



COURSE 1: 2-day Practical Approach To

Corrosion Control And Management

With Particular Emphasis On Maintaining Existing Plant And Infrastructure As Well As Preventative Action For New Plants

28 - 29 July 2008 • JW Marriott Hotel • Kuala Lumpur

COURSE 2: 1-day intensive program on

Understanding Cathodic Protection In Mitigating Corrosion

30 July 2008 • JW Marriott Hotel • Kuala Lumpur

Course 1

Intensive & Hands on approach on

- Corrosion Theory & Identification
- Methods of Corrosion Control
- Material Selection & Corrosion Design
- Protective Coatings
- Types of Cathodic Protection

PLUS!

Practical demonstration & Case studies

Conducted by

Leading Regional Expert

Past National President of the Australasian Corrosion Association

Course 2

Focusing on

- Mechanisms of Corrosion
- Basic Mathematics & Theorems of CP
- Electrochemical Theory of Corrosion
- Polarisation & Protection Criteria
- Common Mistakes in Measurements
- Monitoring CP Systems

Dear Participants,

Corrosion is a thief and each day it steals from the fabric of infrastructure that society needs to function. Corrosion consumes important physical assets, creating a loss of dependability, reliability and increased operating costs.

It is estimated that the costs of preventable corrosion to society is in the order of 3 to 4% of most industrialized country's GDP. This is a huge cost to any economy. The whole science of corrosion, engineering and control is unfortunately often ignored, sometimes with disastrous consequences. Many engineers now actively engaged in corrosion-related problem solving have little training in corrosion due to lack of availability or interest during their formal education.

However corrosion can be controlled and this course is designed to give you a hands on approach to corrosion control with specific emphasis on refurbishment and maintenance of existing infrastructure and effective protection for new structures.

Topics such as material selection, cathodic protection, protective coatings, corrosion monitoring and designing to minimise corrosion are examined and discussed in this two day program.

The program will incorporate reference to, and use of, a series of ISO Standards, NACE recommended practice standards and the SSPC references.

I look forward to sharing my experience in this industry with you.

Mark Weston

Senior Corrosion Engineer and Technical Director

Day 1 - Monday, 28th July 2008

9.00 CORROSION THEORY

- Definition of corrosion
- Costs to industry
- Cost to human life and safety
- Cost to the environment

10.30 Morning Refreshments

10.45 CORROSION IDENTIFICATION

- Nature of corrosion
- Electro-chemical reactions
- Passivity and polarisation

FORMS OF CORROSION

- Uniform
- Galvanic
- Crevice
- Pitting
- Environmentally induced cracking
- Hydrogen damage
- Intergranular corrosion
- De-alloying – dezincification
- Erosion – corrosion fretting
- The drivers of the corrosion process

12.30 Lunch

1:45 CORROSION CONTROL METHODS

- Material selection
- Structural design
- Protective coatings
- Barrier coatings
- Tapes and wraps
- Cathodic protection
- Vapour inhibition
- Other methods
- # Making corrosion work for us (practical demonstrations)

3.30 Tea Break

3.45 CONTINUATION OF PRACTICAL DEMONSTRATIONS

4.45 Discussions and close of day 1

Day 2 - Tuesday, 29th July 2008

9.00 REVIEW OF TOPICS AND DISCUSSION

MATERIAL SELECTION

- Types of corrosion resistant materials
- Weathering steels
- Stainless steels
- Naval brass and other alloys

9.45 PROTECTIVE COATINGS

- Overview of how they work
- Common classifications of protective coatings

10.30 Morning Refreshments

10.45 GENERIC TYPES OF PROTECTIVE COATINGS

- Metallic coatings
- Liquid applied coatings
- Powder coatings
- Tape wraps
- Cementitious coatings

TYPES OF PRIMERS

- Anti corrosive pigments

COATING FAILURE CASE STUDIES

12.30 Lunch

1:45 TESTS FOR EFFECTIVENESS OF PROTECTIVE COATINGS

2.30 CATHODIC PROTECTION

- Theory and application
- Galvanic issues
- Types of Cathodic protection
- Stray current
- Methodology of monitoring CP

3.30 Tea Break

3:45 FINAL WRAP UP OF FAQ AND DISCUSSION

5:00 Close of Program

AFTER ATTENDING PARTICIPANTS WILL BENEFIT FROM THE FOLLOWING ...

