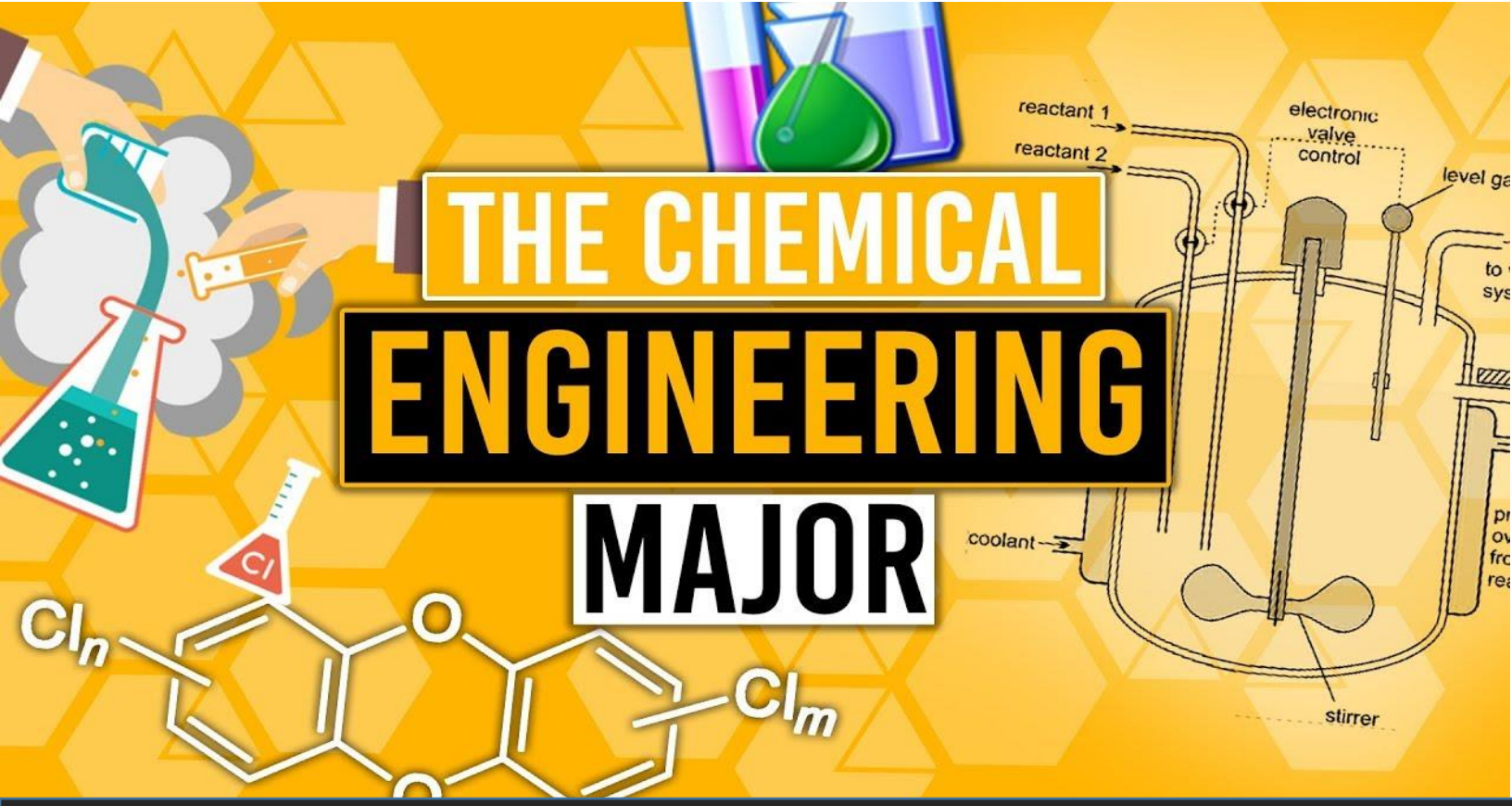

Applied Modern Corrosion Techniques (Testing, Monitoring, Protection & Prevention)

