



Training in Corrosion Engineering Level II At CEREM

College of Engineering, King Saud University

Presenter: Carmelo Ing. Aiello

Short Course

1 – 3 March, 2010

CEREM

1st Day: CORROSION FORMS & CORROSION DAMAGES

Corrosion Forms: 8:30 am -12:00 pm

- Generalized corrosion
- Localized corrosion
- Selective corrosion

Lunch/ Prayer Break: 12:00 pm- 1:00 pm

Corrosion Damages: 1:00 pm – 5:00 pm

- Environmental Conditions: Galvanic Corrosion, Crevice Corrosion, SCC, etc.
- Temperature: High Temperature Corrosion, Metal Dusting, Carburization, Creep, etc.
- Stress : Fatigue Cracking
- Time : Temper Embrittlement, Strain Ageing

2nd Day: CORROSION IN INDUSTRY

Metallurgy and Corrosion in Refinery, Petrochemical & Power Plants: 8:30 am – 12:00 pm

- H₂S and Sulphur compounds at high temp.
- HCN or Cyanides
- NH₃ or Ammonia
- Naphthenic Acids
- Polythionic Acids
- HCl and Chlorides

Lunch/ Prayer Break: 12:00 pm- 1:00 pm

Metallurgy and Corrosion in Refinery, Petrochemical & Power Plants: 1:00 pm – 5:00 pm

- High Temperature Hydrogen Attack
- NH₄Cl, CO₂, H₂SO₄, NaOH, NH₄HS, Wet H₂S
- Corrosion Under Insulation
- MIC – Microbiologically Influenced Corrosion
- Creep

3rd Day: CORROSION PROTECTION TECHNIQUES

Protective Coatings: 8:30 am – 12:00 pm

- Various types of Paintings and Coating
- Coating Failures

Lunch/ Prayer Break: 12:00 pm - 1:00 pm

Corrosion Inhibitors: 1:00 pm – 3:00 pm

- Types of corrosion inhibitors
- Advantages and disadvantages of corrosion inhibitors

Cathodic Protection (CP): 3:15 pm – 5:00 pm

- Sacrificial anode cathodic protection systems
- Impressed current cathodic protection system
- Advantages and disadvantages of CP



Mechanical Engineer H.C. – New York University, Technological Engineer H.C. – International Academy of Technology and Engineering, Member of NACE International, EFC, AIPnD (Italian Association for Non Destructive Testing), EPERC (European Pressure Equipment Research Council), Past President of NACE Italia.

Carmelo has more than 35 years of Experience in Refinery Corrosion , Inspection Management, Management of NDT (MT, PT, RT, UT, ET, IT, AT, VT etc), Materials Selection, Welding, Mechanical Design of pressure vessel (VSR) and heaters (API 530), RBI (Risk Based Inspection) and FFS (Fitness For Service). He is author of many papers and books including "Steels Metallurgy", "Metallurgic Behavior of Materials in Corrosion", "Materials and Corrosion in Refining".

He is member of the WP15 "Refining Corrosion", UE - HTI "High Temperatures on Industry" (Material for high temperature in the industry) of the European Federation of Corrosion (EFC), STG 34 – "Petroleum Refinery and Gas Processing" and STG 37 – "Process Industry – High Temperature" of NACE International. Member of the WG ISPESEL " Guidelines for materials in Creep " and UNI " NDT for vessel pressure in Creep". Senior Corrosion Technologist (NACE 9331) - International Welding Technologist (IWT 30047) - 3^o Level PND (CICPND 643) - European Welding Inspector (EWI 92037).

Acknowledgments: " Journalistic prize - Giorgio Moravia - 1980", " Gold Medal for the organization of the European Conference - Taormina 1989 - OMECO", " Journalistic prize – AIPnD – Ravenna 2003", "Certificate of Scientific Appreciation – AIPnD – Milano – 2004", " Prize Enrico Mattei - AIPnD - 2005 "

Learning Outcome:

Upon completion of this course, participants will gain an understanding of the consequences of corrosion in industry, the various forms of corrosion attack, how to control corrosion by material selection, use of corrosion inhibitors and cathodic protection and protective coatings.

Who Should Attend?

Lab Supervisor, Engineer, Scientist, Process Maintenance and Plant Engineer, Inspection and Corrosion Engineers, Staff of Regulatory organizations. Researchers and Lab technicians.

Course Fee: SR. 3000/--

For more information please contact CEREM:

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