

Refinery Processes

A Eurotek training course



ERS Refinery Processes

An introduction:

The ERS Refinery Processes training course is a 3-module skills course for professionals working within the refining business.

The course will be invaluable to all professionals working in the operation, design and troubleshooting of all refining activities.

It will provide engineers with an overall insight into the various process plants that go to make an integrated refinery. It will also cover all the basic chemical engineering unit processes employed in these refinery process plants.

Learning objectives:

Upon completion, graduates will have a broad knowledge of various refining processes. These will include Crude separation, Conversion, Octane Upgrading and Treating Processes. They will also be able to rate individual unit operations.

After completing this course you will:

- Have a broad understanding of Crude Oil Processing using Fractional Distillation, Catalytic Conversion, Hydrotreatment of intermediate streams, and Octane Upgrading Processes

- Be able to rate and size pumps, compressors, heat exchangers, piping and control systems.



Who should attend?

Professionals working in the operation, design and troubleshooting of all refining activities. In addition, the course will be of value to other staff in providing an insight into how a refinery is integrated within the petroleum and petrochemical industry. Those who are experienced in other fields and seek a review of the fundamentals of Refining will also find this course most beneficial.

This course has been designed for personnel who require a complete overview of refinery processing and performance benchmarks. The course will provide valuable information for those with limited to moderate petroleum refining experience or those who are involved in supporting operations.

Additionally, operating personnel and engineering staff will benefit from this overview of the entire refinery.

Job Titles/Functions Appropriate for the Course Include:

- Process, Project, and Plant Engineers
- Environmental Engineers
- Commercial Development and Planning Engineers
- Fuel Buyers and Oil Traders
- Computer/System Analysts and Refinery Modelling Engineers
- Operations Economic Evaluators
- Insurers and Insurance Evaluators
- Catalyst Manufacturers and Refinery Chemists
- Product, Equipment, Chemicals, Supplies or Services Sales Personnel

Description:

This course will present an overview of a modern, integrated petroleum refinery, and the processes used to convert crude oil and intermediate streams into desirable products.

Material and energy balances of the various processes will be discussed along with their impact on the overall operability and economic performance of the refinery.

Each refining process will be presented covering key equipment, operating conditions, feedstock, catalyst, yields, and the relationship between process parameters, unit performance, product output and properties.

The course is designed to complement and supplement material presented in other ERS training courses.



Course Presenter

Martin Murphy is a Director and founder of MAM Consulting Ltd. He has over 35 years experience in the oil refining and allied industries from design, troubleshooting, operation and optimisation of both fuels and lubes processes as well as catalysis manufacture and application.

He has worked throughout the world in Exploration and Refining with ExxonMobil and BP, has started up and managed technical service departments, started up many FCCUs including ones at ExxonMobil, Total and Repsol.

He spent several years at ExxonMobil sites implementing non-investment operating improvements. While at BASF he managed new catalyst development programmes in Reforming and FCC as well as streamlining FCC catalyst production at one of their manufacturing plants.

He was the founder of Global Technology Forum, the organisers of the ERTC and ARTC series of Conferences.

He holds patents in fractionation and conversion processes and has authored several papers on operational analysis of conversion processes and catalysis. Martin is a Chartered Engineer and a member of the Energy Institute. He graduated in Chemical Engineering from University College Dublin, Ireland. He is also a former PADI open water scuba instructor.



Course programme

Module 1

General Refinery Processes

- Refinery overview and organisation
- Distillation basics
- Refinery distillation schemes

Conversion Processes, Carbon Out

- Visbreaking
- Thermal Cracking
- Delayed Coking
- Fluid Coking
- Fluid Catalytic Cracking

Module 2

Conversion Processes, Hydrogen In

- Fixed bed hydrocracking
- Ebullating bed Hydrocracking

Octane Processes

- Alkylation
- Reforming
- Isomerisation
- MTBE

Hydrotreating and Sweetening

- Naphtha
- Diesel
- Fuel Oil

Module 3

Process Design

- Heat Exchangers
- Pumps
- Compressors
- Control Valves
- Drums
- Computer Exercises