- Have sound working knowledge of corrosion issues
- Be able to identify various types of corrosion
- Be able to identify the causes and driving factors of corrosion
- Be able to determine the most practical method of mitigating corrosion
- Be able to develop work procedures for corrosion control
- Be able to identify and recommend alternatives in structural design to minimize corrosion
- Have a good working knowledge of cathodic protection
- Have a good appreciation of material selection as a method of corrosion control
- Have a good working knowledge of protective coatings for corrosion control
- Be able to monitor the effectiveness of the corrosion control process

ORGANIZATIONAL IMPACT ie IMPACT ON THE COMPANY

- Understand the cost burden of corrosion to industry
- Have an understanding of the environmental impact of corrosion control procedures
- Have an understanding of the environmental and social impact of un-controlled corrosion

PERSONAL IMPACT ie IMPACT ON THE DELEGATE

- Increased awareness of corrosion engineering
- Increased awareness of the social and economic effects of corrosion
- Tools to develop skills in corrosion control
- Tools to develop skills in corrosion monitoring
- Increase in knowledge base and pointers to further research

WHO SHOULD ATTEND FOR BOTH PROGRAMS

- Chief / Project / Consulting / Plant / Service / Maintenance Engineers
- Meta Inspection Officers
- Asset / Pipeline Integrity Managers
- Risk Managers
- Pipeline Designers
- Technical Directors in the process industry - oil, gas, petrochemical, refinery, construction of pipelines, storage tanks, pumps, pressure vessels, coatings
- Companies supplying corrosion-resistant alloys / materials
- Technical Suppliers of Protective Coatings

Program topics, speakers and schedules published herein are confirmed as at printing time. Please refer to the event's timetable page at www.cmttevents.com for the most up-to-date information.

COURSE 2: 1-day intensive program on Understanding Cathodic Protection In Mitigating Corrosion

30 July 2008 • JW Marriott Hotel • Kuala Lumpur

WHY YOU CAN'T MISS THIS

Cathodic Protection is often treated as a somewhat mysterious science by those not fully conversant with this most useful means of corrosion control. Many observers feel that cathodic protection is a complicated procedure whereas in fact the basic principles are quite elegantly simple and follow well defined scientific laws.

Like many other specialised areas of engineering (such as computing) Cathodic Protection has evolved a number of distinctive terminologies and shibboleths that are often confusing to the un-initiated.

It is not a universal panacea for all underground or immersed corrosion, but in the majority of cases provides an economical and effective method of corrosion protection

This program has been designed as a structured training program and at the conclusion of the session the attendees will have gained a working knowledge of the science and practical application of cathodic protection.

PROGRAM OUTLINE

- 9.00 **CORROSION THEORY**
- Definition of corrosion
 - Costs to industry
 - Cost to human life and safety
 - Cost to the environment
- 9.30 **BASIC MATHEMATICS AND THEOREMS FOR CP**
- Ohm's Law
 - Kirchoff's Laws
 - Resistivities
 - # Practical demonstrations of above
- 10.30 Morning Refreshments
- 10.45 **THE BASIC CORROSION CELL**
Basic electrochemical theory of corrosion
- 11.30 **TYPES OF CATHODIC PROTECTION SYSTEMS**
- Sacrificial systems
 - Impressed current systems
 - Power supplies
 - Cathodic interference
- 12.30 Lunch
- 1.45 **POLARISATION AND PROTECTION CRITERIA**
- Measurement methods and equipment
 - Common mistakes in measurements
- 3.30 Tea Break
- 3.45 **MONITORING CP SYSTEMS**
- Tips and techniques
 - Interpretation of results
- WRAP UP, FAQ AND DISCUSSION**
- 5:00 Close

AFTER ATTENDING PARTICIPANTS WILL LEARN THE FOLLOWING..

