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WebCorr Corrosion Consulting Services

Corrosion Clinic is powered by WebCorr Corrosion Consulting Services Singapore. WebCorr was founded in 1995 and has been a leader in the corrosion industry. Our global clients include government agencies, multinational companies and private organizations from countries in the Asia Pacific, Europe, North America, the Middle East and Africa. We serve every industry both onshore and offshore where corrosion may pose a risk to the health and safety of the public, company personnel or the environment. With internationally recognized professional certifications and professional registrations, WebCorr is well positioned to tackle the most complicated corrosion problems facing facility owners and operators today.

WebCorr provides corrosion consulting, corrosion training courses, corrosion expert witness, corrosion prediction and corrosion modeling software and services across the globe. If you have a corrosion problem and no one can help, you can come to WebCorr, the Corrosion Clinic.



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Corrosion is a disease to materials just like a disease to human beings. Some types or forms of corrosion can be prevented through good practices in materials selection and design, while others can be cured or controlled if diagnosed early. Corrosion diagnosis involves a number of destructive and non-destructive inspection and examination techniques such as X-ray radiography

and ultrasound scans, chemical, electrochemical, mechanical, metallurgical, and microstructure tests and analyses.



Unexpected corrosion failures can be avoided through corrosion inspection, corrosion testing, corrosion monitoring, and corrosion life prediction using corrosion prediction and corrosion modeling software such as:

- **CO2Compass** for Modeling and Prediction of Corrosion by Carbon Dioxide (CO₂), Hydrogen Sulfide (H₂S), Acetic Acid (HAc), Elemental Sulfur (S), and Mercury (Hg) in Oil and Gas Pipelines and Production Tubing
- **CP-Compass** for Cathodic Protection Design, Verification, and Assessment
- **CRA-Compass** for Corrosion Resistant Alloys -Corrosion Prediction, Selection and Application Limits (Temperature Limit and Chloride Limits)
- **GC-Compass** for Galvanic Corrosion Prediction and Materials Compatibility Assessment
- **SC-Compass** for Stray Current Corrosion and AC Corrosion - Identification, Assessment and Prediction
- **FAC-Compass** for Flow-Accelerated Corrosion Modeling, Life Prediction and Materials Selection in Water-Steam Systems
- **PipelineCompass** for Pipeline Corrosion Modeling, Prediction, Assessment and Solutions
- **CIPAL-Compass** for Prediction and Modeling of Copper-Induced Pitting corrosion in Aluminium Alloys

WebCorr provides corrosion diagnosis and corrosion failure analysis, corrosion and metallurgy expert witness, corrosion training courses, and corrosion consulting services across the globe. Click the links below for more details.

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| ◆ Corrosion Consultancy Services | ◆ Review of Designs, Reports & Specifications | Corrosion Resources |
| ◆ Corrosion Training Courses | ◆ Corrosion Advisory Services | ◆ Global News on Corrosion |
| ◆ Expert Witness & Litigation Support | ◆ Corrosion Literature Search & Supply | ◆ Corrosion Frequently Asked Questions |
| ◆ Cathodic Protection Design & Consultancy | ◆ Corrosion Prediction & Corrosion Modeling | ◆ Different Types of Corrosion |
| ◆ Corrosion Diagnosis & Failure Analysis | ◆ Life Prediction of Equipment & Structures | ◆ Corrosion Special Topics |
| ◆ Materials Selection & Analysis | ◆ Corrosion Testing & Monitoring | ◆ Corrosion Standards |
| ◆ Metallurgical Investigation & Analysis | ◆ Inspection & Condition Assessment | ◆ Corrosion Links |
| ◆ Protective Coatings & Paints | ◆ Galvanizing, Chromating & Phosphating | ◆ Corrosion Rate Units Converter |
| ◆ Anodic (Anodized) Coatings | ◆ Electroplating & Electroless Plating | |

Corrosion Training Courses

[In-House Training Courses](#), [Online Courses & Distance Learning Courses](#)
[on-site, on CD-ROM/DVD/USB, on request](#)

WebCorr Corrosion Consulting Services is in the corrosion consultancy business and corrosion training is an integral part of our expertise and strength. WebCorr is registered with the Professional Engineers Board Singapore as a corrosion training provider. WebCorr has NACE certified Corrosion Specialist (#5047) providing customized in-house training, on-site training, online and distance learning corrosion courses, corrosion seminars, and workshops on corrosion, materials, metallurgy, paints and metallic coatings. The following corrosion short courses have been conducted regularly since 1992 and were accredited by the Professional Engineers Board

Singapore for awarding professional development units (PDUs) to professional engineers. We do not compete on course fees but on unparalleled course quality and learning support.

