

**TRAINING TITLE**

**CATALYST TECHNOLOGY IN REFINERY & PROCESS INDUSTRY**

**TRAINING DURATION**

5 days

**TRAINING VENUE AND DATES**

REF RT030	Catalyst Technology in Refinery & Process Industry	5 days	12-16 December 2021	\$4,500	Dubai, UAE
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Training will be held at any of the 5 star hotels. Exact venue will be informed later.

**TRAINING FEES**

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

**TRAINING CERTIFICATE**

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

**TRAINING DESCRIPTION:**

This course will guide the participants to develop key concepts and techniques to operate, select and optimize refinery catalytic processes. These key concepts can be utilized to make design and operating decisions. Training and development is an investment in future success gives yourself and your employees the keys to success.

This course covers a general overview of the Catalytic Processes in a Refinery and how each integrates with the high value products, with a special emphasis on Fluidized Catalytic Crackers, Catalytic Reformers and Hydro-processing. A history of each Catalytic Process will be reviewed including; process description, process variables, reaction chemistry, catalyst development and evaluation.

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**TRAINING OBJECTIVE:**

**Upon successful completion of this course, participants will have:**

- An overview of the Catalytic Processes in a Refinery, with a special emphasis on Fluidized Catalytic Crackers, Hydro treaters, Hydrocracking and Catalytic Reformers.
- Catalyst Evaluation Techniques
- An understanding of Reactor and Catalyst interaction
- The operation, control and troubleshooting of a reactor and associated equipment
- An overview of reactors, practical solutions as well as theory

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- An understanding of essential reaction concepts
- Valuable practical insights for trouble-free design and field proven techniques for commissioning, start up and shutdown of reactor operations
- Understand how to tailor your approach to specific design, analysis and troubleshooting problems.
- What can be done in-house and what can be done with specialist software.

### TRAINING METHODOLOGY

A highly interactive combination of lecture and discussion sessions will be managed to maximize the amount and quality of information, knowledge and experience transfer. The sessions will start by raising the most relevant questions, and motivate everybody finding the right answers. The attendants will also be encouraged to raise more of their own questions and to share developing the right answers using their own analysis and experience.

All attendees receive a course manual as a reference.

This interactive training workshop includes the following training methodologies

30% Lectures

30% Workshops and work presentation

20% Group Work & Practical Exercises

20% Videos & General Discussions

### WHO SHOULD ATTEND:

- Process Engineers, Operation Engineers, Process Support Personnel, Chemist, and Managers
- People who are making day to day decisions regarding operation, design, maintenance, and economics of process industry plants.
- An engineer or chemist who must troubleshoot and solve catalyst problems in a plant, an engineering office or laboratory.
- Engineering graduates/technologists who will be using catalyst in their daily work.
- Technical Process engineers doing process design and optimization projects and studies that need who need advanced skills for more complex modeling tasks.
- Plant Operation Support Engineers checking plant performance under different operating conditions, and who are involved in design of new facilities or revamps of existing facilities.
- Ideal for veterans and those with only a few years of experience who want to review or broaden their understanding of process safety.
- Other professionals who desire a better understanding of the subject matter.

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## COURSE CONTENTS

### Course Introduction

### Definitions and Basic Concept

### Physical Absorption and Chemical Absorption

### Chemical Reaction Rates and Kinetic Models

### Catalyst Preparation and Manufacturing

### Physical Characterization and Examination of Catalysts and Supported Metal Catalysts

### Acid and Zealot Catalysts

### Oxidation Catalysis, Air Pollution Control and Synthesis Gas Reactions

### Processing of Petroleum and Hydrocarbons

### Selected Industrial Problem Troubleshooting and Case Studies

## DAILY SCHEDULE

### DAY 1

#### Course Introduction & Pre-assessment

#### Introduction

#### Refinery Overview and the role of Catalytic Process in the Refinery

- Alkylation
- Hydrodesulphurization
- Hydrogenation
- Dehydrogenation
- Isomerization
- Hydrocracking and De-Alkylation
- Reforming

#### Hydrogenation

- Process Overview
- Process Chemistry
  - Feedstock, Reaction, Catalyst
- Process Variables
- Common Problems
- Advance in Cat Development
- Catalyst Evaluation Techniques

### DAY 2

#### Dehydrogenation

- Process Overview
- Process Chemistry
  - Feedstock, Reaction, Catalyst

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- Process Variables
- Common Problems
- Advance in Cat Development
- Catalyst Evaluation Techniques

### Case Studies

#### Hydro-treating / Hydro-desulfurization

- Process Overview
- Process Chemistry
  - Feedstock, Reaction, Catalyst
- Process Variables
- Common Problems
- Advance in Cat Development
- Catalyst Evaluation Techniques

### DAY 3

#### Catalytic Reforming

- Process Overview
- Process Chemistry
  - Feedstock, Reaction, Catalyst
- Process Variables
- Common Problems
- Advance in Cat Development
- Catalyst Evaluation Techniques

#### Troubleshooting Skills – Working Groups

#### Hydro-cracking and De-Alkylation

- Process Overview
- Process Chemistry
  - Feedstock, Reaction, Catalyst
- Process Variables
- Common Problems
- Advance in Cat Development
- Catalyst Evaluation Techniques

### DAY 4

#### Fluidized Catalytic Cracking (FCC)

- Process Overview
- Process Chemistry
  - Feedstock, Reaction, Catalyst
- Process Variables

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- Common Problems
- Advance in Cat Development
- Catalyst Evaluation Techniques

**Troubleshooting Skills – Working Groups**

**DAY 5**

**Alkylation**

- Process Overview
- Process Chemistry
  - Feedstock, Reaction, Catalyst
- Process Variables
- Common Problems
- Advance in Cat Development
- Catalyst Evaluation Techniques

**Isomerization**

- Process Overview
- Process Chemistry
  - Feedstock, Reaction, Catalyst
- Process Variables
- Common Problems
- Advance in Cat Development
- Catalyst Evaluation Techniques

**Current Advancements in Catalyst  
Catalyst Evaluation Techniques**

**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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