- The mechanisms of corrosion, how and why it occurs
- The electrochemical theory of corrosion
- The basic requirements of applying cathodic protection to buried or immersed structures
- Protective coatings used in conjunction with cathode protection
- Basic cathodic protection design calculations
- The criteria for protection, polarisation, current sources, anode and cathode potential fields
- Impressed current and sacrificial cathodic protection installations
- The ongoing monitoring of cathodically protected items
- Stray current and cathodic interference
- Regulatory standards and recommended practices

REGISTRATION

Name _____
 Position _____
 Email _____
 Name _____
 Position _____
 Email _____
 Tel _____ Fax _____

Company _____
 Address _____
 City/Postcode _____ Country _____
 Approving Manager's Name _____
 Position _____
 E-mail _____

Fees: The full Registration Fee includes cost of all sessions, luncheon, coffee/tea & documentation.

Regular Fee	1 Person	Group of 3 or more* (save min RM1200*)
Course 1	RM3,995	RM3,595*
Course 2	RM2,995	RM2,995
Attend both courses & SAVE min RM300 per person		
Both Courses	RM6,690	RM6,290*

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TO REGISTER

Online: www.cmtevents.com
 Email: adminkl@cmtsp.com.sg
 Fax: (603) 2162 6393
 Tel: (603) 2162 7322
 Post to: Lot 7.03, 7th Floor, North Block, The Ampwalk,
 218 Jalan Ampang, 50450 Kuala Lumpur

CERTIFICATE OF COMPLETION

A Certificate of Completion will be awarded upon successful completion of each course. This serves as evidence of your personal and professional commitment to your career.

COURSE TIMING

Registration: 8.30 am, Course Begins: 9.00 am,
 Morning Coffee: 10.30 am, Lunch: 12.30 pm to 1.45 pm,
 Tea Break: 3:30 pm, Course Ends: 5.00 pm

Register me for

- Course 1 only Course 2 only
 Both course 1 & 2

* Terms and conditions apply.

Cancellations, Refunds & Transfers: A full refund will be promptly made for all written cancellations 3 weeks before the meeting. Thereafter, cancellations are not refundable. A substitute may be made at any time.

Cheques : Crossed & payable to
"Centre for Management Technology Sdn Bhd"

Photocopy Registration Form to Preserve Brochure Copy. July 2008

TELEGRAPHIC TRANSFER

Account Name: **Centre for Management Technology Sdn Bhd**
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TT must include additional RM10 for Beneficiary's Bank charges. Delegates must bear all bank charges and local taxes (if applicable). Fees must be NETT of ALL charges.

Register online ~ www.cmtevents.com

LEARN FROM THE BEST

Mark Weston is the past National President of the Australasian Corrosion Association (ACA) and sits on a number of protective coatings and corrosion related committees in Australia. He is a board member of the Protective Coatings Certification Program (PCPP).

Mark is a certified Corrosion Technologist and hold coating inspection certificates from both the ACA and the National Association of Corrosion Engineers, USA (NACE) and is a trainer for both NACE and the ACA.

He has written and developed a number of corrosion, protective coating and cathodic protection courses that have been presented in a number of countries including the Middle East, Australia, New Zealand and various countries in South East Asia.

Mark has written many well published papers in corrosion magazines including "Corrosion Australia", "Journal of Mining" and "Rust" and has presented at international conferences.

His clients range from port authorities, water, oil & gas industries including notable clients such as Esso Australia, Western Mining Corporation, Shell, Mobil, Origin Energy, Woodside Petroleum etc

With all these clients, Mark was personally involved with the design of corrosion mitigation systems, installation of cathodic protection systems, conduct of major asset and detailed plant condition survey, monitoring of coating application and advice on coating selection for both onshore and offshore structures including underground storage tanks and pipelines.

CMT into our 25th year is a global conference organizer HQ in Singapore. CMT's dedicated team works closely with market leaders to analyze the latest industry trends and provide information supporting your decision making. Our annual 60 events encircle the globe from Asia Pacific to the Middle East to New Europe/Russia and Latin America.