WebCorr's *corrosion courses* have attracted participants from North America, Europe, Africa, the Asia-Pacific and the Middle East. Our *customized in-house training, on-site training, course-on-demand, online and distance learning courses* can be taken at any time of the year and are not limited to the published schedule below.

List of All Corrosion Courses

Corrosion Education and Structured Training Courses for NACE Certification Applicants

Recommended Corrosion Courses for the Oil and Gas Industry

Recommended Corrosion Courses for the Pipeline Industry

Recommended Corrosion Courses for the Refining and Chemical Processing Industry

Recommended Corrosion Courses for the Marine and Offshore Industry

Recommended Corrosion Courses for the Microelectronics and Semiconductor Industry

Recommended Corrosion Courses for the Surface Finishing Industry

Recommended Corrosion Courses for the Construction Industry

Recommended Corrosion Courses for the Public Transportation Industry

Recommended Corrosion Courses for the Automotive Industry

Recommended Corrosion Courses for the Aerospace Industry

Recommended Corrosion Courses for the Water & Wastewater Industry

Recommended Corrosion Courses for the Defense and Military Industry

Recommended Corrosion Courses for the Arts and Museum Industry

Recommended Corrosion Courses for the General Industry

Recommended Online Corrosion Courses

Corrosion Courses (click the title for course contents)	No. of days	Schedule	Course Fee
A Basic Course in Corrosion Control and Prevention	5	25 Feb-1 Mar 2019 Victoria, BC, Canada 4-8 Nov 2019 Singapore	\$3500
Corrosion Control by Materials Selection and Design	5	online, on-site, on-WebEx, on-demand	\$3500

Protective Coatings: Inspection, Maintenance and Repair	5	online, on-site, on-WebEx, on-demand	\$3500
An Advanced Course in Cathodic Protection - Specification, Design, Commissioning, Testing and Monitoring	5	online, on-site, on-WebEx, on-demand	\$3500
Cathodic Protection of Underground Pipelines	5	4-8 Mar 2019 Vancouver, Canada	\$3500
Design and Operation of Pipeline Cathodic Protection Systems - Design, Installation, Operation, Maintenance, Survey and Monitoring	5	online, on-site, on-WebEx, on-demand	\$3500
External Pipeline Integrity Assessment and Composite Repairs	5	25-29 Mar 2019 Vancouver, Canada 1-5 April 2019 London, UK 18-22 Mar 2019	\$4950
Internal Pipeline Integrity Assessment and Pigging Technology	5	Vancouver, Canada 8-12 April 2019 London, UK 18-22 Nov 2019 Singapore	\$4950
CO2 Corrosion Modeling for the Prediction of Internal Corrosion in Oil & Gas Pipelines and Production Tubing	5	29 Apr-3 May 2019 Vancouver, Canada 12-16 August 2019 London, UK	\$4950
AC Corrosion of Buried or Immersed Pipelines - Recognition, Evaluation, Mitigation and Prevention	3	online, on-site, on-WebEx, on-demand	\$2500
Corrosion Control by Chemical Treatment	2	online, on-site, on-WebEx, on-demand	\$1995
Corrosion, Metallurgy, Failure Analysis and Prevention	5	1-5 April 2019 Vancouver, Canada	\$3500
Welding and Weldment Metallurgy: Processes, Procedures, Inspection and Failure Prevention	5	online, on-site, on-WebEx, on-demand	\$3500
Marine Corrosion, Causes and Prevention	2	online, on-site, on-WebEx, on-demand	\$1995
Offshore Corrosion Inspection and Assessment	5	online, on-site, on-WebEx, on-demand	\$3500
Corrosion Inspection, Corrosion Testing and Monitoring	5	online, on-site, on-WebEx, on-demand	\$3500
API RP 571 Damage Mechanisms Affecting Fixed Equipment in the Refining and Petrochemical Industries	5	online, on-site, on-WebEx, on-demand	\$3500

