



PE290: Petroleum Refinery Processing

Training Description:

Petroleum Refinery serves a vital role in producing and transporting fuels and other byproducts. Petroleum refining processes transform crude oil into valuable products such as liquefied petroleum gas, gasoline or petrol, kerosene, jet fuel, diesel oil, and fuel oils. Once separated, the components of crude oil can be sold to various industries for various uses. Refineries are enormous industrial complexes that include a variety of processing equipment as well as supporting buildings like utility units and storage tanks. The key Petroleum Refinery Operations include crude oil loading and unloading, mixing of crude oil, production unit operations of conversion and separation, operations of blending, and distribution of products.

This Petroleum Refinery Processing Training course is divided into various sections to make all participants aware of what is happening in a refinery complex. You will understand how associated processes carry out the pre-treatment of crude to produce intermediate refinery products and then further convert them into more valuable middle distillate products. It will cover different types of instruments, their operating principles & functional requirements. The course will also give information on different types of pipes used in refineries.

Training Objectives:

By the end of the training, participants will be able to:

- ✓ Refinery Operations and Processes basics covering overall refinery configuration
- ✓ A detailed review of various processes, flow diagrams, and major equipment involved in each
- ✓ Various equipment in each process, functional requirements, and specifications of key process equipment
- ✓ Instruments used in refinery, their sketches, functional specifications, operating principles, and guidelines for selection of various instruments
- ✓ Types of valves used in the refinery, along with their functional specifications
- ✓ Types of piping used in refinery, functional advantages of different types of pipes, and their applications

Training Designed for:

This training course is intended for All design engineers who carry out basic and detailed engineering, Piping & Mechanical engineers, Instrument and controls engineers, Maintenance or project engineers, Operations, Production, and processing personnel, Facilities and process engineers, Technical Services engineers and Line managers, and sales or business development staff.

Training Requirement:

“Hand’s on practical sessions, equipment and software will be applied during the course if required and as per the client’s request.”

Contents can be adapted to your specific wishes. It is therefore possible to focus on specific modules of the training course as per client’s learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Program:

DAY ONE:

❖ Refinery Operations and Processes (Basics)

- Introduction
- Physical Processes
- Thermal Processes
- Catalytic Processes
- Conversion of Heavy Residues
- Treatment of Refinery Streams
- Lube Base Stock Preparation
- Other Common Processes Units

DAY TWO:

❖ Refinery Operations and Processes (Advance)

- Crude Distillation Unit
- Vacuum Distillation Unit
- Thermal Cracker
- Naphtha Hydrodesulphurization
- LGO Hydrotreater
- HGO Hydrotreater
- Diesel Hydrotreating
- C4 Separator
- Kerosene Splitter
- FCC Unit
- C3 Separator
- C2 Separator
- Gas Treating unit
- Naphtha Splitter
- Catalytic Reformer
- N-butane Splitter

DAY THREE:

❖ Refinery Operations and Processes (Advanced Contd.)

- Isomerization Unit
- Alkylation Unit
- LVGO Splitter
- LPG Pool Unit
- Gasoline Pool
- Gasoil Pool
- Fuel Oil Pool
- Delayed Coker Unit
- Hydrocracker
- Hydrogen Unit
- Sulfur Recovery Unit

DAY FOUR:

❖ Refinery Equipment Functional Specifications

- Crude Desalter
- Crude Preheat Train
- Pre Flash Drum
- Overhead Condenser
- Accumulator
- Stripper
- Vacuum Pump
- Gas Furnace
- Gas Compressor
- Sour Water Flash Drum
- Fractionators
- Steam Generator
- Splitter
- Stabilizer
- Depropanizer
- KOH Treater
- Coke Drums
- Blow down Scrubber

DAY FIVE:

❖ Refinery Instrumentation and Piping

- Process Control Terms
 - Pressure, Flow, Level & Temperature
 - Density & Ph (acidity or alkalinity)
 - Liquid interface (the relative amounts of different liquids that are combined in a vessel)
 - Mass & Conductivity
- Different Types Valves Used in Refineries
 - Gate Valves
 - Needle Valve
 - Globe Valve
 - Diaphragm Actuated Control Valve
 - Piston Actuated Control Valve
 - Butterfly Valve
 - Angle Valve
 - Electro-Pneumatic Actuator
- Refinery Piping and Components
 - Different Types of Pipes Used in Refinery (Metallic, Ordinary steel, Seamless, Corrugated, etc.) pipe
 - Some Metal Pipes and Applications
 - Connections (Joints)
 - Types of Connections (Pipe Fitting & Material Selection)
 - Fitting and Valve Friction Losses

- Materials for Gaskets
- Flange Face-to-Face Dimension
- Damage Assessment
- Leak Testing Methods and Safety Procedure
- ❖ Course Conclusion
- ❖ POST-ASSESSMENT and EVALUATION

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:

- 30% Lectures, Concepts, Role Play
- 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, Gamification, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

CMCT Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Fees:

TBA as per the course location - This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Timings:

Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:00	Recess (Prayer Break & Lunch)
13:00 - 14:00	Last Session

For training registrations or in-house enquiries, please contact:

Aisha Relative - Training & Career Development Manager

aisha@cmc-me.com / training@cmc-me.com

Tel.: +971 2 665 3945 or +971 2 643 6653 | Mob.: +971 52 2954615