatings: Inspection, Maintenance and Repair

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Course Overview

This 5-day training course thoroughly and systematically covers every aspect of coatings application and inspection techniques, maintenance and repair procedures. Coatings selection, specifications, applications and relevant industry standards for surface preparations of various substrates such as steel, galvanized steel, stainless steel, copper, and aluminum are also discussed in depth. The effect of cathodic protection on the performance of coatings is also covered in detail. This coatings short course trains the participants with the knowledge and skills required for effective coatings inspection, maintenance and repair of both organic coatings (or paints) and metallic coatings such as hot-dip galvanizing and metallic spray (or metallization). This coatings inspection course can be taken as in-house training course, course-on-demand, online course and distance learning course worldwide. It can also be customized to meet the specific needs of your organization.

Who Should Attend

- Engineers and technologists who are in charge of cathodic protection systems.
- Designers who are interested in cathodic protection technology for corrosion prevention.
- Technicians and maintenance personnel who deal with installed cathodic protection systems.
- Facility owners and users who are concerned with corrosion

Course Outline

- 1.0 The Role of a Coating Inspector
- 1.1 The Basic Requirements of A Coating Inspector
- 1.2 Types of Coatings Inspectors
- 1.3 The Roles of Coating Inspectors
- 1.4 Accountability of A Coating Inspector
- 1.5 Coatings Inspection Requirements
- 1.6 Case studies on coatings-related disputes



- 2.0 Corrosion Concepts Relevant to Coatings
 - 2.1 Definition and classification of corrosion
 - 2.2 Various forms of corrosion and its control
 - 2.3 The need for coatings
 - 2.4 Major factors influencing corr & coating durability
- 3.0 BS & ISO Classification of Corrosive Environments
 - 3.1 British standard & International standard (ISO)
 - 3.2 The duration of corrosion: Time of wetness (ToW)
 - 3.3 Coatings for protection of corrosion in atmospheres
 - 3.4 Coatings for protection of corrosion in water and soil
 - 3.5 Coatings for corrosion protection:
 - special situations and special stresses
- 4.0 Characteristics of Coatings
 - 4.1 Physical barrier and special functions of coatings
 - 4.2 Essential coating properties
 - 4.3 Inhibitive primers
 - 4.4 Importance of moisture vapor transfer rate (M.V.T.)
 - 4.5 MVT and coating blistering
 - 4.6 Osmosis and osmotic blistering:
 - causes and prevention
 - 4.7 Electroendosmosis: causes and prevention
- 5.0 Fundamentals of Coatings
 - 5.1 ISO standard: definitions of coatings, paints and lining
 - 5.2 Basic components of coatings
 - 5.3 Functions of pigment, binder and solvent
 - 5.4 General functions of each coat:
 - primer, intermediate coat and top coat
 - 5.5 Mechanisms of protection
 - 5.6 Common coatings and their compositions
- 6.0 The Protective Coating System
 - 6.1 ISO standard definition of terms: pot life, shelf life, DFT, NDFT, VOC, tie coat, stripe coat etc.
 - 6.2 Different types of pain

Course Outline

- 6.3 ISO paint durability classification
- 6.4 ISO durability vs guarantee time
- 6.5 Shop and site application: pros and cons

- 7.0 Corrosion Resistant Organic Coatings
 - 7.1 Protective coatings classification
 - 7.2 Mechanisms of curing
 - 7.3 Natural-air oxidizing coatings
 - 7.4 Synthetic-air oxidizing coatings
 - 7.5 Solvent dry lacquers
 - 7.6 Coreactive coatings
 - 7.7 Emulsion type coatings
 - 7.8 Heat-condensing coatings
 - 7.9 100% solid coatings

- 8.0 Corrosion Resistant Zinc Coatings
 - 8.1 Zinc and its sacrificial protection to steel substrate
 - 8.2 Organic zinc-rich coatings and its properties
 - 8.3 Inorganic zinc-rich coatings and its properties
 - 8.4 Organic zinc-rich vs Inorganic zinc-rich coatings
 - 8.5 Hot-dip galvanizing
 - 8.6 Zinc-rich paint vs hot-dip galvanizing

- 9.0 Designing for Coatings
 - 9.1 Basic design criteria for corrosion protection
 - 9.2 Accessibility, Treatment of gaps, Precautions to prevent retention of deposits and water
 - 9.3 Edges, Welding surface imperfections, Bolted connections, Box members and hollow components
 - 9.4 Notches, Stiffeners, Prevention of galvanic corrosion, Handling, transport and erection

- 10.0 Effect of Substrate on Coating Life
 - 10.1 The Importance of Surface Cleanliness
 - 10.2 The Substrate Effect & Coating Life
 - 10.3 Types of Substrates: Steel, Galvanized steel, Stainless steel, Aluminium, Wood & Concrete etc.
 - 10.4 Millscale and its effect on a coating's performance
 - 10.5 Surface contaminants: moisture contamination
 - 10.6 Surface contaminants: water-soluble salts and osmotic blistering
 - 10.7 ISO standard on acceptable chloride levels on sandblasted surfaces
 - 10.8 Surface contaminants: oil and grease
 - 10.9 Other surface contaminants: fungal/algal growth and efflorescence

- 11.0 Importance of Surface Preparation
 - 11.1 BS, ISO, SIS, NACE and SSPC Standards on Surface Preparation
 - 11.2 Hand Tool Cleaning
 - 11.3 Mechanical or Power Tool Cleaning
 - 11.4 Solvent Cleaning/Degreasing Acid Pickling
 - 11.5 Abrasive Blast Cleaning
 - 11.6 High Pressure Water Jetting
 - 11.7 Flame Cleaning