API 579-1 / ASME FFS-1 Fitness-For-Service Assessments	5	online, on-site, on-WebEx, on-demand	\$3500
API 573 Inspection of Fired Boilers and Heaters	5	online, on-site, on-WebEx, on-demand	\$3500
API 580 Risk-based Inspection	5	online, on-site, on-WebEx, on-demand	\$3500
API 581 Risk-based Inspection Methodology	5	online, on-site, on-WebEx, on-demand	\$3500
API 583 Corrosion Under Insulation and Fireproofing -Detection, Mitigation and Prevention	5	online, on-site, on-WebEx, on-demand	\$3500
API 584 Integrity Operating Windows	5	online, on-site, on-WebEx, on-demand	\$3500
Understanding NACE MR0175/ISO 15156: Petroleum and Natural Gas Industries -Materials for use in H2S-containing Environments in Oil and Gas Production	3	online, on-site, on-WebEx, on-demand	\$2500
Environmental Cracking (SCC/HIC/SWC/HSC/SSC/SOHIC/SZC/HB/HE): Recognition, Mechanisms and Prevention	5	online, on-site, on-WebEx, on-demand	\$3500
Corrosion in Oil Refineries: Inspection, Monitoring and Control	5	online, on-site, on-WebEx, on-demand	\$3500
Corrosion Management in the Oil and Gas Industry	2	online, on-site, on-WebEx, on-demand	\$2500
Materials Selection and Corrosion Control for Oil and Gas Production Systems	2	online, on-site, on-WebEx, on-demand	\$2500
Stainless Steels and Alloys: Why They Resist Corrosion and How They Fail	1	online, on-site, on-WebEx, on-demand	\$1495
Microbiologically Influenced Corrosion (MIC): Recognition, Mitigation and Prevention	5	online, on-site, on-WebEx, on-demand	\$3500
Life Predication of Corrodible Structures and Components	1	online, on-site, on-WebEx, on-demand	\$1995
Preferential Weld Corrosion: Causes and Prevention	3	online, on-site, on-WebEx, on-demand	\$1995
Hot Dip Galvanizing and Mechanical Plating - Processes, Properties and Applications	3	online, on-site, on-WebEx, on-demand	\$2500

Methods and Materials for Corrosion Control and Prevention	5	18-22 Mar 2019 Vancouver, Canada	\$4750
Corrosion Control and Prevention for Aircraft Structure and Engine Components	3	19-23 Aug 2019 London, UK online, on-site, on-WebEx, on-demand	\$2500
Corrosion Control and Prevention in the Microelectronics and Semiconductor Industry	2	6-7 August 2019 Santa Clara, CA, USA 12-13 Nov 2019 Singapore	\$1995
Electroplating Technology for the Microelectronics and Semiconductor Industry	2	8-9 August 2019 Santa Clara, CA, USA 14-15 Nov 2019 Singapore	\$1995
Plating on Plastics: Fundamentals and Processes	2	online, on-site, on-WebEx, on-demand	\$3500
An Advanced Course in Electrodeposition	5	online, on-site, on-WebEx, on-demand	\$3500
Electrochemical Migration (ECM), Conductive Anodic Filament (CAF) Formation and Surface Insulation Resistance (SIR) Testing	1	online, on-site, on-WebEx, on-demand	\$1495
Electrochemical Impedance Spectroscopy -Measurement, Modeling, Data Interpretation & Applications	2	online, on-site, on-WebEx, on-demand	\$1995
Pinhole Leaks in Copper Pipes in Potable Water Distribution System: -Causes and Prevention	1	online, on-site, on-WebEx, on-demand	\$1495
Corrosion Control and Prevention for Conservators and Curators	2	online, on-site, on-WebEx, on-demand	\$1995
Corrosion Control and Prevention for Historic Buildings and Monuments	2	online, on-site, on-WebEx, on-demand	\$1995
Corrosion Control and Prevention for Military Equipment and Systems	2	online, on-site, on-WebEx, on-demand	\$1995
Concrete Corrosion: Causes and Prevention	1	online, on-site, on-WebEx, on-demand	\$1495
Emerging Corrosion Control Technologies for the Repair and Rehabilitation of Concrete Structures	1	online, on-site, on-WebEx, on-demand	\$1495
An Advanced Course in Concrete Durability	5	online, on-site, on-WebEx, on-demand	\$3500

Cathodic Protection of Reinforced Concrete Structures	5	online, on-site, on-WebEx, on-demand	\$3500
Modern Techniques for Corrosion Testing and Monitoring in Concrete Structure	2	online, on-site, on-WebEx, on-demand	\$1995
Stray Current Corrosion in DC Rail Transit Systems - Identification, Detection, Mitigation, Monitoring and Prevention	3	online, on-site, on-WebEx, on-demand	\$2500
Corrosion in Automotive System: Causes and Prevention	2	online, on-site, on-WebEx, on-demand	\$1995
Corrosion in Fire Protection Systems (FPS) - Detection, Mitigation and Prevention	1	online, on-site, on-WebEx, on-demand	\$1495
Corrosion Control and Prevention in Seawater Desalination Plants	1	online, on-site, on-WebEx, on-demand	\$1495
Accelerated Low Water Corrosion (ALWC) - Mechanisms, Mitigation and Prevention	1	online, on-site, on-WebEx, on-demand	\$1495

* The fees quoted above are for publicly scheduled corrosion courses only. Fees for online corrosion courses, distance-learning courses, course-on-demand, in-house training and on-site training corrosion courses are available upon request here.

