

# (ME#06) CHEMICAL AND PETROCHEMICAL INDUSTRY MATERIALS SELECTION AND CORROSION CONTROL

*Turning GOOD Engineers into GREAT Engineers!*

## **COURSE OVERVIEW**

This course will introduce the basic corrosion and Metallurgical concepts that are needed to understand the types of corrosion and damage that occur in Chemical and Petrochemical Plants. The basic concepts of electrochemistry and how this is applied to control corrosion in process plants will be covered. Recognizing the types of corrosion will be covered from both a theory viewpoint and from inspection of failures specimens that have come from operating plants throughout the world. Laboratory corrosion testing techniques and plant corrosion monitoring methods will be reviewed. The control of external corrosion will be discussed.

## **WHO SHOULD ATTEND**

For the experienced designer, engineer and materials engineer, this course will be a review of the established principles of design and application as well as an update of the new materials that are used in the Chemical and Petrochemical Industries. For inspection and maintenance personnel, the course will offer background information that can be used to recognize and evaluate corrosion in the plant and that can be used to plan effective inspection programs. For less experienced personnel, the course will offer a Unique introduction to the problems that are encountered in operating plants and some of the techniques that can be used to control corrosion and degradation.

## **LEARNING APPROACH**

This is the course that will give attendees the background required to design, engineer and complete piping assignments. Workshop consisting of a series of projects where attendees will have an opportunity to produce specifications, develop a P&ID and perform the calculations involved, including line sizing, pump sizing and selection. Each session will be conducted in lectures, discussion & problem solving format

## **AMONG INTERESTING TOPICS COVERED DURING THE COURSE**

- Basics of Corrosion and Corrosion Electrochemistry
- Forms of Corrosion
- Stainless Steels
- Recognition of Corrosion
- Workshop
- Failure Modes
- Control of Corrosion by Process Modification
- High Temperature Corrosion
- Workshop Construction of High Temperature Phase Diagram
- Metal Dusting
- Hydrogen
- Cathodic Protection
- Materials Selection and Workshop
- Calculation of pH - by estimation
- Process Modifications and Control
- Chemical Plant Alloys and Materials
- Nickel alloys
- Fabrication and Welding Details
- Acetic Acid
- Materials Selection Workshop
- Sample Case Studies