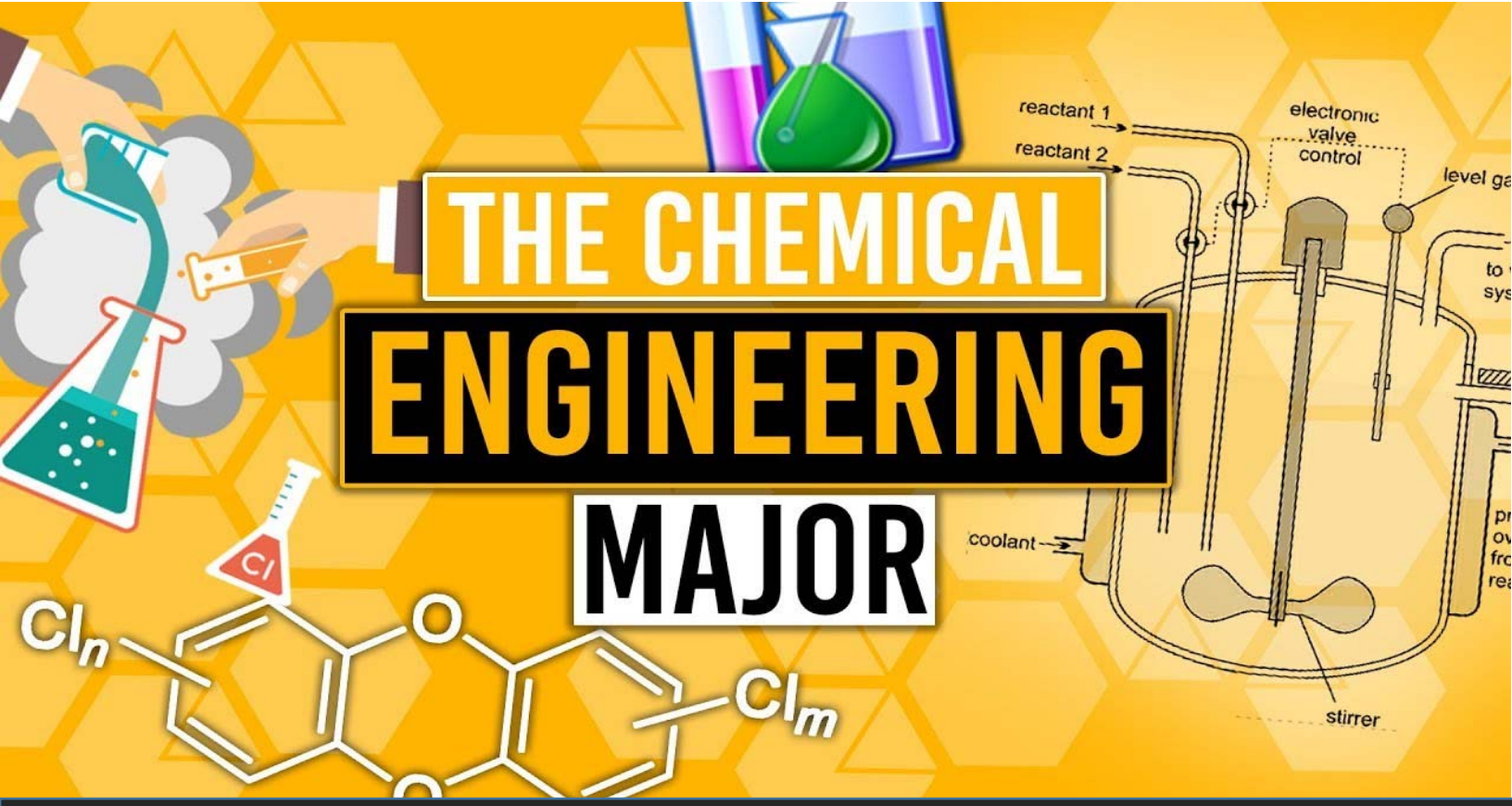

Petroleum Refining & Petrochemicals for Non-Technical Personnel

BTS
Training & Consultancy

www.btsconsultant.com

Petroleum Refining & Petrochemicals for Non-Technical Personnel

Introduction

This Petroleum Refining & Petrochemicals for Non-Technical Personnel training course is designed for non-technical professionals who work within the Petroleum Refining & Petrochemicals industry, who would like an insight into chemical processes, plant operations, equipment and economics.