In-House Training Corrosion Courses/On-Site Training Corrosion Courses

If you are concerned with corrosion in your business, in-house training or on-site training is a great solution to train a group of employees from design, production, operation, quality assurance, inspection and maintenance, and technical sales and support on corrosion control and corrosion prevention technology. The



contents of all our corrosion courses can be customized to fit your organization's needs.

There is no limit to the number of participants required for in-house training corrosion courses or on-site training corrosion courses. We conduct the in-house or on-site training corrosion courses at your company's premises worldwide and at a time convenient to your company.

Click here to contact us for a quotation.

Online Corrosion Courses & Distance Learning Corrosion Courses

All our corrosion short courses are available for online learning or offline distance learning. You can start an online corrosion course at any time and learn at your own comfortable pace and schedule, whenever and wherever you are. You have around-the-clock access to interactive and media-rich course materials, virtual labs, course instructions, course assignments, and course assessments. Learning support is provided directly by our NACE certified Corrosion Specialist via email, skype or whatsapp. For those who do not have ready access to internet, we can send you our online course materials on a CD-ROM or DVD or USB memory stick for offline distance learning.



[Click here to register an online corrosion course.](#)

Corrosion Course-On-Demand

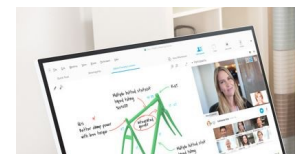
All our publicly scheduled corrosion short courses are conducted once a year. However, you do not need to wait for one year if you have missed any of the publicly scheduled corrosion courses as we have this unique corrosion course-on-demand scheme: we will conduct the course just for you on an one-on-one basis at a time and a location convenient to you. This option costs significantly less than a full-scale in-house training program.



[Click here to contact us for a quotation.](#)

Corrosion Course-On-WebEx

WebEx is hosted by Cisco, a product purpose-built for **real-time web communications**. If you are an existing user of WebEx, or if you are willing to



experience the power of WebEx, we can conduct the course for you over WebEx with audio and video presentations and interactions with the course instructor and other course attendees in real-time. It is just like the physical classroom settings that everyone can interact with each other. Your questions will be answered in real time by our instructor.

[Click here to contact us for a quotation.](#)

Corrosion PowerPoint Slides & Corrosion Test Banks for Trainers, Instructors, Tutors, University Lecturers, and Professors Teaching Corrosion Courses

If you are involved in teaching corrosion courses, you may wish to purchase a complete set of PowerPoint slides and the computerized test banks (in MicroTest format) with solutions. These presentations are suitable for teaching corrosion courses at different levels (from undergraduate to postgraduate) and durations (from 6 hrs to 40 hrs). These ready-to-use corrosion PowerPoint slides contain high quality color photographs, illustrations, animations and video clips. They can also be easily edited and customized to your own styles. The corrosion test banks contain over 1,000 corrosion questions for your use in tutorials, tests or examinations. These questions are conveniently grouped into 4 categories in the test bank: (1) true or false, (2) multiple choice, (3) calculation, and (4) reasoning and open-ended discussions.

[Click here to contact us if you need more information.](#)

Corrosion Advisory & Corrosion Consulting Services

At WebCorr, our NACE certified corrosion specialist provides efficient and proficient corrosion advisory and corrosion consultancy services including cathodic protection design and specification, corrosion diagnosis, corrosion failure analysis, forensic investigation and expert

witness in litigation and arbitration cases related to corrosion, materials, metallurgy, organic coatings (paints) and metallic coatings such as thermal spray metalizing, galvanizing, anodizing, chromating, phosphating, electroplating, electroless plating, mechanical plating, and sheradizing or diffusion coating.

- Corrosion advisory services on corrosion related issues.
- Corrosion diagnosis and trouble-shooting of process-related issues.
- Selection of corrosion resistant materials, coatings and paints to meet your project requirements.
- Third party independent review of designs, drawings and technical specifications to identify potential corrosion risks, the compatibility of materials, the different forms of corrosion and their mitigation.
- Reviews of specifications on materials, processes and coatings to identify any clauses that may lead to potential dispute, arbitration or litigation among the parties involved.
Corrosion liability can be avoided through proper specifications.
- Review of contracts to identify potential corrosion liabilities and advices on how to deal with them.
- Materials and coatings inspection, performance evaluation, and assessment of remaining life.
- Quality assessment of anodized aluminium (anodic coatings), chromate and phosphate coatings.
- Optimization of process parameters in anodizing and plating operations.
- Corrosion Testing to standards, certifications and verifications.

