



## Introduction to Refinery Process, Design, and Operation

30 Mar - 20 Apr 2025  
Online



# Introduction to Refinery Process, Design, and Operation

**Ref.:** 15285\_289258 **Date:** 30 Mar - 20 Apr 2025 **Location:** Online **Fees:** 2500 **Euro**

## Introduction

This course teaches participants the fundamentals of oil refining and related technologies. This introductory course highlights several refinery types, as well as their setup and product slates, offering adequate expertise to pick them.

## Targeted Groups:

- Process Engineers, Technologists, Operating, and Supervisory personnel engaged in the refining activities who have a minimum of experience and who are required to understand and discuss issues related to their processes.
- Refinery scheduling staff, blending staff and crude oil buyers
- Engineering and operations personnel, this training course will also be suitable for business, sales, technical, and scientific personnel with limited or no broad refinery operating experience, along with Technical sales personnel.
- Those involved in selling equipment or supplies to the refining industry and those involved with economic evaluations of refinery operations will benefit from this training course

## Targeted Competencies:

- Crude oil characteristics
- Refinery configuration and complexity
- Major refinery process operations
- Environmental issues affecting refinery operations
- Development of optimization strategies and methods

## Course Objectives

### Unit 1: Introduction to petroleum refining and crude oil composition:

- Market drivers for the refining industry
- An of refinery products and processes
- Chemical constitution of crude oil

### Unit 2: Properties and classification of crude oil:

- API gravity
- Pour point
- Concentration of Various contaminants
- Distillation and boiling points
- Crude assay
- Characterization factors
- Elemental analysis and ternary classification of crude oils

## **Unit 3: Overall refinery flow**

- Desalting and distillation
- Light ends unit
- Catalytic reformer
- Catalytic hydrotreatment
- Conversion of heavy gas oil
- Conversion and processing of vacuum gas oils
- Processing and conversion of vacuum distillation residue
- Paths for upgrading heavy oil

## **Unit 4: Separation processes**

- Atmospheric and vacuum distillation units
- Distillation methods
- Distillation terminology
- Fractionation in light ends unit LEU
- Deasphalting
- Gradient solubility model
- Dewaxing

## **Unit 5: Thermal conversion processes**

- Chemistry of thermal cracking
- Thermal reactivity considerations in processing
- Visbreaking
- Coking

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- Chemistry of thermal cracking
- Thermal reactivity considerations in processing
- Visbreaking
- Coking

## **Unit 7: Catalytic conversion processes**

- Chemistry of thermal cracking
- Catalytic cracking processes
- Catalytic hydrocracking
- Catalytic reforming
- Chemistry of catalytic reforming
- Catalytic reforming processes
- Alkylation
- Polymerization
- Isomerization

## **Unit 8: Finishing processes**

- Hydrogenation
- Hydrotreatment
- Hydro desulfurization
- Hydro denitrogenating
- Hydro demetallation
- Hydrotreatment processes
- Product blending

## **Unit 9: Supporting processes**

- Gas processing unit
- Sulfur recovery
- Hydrogen production
- Waste water treatment
- Environmental regulation of refineries

## **Unit 10: Past and future of petroleum refining**

- Refinery evolution
- Future trends in petroleum refining

## **Unit 11: Natural gas processing**

- Shale gas
- Natural gas liquids
- Natural gas composition and specifications
- Natural gas processing



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