

**Training Title**

**MATERIAL SELECTION FOR OIL AND GAS PLANT**

**Training Duration**

**5 days**

**Training Dates & Venue**

REF PE059	Material Selection for Oil and Gas Plant	5	27 June - 1 July 2021	\$4,500	Dubai, UAE
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Training will be held at any of the 5 star hotels. The exact venue will be informed once finalized.

**Training Fees**

- 4,500 US\$ per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Buffet Lunch

**Training Certificate**

Define Management Consultancy & Training Certificate of course completion will be issued to all attendees.

**TRAINING OVERVIEW**

**TRAINING DESCRIPTION**

The purpose of this course is to provide the attendees with an overview of corrosion concerns in upstream production of Oil & Gas industries. It aims to identify and examine corrosion, metallurgical and materials failures that can occur in any process units within this industry. The attendees will have an opportunity to examine techniques and practices that can be used to control corrosion and enhance the integrity of the production plant. This course is designed for all disciplines engaged in the day to day operation of the plant. It includes, but not limited to, Corrosion and inspection engineers, Equipment, Process, Mechanical, Metallurgical integrity managers, project engineers and all technologists who are involved with hydrocarbon production, processing, safety and commissioning. Management will also benefit by increasing their awareness of corrosion monitoring to maintain the plant in a safe mode. In addition, manufacturers of equipment, suppliers of materials to this industry and the procurement team engaged in the project will also benefit attending this course.

**TRAINING OBJECTIVES**

- Develop a comprehensive understanding of Introduction to hydrocarbon production , Basic Corrosion , Types and Control measures, applicable to this industry

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- Impact of corrosion and type of corrosion damage in oil and gas production
- Materials selection strategy and the types of materials used in petroleum industry by analysing the life cost approach.
- Types of standards used in oil and gas production industry
- Main types of corrosion and their perdition in petroleum industry covering
- Understand the failure mechanism imposed by sour service and the methods to tackle the failure by understanding NACE MR0175/ISO 15156
- Sweet and Atmospheric corrosion
- Water injection corrosion
- Materials selection and optimization in drilling, well completion, surface/topside facilities and pipelines
- Whole life cost analysis
- Corrosion mitigation methods i.e. Chemical injection, Coating, Cathodic Protection and design concerns
- Qualification methods of corrosion inhibition, biocide injection, scale inhibitor.
- Case histories and hands on exercises
- Describe techniques that can be utilized for mitigation of each mechanism of corrosion
- Identify and define the dominating categories of process and environmental related corrosion.
- Identify areas susceptible to failure.
- Identify and explain mechanical failure that may occur in equipment and utilize appropriate techniques for prevention.
- Identify the influential parameters in corrosion processes of each unit.
- Understand the most advanced Corrosion Monitoring Techniques

### WHO SHOULD ATTEND?

This course is designed for all disciplines engaged in the day to day operation of the plant. It includes, but not limited to: Corrosion and Inspection Engineers} Equipment, Process, Mechanical, Metallurgical} Engineers Integrity Managers} Petroleum Engineers} Project Managers and Project Engineers} All technologists who are involved with hydrocarbon} production, processing, safety and commissioning. Manufacturers and suppliers of equipment and materials}

### TRAINING METHODOLOGY:

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions, and motivate everybody find the right answers. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course. Very useful Course Materials will be given.

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- 30% Lectures
- 30% Workshops and work presentation
- 20% Group Work & Practical Exercises
- 20% Videos & General Discussions

## DAILY OUTLINE

### Day 1

- Assessment test of the attendees' knowledge of basic corrosion and materials engineering.
- Overview of exploration and production
- Basic corrosion
- Types of oilfield equipment
- Types of oilfield corrosion damage
- The impact of corrosion on oil & gas industry Sour (H<sub>2</sub>S) corrosion; mechanisms, types, the implications and means of design
- Sweet (CO<sub>2</sub>) corrosion; mechanism, types, parameters and the implications.
- Materials Classification and Materials of Construction used in Oil and gas plants.

### Day 2

- Seawater corrosion; mechanism, the implications and means of design
- Erosion damage and interaction with corrosion and means of design.
- Oilfield materials; principal types of metallic and non-metallic materials, oilfield metallurgy
- Main oilfield standards and guidance; API, ISO, NACE, EFC, EEMUA, CEN, ASTM

### Day 3

- Corrosivity evaluation, system corrosivity and predictive models
- Water chemistry (gas production and oil production), production conditions, and principal parameters affecting performance
- Key challenges in oilfield materials and corrosion
- Whole life cost analyses, net present value and expected value technique Inhibitor performance consideration
- Corrosion Control Concerns on Oil, Gas, Water Transmission Pipelines

### Day 4

- Corrosion inhibition, principles, key parameters affecting performance

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- Corrosion monitoring and inspection, principle types, considerations in using them and practical deployment methods
- Oilfield corrosion design; drilling, production, transportation
- Water injection (seawater, produced water, commingled water), water and gas (WAG) injection key parameters and design considerations.

#### Day 5

- Corrosion testing, materials evaluation, inhibitor evaluation techniques.
- Workshop, case studies (wells, seawater injection, pipelines), review and use of modeling.
- Role of Materials & Corrosion Engineer in phased of Project
- Discussion and exchange of ideas
- Final examination covering the main course contents taught

#### NOTE:

Pre & Post Tests will be conducted

Case Studies, Group Exercises, Group Discussions, Last Day Review & Assessments will be carried out.



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P.O BOX 45304  
ABU DHABI, U.A.E

T +971 2 6264455  
F +971 2 6275344

[www.definettraining.com](http://www.definettraining.com)