TECHNICAL EDUCATION ACADEMY

School of Engineering

COURSE PROGRAMME

000096

RPCH007 - Introduction to Refining Process

This course presents an overview of the modern, integrated petroleum refinery.



Learn from the Best in the Business!

Course overview

Foundation level

Why take this course

This course presents an overview of the modern, integrated petroleum refinery. Each refining process is presented covering configuration, operating description and conditions, feedstock and catalyst selection, stream yields and properties, process parameter relationships and their effect on unit performance and yields. The impact of each process on environmental regulations and pollution control is also discussed. Crude oil properties and assays are reviewed. Current and anticipated future worldwide fuel product specifications are presented. The effects of changes in crude oil source and supply, in particular bitumen and shale oil, as well as shifting product demand and import/export balances on future refinery operation will also be discussed.

Who it is for and how it helps

The course is designed and presented to be understood by, and of benefit to, both technical and non-technical personnel including environmental, safety and maintenance staff; all engineering disciplines; consulting and engineering organization staff; equipment, catalyst and chemical suppliers; R&D and government agency staff, as well as oil traders, pipeline, financial and business development personnel.

What you will learn

- Learn about the main refining processes and their operating characteristics
- Understand the manufacturing scheme of petroleum products
- Understand the main constraints and trends in the refining industry

Curriculum

Modules 01–05

01 Crude oils & petroleum products

- Crude oils: supply, properties, classification, yields and properties of petroleum cuts.
- Main characteristics of commercial products, relation to product uses.
- Trends in market structure and product characteristics. Biofuels.

02 Initial crude oil fractionation

- Operation principle, unit flow diagram, operating conditions, energy consumption:
- Crude oil atmospheric distillation, desalting.
- Light-ends fractionation.
- Atmospheric residue vacuum distillation.

03 Catalytic reforming - isomerization

- Process fundamentals, operating conditions, catalysts.
- Industrial units, process flow diagrams, equipment, yields, energy consumption, hydrogen production.

04 Hydrorefining processes - sulfur plant

- Main features of impurities removal by catalytic hydrogen treatment: example of gas oil desulfurization unit.
- Amine washing, sulfur plant (Claus unit), treatment of tail gas from Claus units.

05 Conversion units

- Characteristics of feeds to be cracked.
- Overview of conversion processes by cracking of heavy feeds.
- Conversion by means of thermal cracking: resid visbreaker, impact on heavy fuel oil production. Delayed coker.
- Conversion by means of fluid catalytic cracking: FCC (process flow diagram, operating conditions, products disposal) and ancillary units: gasoline sweetening, alkylation, MTBE-ETBE.
- Conversion by hydrocracking: process flow diagram, operating conditions, yields, product quality, hydrogen consumption. Adjustments to heavy feedstocks.

Curriculum

Modules 06–07

06 Manufacturing schemes of main products

- Integration of the units into the manufacturing scheme.
- Simple and complex refineries, trends.
- Manufacturing of main products.

07 Base oil manufacturing

- Base oil properties.
- Purpose of the different refining treatments.

Joining the programme

Contact the Academy and quote course code 000096 to confirm dates, delivery format, prices and enrolment terms.

Training for your team

Tell us your business goals, the roles and number of participants, and your preferred dates and location. This will help us discuss the right training option.

Preparing for the programme

The published programme does not specify any prerequisites. Contact us before enrolling to confirm how to prepare.

Discuss your training needs

mail@tecedu.org
www.tecedu.academy

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