Verification of whether materials or products have been produced in accordance with the relevant international standards such as ASTM, BS, DIN, ISO and JIS or to contract specifications may be established by testing. Corrosion Clinic has access to a wide range of equipment and expert personnel for testing physical, mechanical and corrosion resistance properties of materials.

- Life prediction of materials, components, structures, paints, metallic coatings including thermal spray metalizing, galvanizing, anodizing, chromating, phosphating, electroplating, electroless plating, mechanical plating, and sheradizing.
- Forensic investigation, failure analysis of materials, paints & metallic coatings including thermal spray metalizing, galvanizing, anodizing, chromating, phosphating, electroplating, electroless plating, mechanical plating, and sheradizing.
- Expert witness and support in litigation and arbitration matters related to corrosion, materials, metallurgy, paints & metallic coatings including thermal spray metalizing, galvanizing, anodizing, chromating, phosphating, electroplating, electroless plating, mechanical plating, and sheradizing or diffusion coating.

Typical Corrosion Consulting Services Provided to Clients

- Assessment of the susceptibility of suction scrubber vessels to hydrogen induced cracking (HIC) under different process conditions.
- Assessment of the impact of a change in carbon equivalent (CE) value from 0.43 to 0.45 on the risk of hydrogen induced cracking (HIC).
- Assessment of the requirement for HIC testing under NACE TM0284 (CLR, CSR and CTR).

- Corrosion failure analysis of SA285 steel plate in an industrial waste water tank.
- Corrosion failure analysis of stainless steels and alloys in seawater reverse osmosis (SWRO) desalination plant.
- Design of cathodic protection system for reinforced concrete structure.
- Design review and development of a corrosion monitoring plan and philosophy for FPSOs.
- Literature search and supply for a multinational oil & gas company on the corrosion resistance of steels and alloys used in the oil and gas industry.
- Materials selection and corrosion testing for a multinational pharmaceutical company
- Review of designs for an overseas company on the compatibility and suitability of materials specified in a heat exchanger.
- Failure analysis of an aircraft engine component
- Failure analysis of overhead power cables in a DC rail system
- Failure analysis of a 316L stainless steel plug and seat valve used in a chemical process plant
- Expert witness in the corrosion of stainless steel assembly
- Expert witness in corrosion of stainless cladding in buildings
- Expert witness in the corrosion of stainless steel chains
- Expert assistance in the corrosion of hot-rolled and cold-rolled steel plates
- Expert witness in the corrosion of silver coatings on mirrors
- Expert witness in the corrosion of steel pipe piles
- Expert witness in the corrosion of a lamppost
- Expert witness in the case related to electroless plating processes

- Expert witness in the corrosion of intermediate container boxes (ICBs)
- Corrosion diagnosis and life prediction of a galvanized roof in an industrial area
- Corrosion inspection and assessment of low pressure and high pressure feedwater heaters in a power plant
- Assessment of design and failure analysis of military vehicles
- Corrosion diagnosis and metallurgical examination of a cast iron wedge gate valve
- Corrosion analysis of copper pipe pitting in the living quarters on an offshore platform
- Corrosion analysis of copper pipe cracking in hot tap water system in a hotel
- Corrosion inspection, and assessment of an underground ductile iron sewer pipe
- Corrosion inspection and metallurgical analysis of boiler tubes onboard a ship
- Investigation of Microbiologically Influenced Corrosion (MIC) of an underground water pipe
- Advice, design and training on corrosion sensors for marine concrete structures
- Life prediction of a titanium nozzle used in a chemical process plant
- Corrosion analysis and life prediction of roof deck assembly
- Inspection and corrosion diagnosis of a 316L stainless steel air-receiver
- Assessment of damage to fresh water tank coatings due to sea water flooding onboard a ship
- Corrosion of an Inconel 600 alloy in a gas scrubbing installation
- Assessment of the corrosion resistance of gold and gold-PTFE plating in printer inks
- Evaluation of the shelf life and the corrosion resistance of Al-based wafer in process chemicals
- Corrosion evaluation of Hastelloys (B, B2, C, C4, C-276, C22) in waste chemicals

- Corrosion resistance of aluminum in hot saline waters
- Measurements of impedance and admittance of anodized aluminum in accordance with relevant industry standards such as ASTM, BS and ISO.