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Training & Consultancy

Applied Modern Corrosion Techniques (Testing, Monitoring, Protection & Prevention)

Introduction:

This comprehensive corrosion course consists of several modules covering virtually every aspect of corrosion. The course is structured in a flexible modular format so that beginners will establish a strong foothold from the basic modules dealing with the necessary concepts and principles before taking advanced topics, while advanced participants will be able to go through specific modules of their interest. The smooth integration of the modules provide an excellent avenue for corrosion practitioners, designers, technical managers, inspection and maintenance engineers, technicians, quality control personnel and those involved in failure analysis to update their appreciation of corrosion and the awareness of the emerging technologies for corrosion control, prevention, testing and monitoring.

Who Should Attend?

Corrosion Control Engineers & Personnel, Process Engineers, Metallurgists, Inspection Personnel, Mechanical Engineers, Material Selection Personnel, Plant Contractors, Operations Engineers, Team Leaders & Supervisors, Maintenance Supervisors, Senior Plant

Supervisors, Mechanical Engineers, Corrosion Control & Monitoring Systems Personnel, Oil and Gas Production Facilities Personnel, Chemists, Chemical Engineers, Technicians and Supervisors, New Petroleum Engineers, Asset Management Personnel, Design & Construction Engineers, Team Leaders & Coordinators, Construction Coordinators, Maintenance Engineers, Technologists, Maintenance Team Leaders & Engineers, Personnel who are / will be responsible for detecting, inspecting, monitoring, controlling corrosion in oil and gas piping, pipelines used in production operations and Personnel responsible for metallurgy, corrosion or the prevention of failures in plant and equipment.

Course Objectives:

By the end of this course delegates will be able to:

- Have a good background on metallurgy and ferrous metals
- Become familiar with the classification and heat treatment of steels
- Know the basics of corrosion chemistry
- Be familiar with the main corrosion mechanisms occurring in oil and gas production and processing systems
- Recognize the different types of damage caused by corrosion
- Get deeper into materials selection for corrosion prevention
- Discuss different forms of corrosion (mechanisms, recognition and prevention)
- Know some advantages and disadvantages of the various corrosion monitoring methods
- Know corrosion monitoring, choices of metallurgy, and prevention
- Be familiar with current corrosion control techniques will be reviewed, along with current methods

- Be familiar with modern corrosion testing, protection and monitoring techniques
- Increase awareness on the different damage and failure mechanisms and be familiar with the methods of failure prevention and inspection

Course Outline:

Theory & Principles of Aqueous Corrosion

· Introduction

· Electrical concepts relevant to corrosion

· Matters of Substance

· Chemical and electrochemical concepts

· Why does a metal corrode?

· How does a metal corrode? - Kinetics of corrosion

Different Forms of Corrosion (Mechanisms, Recognition and Prevention)

· Uniform corrosion, Galvanic corrosion

· Dealloying and Graphitisation

· Crevice corrosion, Pitting corrosion

· Intergranular stress corrosion cracking, weld decay and knife-line attack

· Exfoliation, Filiform corrosion

· Microbiologically-Influenced Corrosion (MIC)

· Environment-sensitive cracking

· Hydrogen Damage, Corrosion fatigue, Fretting

· Erosion corrosion, impingement attack and cavitations

· Stray current corrosion

Design and Materials Selection for Corrosion Prevention

· Design guidelines for corrosion prevention

· Corrosion resistance properties of stainless steels and super-duplex stainless steels

· Corrosion resistance of other common materials

· Corrosion resistance of non-metallic materials

· Current development and future trend

Corrosion Protection by Coatings

· Metallic coatings, Organic coatings and Paints, Composite coatings

· Organic coatings and cathodic protection

· Current development and future trend

Corrosion Testing and Monitoring

· Type and classification of corrosion testing

· The nature of corrosion process

· Conventional methods, Electrochemical methods

· Principal online corrosion monitoring techniques

· Other methods of corrosion testing and monitoring

· Current development and future trend