Petroleum Refining-Production Planning, Scheduling and Yield Optimization Training

Description

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Objectives

- Gain an appreciation of modern planning and scheduling tools that will be useful for planning of crude and product deliveries in their facilities
- Assist in improved operations, optimization, upgrading and modification of existing facilities
- Will result in improved profitability and help in continuous modernization of facilities
- Act as a primer into the industry of Petroleum Refining to maximise process fluid yields
- Familiarize industry professionals with all processes associated with the processing of petroleum into finished products
- Equip new engineers into the industry, with the basic tools for understanding the complex nature of Refining and its operations

Programme Outline

Application of Planning and Scheduling

- Overview of planning and scheduling in oil refineries
- Refinery Configuration:
- Hydro skimming Refinery
- Refineries with Secondary Conversion Process
- Integrated Refineries
- Existing & New Refineries
- Choice of Crude
- Crude oil scheduling
- Choice of Processes
- Capacity utilization of Crudes
- Severity of Process Operations
- Cut-points Optimization
- Facing Upset Situations

- Tankage Requirement

Improving Product Movements and Releasing Tankages

- Basic Information Required
- Crude Assay
- Intermediate Feed Characteristics
- Yields and Properties
- Different Process Units
- Utilities

Product Blending Rules

- Product Specifications
- New Trends in fuel production
- Environmental Issues
- Crude Cost
- Product Netback

Formulation of Problem

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- Refinery Flow-sheets
- Simplified Material Balance
- General Formulation
- Demand Equations
- Product Inventory Control
- Product Quality Control
- Fixed Composition Blend
- Capacity Control/ Constraints
- Availability of Feedstock/ Control

Application to a Refinery Worksheet

- Petroleum Product Movement and Product Exchange
- Marginal Depot Supply and movements
- Commonly Used Methods & Recent Developments
- Mathematical Approach to Solution
- Linear Programming
- Graphic Method
- Vendors Software
- Discussion and Summary

Crude Oil Yields Refinery Technology

- Introduction
- Crude Oil Origins & Characteristics
- Crude oil Assay and properties
- Crude oil products

- Product specifications
- Gasoline
- Kerosene/ Jet Fuel
- Fuel Oil/ Diesel Fuels
- Petrochemical Feedstocks
- Refineries Complexity
- Overall refinery flow: Interrelationship of processes

Petroleum Refinery Processes

- Crude Processing
- Desalting
- Atmospheric distillation
- Vacuum distillation
- Heavy Oils Processing – Cocking and Thermal Processes
- Delayed Coking
- Fluid Coking
- Flexicoking
- Visbreaking
- Case study – example

Process for Motor Fuel Production

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- Fluid catalytic cracking
- Hydrocracking
- Cat Cracking
- Isomerization
- Alkylation
- Hydrotreating
- Catalytic Reforming
- Case study – example

Supporting Operations

- Blending for Product Specifications
- Hydrogen production
- Refinery Gas Plants
- Acid Gas Treating
- Sulfur Recovery Plants
- Case study – example

Refinery Economics

- Residue Reduction
- Asphalt and Residual Fuel
- Cost Estimation
- Economic Evaluation
- Case Studies
- Group Discussions

- Program Evaluation & Summary

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