- 12.0 BS, ISO, SIS, NACE, SSPC Standards Relevant to Surface Preparation
 - 12.1 Rust Grades and Preparation Grades
 - 12.2 ISO, Swedish and British Standards on Surface Preparation
 - 12.3 ISO Standard on Localized Surface Preparation of Previously Painted Steel
 - 12.4 Inspection and Verification of Surface Preparation
 - 12.5 Procedure for the visual assessment of steel substrates
 - 12.6 Water jetting standard and the various flash rust grades
 - 12.7 Interpretation of the various blasting grades: Sa2, Sa2½, Sa3, PMA, PSa2 & PSa2½.
 - 12.8 ISO surface preparation standard for localized repair

- 13.0 Methods of Application
 - 13.1 Brush application
 - 13.2 Roller application
 - 13.3 Conventional air spray
 - 13.4 Airless spray
 - 13.5 Conventional spray vs Airless spray
 - 13.6 Electrostatic spray
 - 13.7 Other methods of application

- 14.0 Health and Safety Aspects
 - 14.1 MSDS and Product Data Sheet Review
 - 14.2 Flash point classification
 - 14.3 Fire Hazard and Fire Fighting Measures
 - 14.4 Hazardous ingredients
 - 14.5 General Precautions and First Aid

- 15.0 Selection of Coatings
 - 15.1 Factors influencing coatings selection
 - 15.2 The process of coatings selection
 - 15.3 High chemical resistant coatings
 - 15.4 Moderate chemical resistant coatings
 - 15.5 Low chemical resistant coatings
 - 15.6 High temperature resistant coatings
 - 15.7 Special: zinc-rich coatings

- 16.0 Coatings and Cathodic Protection
 - 16.1 How coatings protect steels from corrosion
 - 16.2 How cathodic protection works

- 16.3 Coating failures induced by cathodic protection
- 16.4 Coatings suitable for use with cathodic protection
- 16.5 Economic aspect of specifying coatings with CP
- 16.6 Cathodic protection criteria safe for coatings
- 16.7 Laboratory and field test methods

17.0 Coating Failures: Causes and Prevention

- 17.1 Case studies: Arbitration & Litigation cases arising from coating failures
- 17.2 Who pays when a coating fails
- 17.3 The breakdown of coating failures
- 17.4 Incorrect coatings specifications
- 17.5 Application errors
- 17.6 Change in environment from original design criteria
- 17.8 Faulty paints
- 17.9 Common coating failures: causes and prevention
- 17.10 What the owner, applicator and supplier can do to minimize the risk of coating failures

18.0 Coating Repair and Maintenance

- 18.1 The need for coating maintenance and repair
- 18.2 The timing of coating repair
- 18.3 Inspection to determine the extent of coating failure: ISO, ASTM, SSPC & European standards
- 18.4 Standard Methods of Evaluating Degree of Rusting on Painted Steel Surfaces
- 18.5 Repair procedure: ISO Standard
- 18.6 Repair of common coating failures

19.0 Development of Coatings Specifications

- 19.1 Development of specifications
- 19.2 Project specification
- 19.3 Coatings specification
- 19.4 Coatings work specification
- 19.5 Inspection and assessment specification
- 19.6 How to develop coatings specification for new work
- 19.7 How to develop coatings specification for maintenance
- 19.8 Contents of a specification
- 19.9 Sample specifications for new work, maintenance and inspection



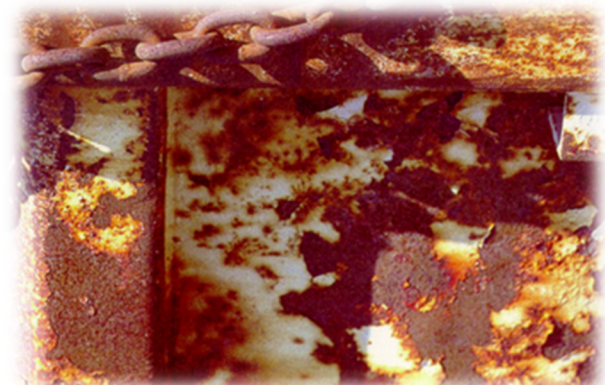
- 20.0 Quality Control in Coatings Application
- 20.1 The needs for quality control in coatings application
- 20.2 Factors to be considered in quality control
- 20.3 Variables involved in quality control
- 20.4 Weather conditions
- 20.5 Dehumidification
- 20.6 In-process quality control

21.0 Coatings Inspection and Testing

- 21.1 The needs for inspection and testing
- 21.2 Relevant international standards applicable to coatings inspection and testing
- 21.3 The inspection requirements
- 21.4 Preparation for inspection
- 21.5 Laboratory and field test methods for surface cleanliness after sandblasting
- 21.6 Inspection and measurement of surface profile after sandblasting
- 21.7 Measurement of Ambient Conditions & Environmental Test Instruments
- 21.8 Nondestructive Testing and Inspection
- 21.9 Nondestructive Testing Instruments
- 21.10 Use of Inspection Procedures for Both Destructive and Nondestructive Test Instruments
- 21.11 Laboratory Instruments and Test Methods
- 21.12 Measurements of wet film thickness (WFT) and dry film thickness (DFT)
- 21.13 Holiday detection
- 21.14 Single coat vs multicoat
- 21.15 Inspection Procedures
- 21.16 Documentation and Logbook
- 21.17 Inspection Checklist

22. Glossary of Technical Terms in Coatings and Corrosion

23. 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, 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.