The training course examines the intricacies of refining and petrochemicals, each of which will be broken down into core building blocks whose concepts will be explained. These will allow non-technical company personnel to interface seamlessly and effectively with their technical counterparts in their organization. Understanding of these key concepts enhances problem-solving and troubleshooting skills in specific job functions as well as improve interdepartmental communication.

This BTS training course examines the history and use of petroleum from exploration through to refining and then to petrochemicals. The technology used and the production operations of the oil industry are outlined and explained in a clear easy to understand language.

Designed for non-technical professionals who function within the Petroleum Refining & Petrochemicals industry, this training course promises an insight into chemical processes, plant operations, equipment and economics.

This training course will include:

- Fundamental technical skills to comprehend what oil & gas is, how it was formed and discovered and the various methods for getting it to the marketplace.
- The significance of how reserves are estimated and the importance of how long this resource will last
- Awareness of the surface facilities for the treatment of well fluids and their subsequent refining into fuels and petrochemicals.
- Understanding of the separate processing requirements for producing a marketable on-specification product and recognize the importance of crude oil type and refinery complexity have on profitability
- Understanding how blending operations are a refiners last chance to improve his bottom line

- Appreciation of the importance of crude oil and natural gas transportation logistics on the oil and gas value chain
- Improving the gas value chain through the commoditization of natural gas into petrochemicals, natural gas in some cases is either flared or reinjected into crude oil wells

Training Objectives

What are the Goals?

By the end of this training course, participants will:

- Comprehend the basic differences between exploration, and refining and petrochemicals
- Understand the basics of the various refining and petrochemical processes
- Examine the fundamental differences in various refinery types, their complexity and impact on their profitability
- Identify the basics of the different building blocks of petrochemicals
- Appreciate that aromatic based petrochemicals are important to the polymer industry even though the refining industry is trying to minimize these in gasoline due to its toxic properties
- Appreciate that olefinic and aromatic petrochemical precursors are specialty chemicals produced by the refining processes from refineries of high complexity numbers

Target Audience

Who is this Training Course for?

This BTS training course is specifically designed to be of substantial benefit to non-technical personnel within the Oil and Gas Industries. The training course is also suitable to a wide range of professionals but will greatly benefit:

- Non-technical professionals assigned to positions in refineries and petrochemical plants, corporate offices, suppliers and other interrelated companies
- Support Personnel including Environmental professionals, Accountants, Business managers, Administrative and legal staff, Sales and marketing personnel, Insurance representatives, Personnel managers, Financial professionals and other professionals who desire a better understanding of subject matter

- Newly-hired refinery or petrochemical plant personnel and current semi-technical personnel who require further training
- Other support staff who have an interest in increasing their understanding of Petroleum Refining & Petrochemicals production and operations
- Business Development Managers, Corporate Planning professionals and business analysts switching disciplines who are required to have a better understanding of this stimulating field
- Energy industry journalists and reporters
- Professional personnel such as legal, banking, insurance, finance dealing with oil supply, Petrochemicals, refining and transportation

Training Methods

How will this Training Course be Presented?

