Tel No:+97126654546 | Fax No:+97126654182 | Email: training@cmc-me.com | www.cmc-me.com



PE100:
Petroleum Refining Process & Economics for Technical Professionals

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Training Description:

The success of every company depends of each employee's understanding of the key business components. Employee training and development will unlock the companies' profitability and reliability. When people, processes and technology work together as a team developing practical solutions, companies can maximize profitability and assets in a sustainable manner. Training and development is an investment in future success - give yourself and your employees the keys to success.

It is strategically important that your operations team understands the fundamentals of process unit operations concepts. This is the difference between being in the best quartile of operational ability and being in the last quartile. There is vast difference in the operational ability of operating companies and most benchmarking studies have confirmed this gap in operational abilities.

Whether you have a team of new or seasoned employees, an introduction or review of these concepts is very beneficial in closing the gap if you are not in the best quartile, or maintaining a leadership position. Most studies show that a continuous reinforcement of best practices in operational principles is the most effective way to obtain the desired results. Training and learning should be an ongoing continuous lifelong goal.

Training Objectives:

The main objective of this intensive course will guide the participants to develop key concepts and techniques for the refining of petroleum processes and economics. These key concepts can be utilized to make operating decisions that can improve your unit's performance. Many aspects of petroleum refining operations and management can be improved including, product recoveries, purities and energy utilization, and safety. This cannot be achieved without first and understanding of basic fundamental principles of design and operation. These principles need to be understood in advance of operating and troubleshooting a process unit operation for the manager or problem solving to be effective.

This course focuses on the core building blocks of the refining process systems, equipment and economics. This program will emphasize refining process unit operation fundamentals, safe utilization of these fundamentals by operations and maintenance personnel, and equipment troubleshooting techniques.

Training Designed for:

This course is intended for people who are making day to day decisions regarding operation, design, and economics of processing plants such as Operations personnel, Operation Supervisors, Maintenance personnel, Maintenance Supervisors, Senior Plant Supervisors, Operations Engineers, Process Support Engineers, Design Engineers, Cost Engineers. Also, the course is ideal for veterans and those with only a few years of experience who want to review or broaden their understanding in Processing Plant Operations as well as other professionals who desire a better understanding of subject matter.

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."

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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:

- PRE-TEST
- Introduction
  - Overview of the Chemical Processing Industry
  - Review of Process Incidents
  - Safety for the Refining Groups
  - Fundamentals of Petroleum Chemistry
  - Description of a Hydrocarbon Molecule
  - Types of Hydrocarbon Molecules
  - Definition and Function of a Catalyst
- Characteristics of Crude Oil
  - Sources of Crude
  - Composition of Crude
  - Description of Crude Oil Fractions
  - Definition of Physical and Chemical Processes
  - Crude Oil Testing
  - Crude Assays

DAY TWO:

- Crude Oil Distillation
  - Description of the Distillation Process
  - Cut Points of the Various Fractions
  - Crude Tower Design
  - Vacuum Tower Design
- Introduction to Refinery Equipment
  - Distillation
  - Absorption
  - Heat Exchange
  - Reactors
  - Pumps
  - Compressors
  - Furnaces
- Introduction to the Refinery Flow Sheet
  - Refinery Flow Sheet
  - Gasoline Processing Options
  - Bottoms Heavy Oil Processing Options
  - Alkylation
  - Hydrotreating
  - Gas Sweeting

- Sulfur Recovery

DAY THREE:

- ❖ Crude Oil Quality and Refinery Flow sheets
  - Crude Oil Types for Different Refinery Configurations
  - Light vs. Heavy
  - Sweet vs. Sour
  - Paraffinic vs. Naphthenic
  - Crude Oil Selection Methods
- ❖ Product Blending and Usage
  - Gasoline Properties and Blending
  - Distillate Fuels: Heating Oil, Diesel, Jet Fuel
  - Residual Materials: Bunker Fuel
  - Lube and Specialty Products
- ❖ Petroleum Product Markets
  - Major Petroleum Products
  - Product Supply and Demand Overview
  - Petroleum Products Markets

DAY FOUR:

- ❖ Gasoline Production Processes
  - Catalytic Reforming
    - Process Chemistry and Catalyst
    - Process Variables and Economics
  - Isomerization
    - Process Chemistry and Catalyst
    - Process Variables and Economics
  - Fluid Catalytic Cracking
    - Process Chemistry and Catalyst
    - Process Variables and Economics
  - Alkylation
    - Process Chemistry and Catalyst
    - Process Variables and Economics
    - Economics of Gasoline Production Processes
    - Fundamentals of Hydroprocessing
- ❖ Hydrotreating
  - Process Chemistry and Catalyst
  - Process Variables and Economics
- ❖ Hydrocracking
  - Process Chemistry and Catalyst
  - Process Variables and Economics
  - Options for Heavy Oil Processing

DAY FIVE:

- ❖ Delayed Coking
- ❖ Solvent Deasphalting

- Visbreaking
- Residual Oil Hydroprocessing
- Lube Oil Processing
  - Economics of Heavy Oil Production Processes
  - Refining Margins
- Refinery Operating Costs
- Refinery Profit Margins
- Conversion Unit Processing Costs
- Relative Value of Crude Oil versus Products
- Refining Process Capital Costs
- 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:
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