This training course will utilise a variety of proven adult learning techniques to ensure maximum understanding, comprehension and retention of the information presented. This includes:

- Lectures
- Use of PowerPoint presentations
- Short videos to reinforce specific points and relate the material to the real world
- Case studies and exercises that will be augment the course
- Discussions in a highly interactive programme that will offer and encourage the participants to advance their opinions and ideas

Daily Agenda

Day One: Origin and Nature of Petroleum

Competency Description: As a professional in the oil and gas industry, you need to gain fundamental technical skills to comprehend what oil and gas is, how it was formed and discovered and the various methods for getting it to the marketplace.

Key behaviours

- Understand how oil and gas was formed, the significance of how reserves are estimated and grasp the importance of how long this resource will last
- Understand the scope and structure of the exploration industry
- Appreciate the importance of crude oil and natural gas transportation logistics on the oil and gas value chain

Topics to be covered

- Chemistry of fossil fuels
- Basic petroleum geology
- Origins, formation and trapping of oil & gas
- Exploration and production methods
- Transportation Logistics
- Course Exercise - Estimation of Reserves

Day Two: Overview of Refining

Competency Description: As a professional, you need to be cognizant of the surface facilities for the treatment of well fluids and their subsequent refining into fuels and petrochemicals.

Key behaviours

- Understand how oil and gas is processed for shipment to refineries
- Appreciate the scope and structure of the refining industry
- Recognize the importance of crude oil type and refinery complexity have on profitability

Topics to be covered

- Classification of hydrocarbons
- Surface processing of oil and gas
- Refinery types and complexity
- Hydroskimming, Cracking and Coking Refineries
- Refining Margins and Profitability
- Course Exercise - Netback & Complexity Factors

Day Three: Refinery Process Operations

Competency Description: As an engineer/ technologist, you need to understand the separate processing requirements for producing a marketable on-specification product.

Key behaviours

- Grasp the importance of secondary processing using vacuum distillation and residue reduction adds value and improves refining margins
- Appreciate the importance of maximizing gasoline and diesel production have on the refinery's value chain

- Understand how blending operations are a refiners last chance to improve his bottom line

Topics to be covered

- Physical separation – Crude and Vacuum Distillation
- Chemical conversion processes, Gasoline Production
- Hydrotreating, Catalytic Reforming, Alkylation, and Isomerization
- Residue Reduction I: Cat Cracking, Hydrocracking, Visbreaking, Hydrocracking
- Residue Reduction II: Coking, Asphalt and Residual Fuel
- Course Exercise - Blending

Day Four: Petrochemicals I - Production and Uses

Competency Description: The petrochemical industry requires an understanding of the different types of feedstock and their origins.

Key behaviours

- Appreciate that olefinic and aromatic petrochemical precursors are specialty chemicals produced by the refining processes from refineries of high complexity numbers
- Understand that petrochemical feedstocks are not produced by simple distillation of crude oil since their proportion in the crude itself may be non-existent, however it can be produced from naphtha, one of the main products of distillation
- Appreciate that aromatic based petrochemicals are important to the polymer industry even though the refining industry is trying to minimize these in gasoline due to its toxic properties

Topics to be covered

- Production and segregation of olefinic and aromatic compounds
- Olefin based compounds
    - Ethylene
    - Propylene
    - Butadiene
    - Isobutylene
- Aromatic based compounds
    - Benzene
    - Toluene
    - Xylene

Day Five: Petrochemicals II - Production and Uses

Competency Description: This high value route to petrochemicals is one way of commoditization of natural gas that in some cases is either flared or reinjected into crude oil wells.

Key behaviours

- Understand the scope and structure of the exploration industry
- Appreciate the importance of petrochemicals derived from natural gas since this is a commoditization route to improving the gas value chain
- Comprehend that countries with abundant gas reserves that are utilized for petrochemical production have a competitive edge against their naphtha based competitors particularly during high crude oil prices (above $70/bbls)

Topics to be covered

- Commoditization of natural gas
- Natural Gas based compounds
    - Ammonia
    - Methanol
- Gas to liquid technologies
- Case study - Petrochemical production – Major Companies
- Course roundup and discussions