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COURSE BROCHURE

Refinery Configuration Design and Crude Slate Matching Training Course

15 – 19 February 2027
Rome

Refinery Configuration Design and Crude Slate Matching Training Course

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Refinery Configuration Design and Crude Slate Matching is a 1-week training course for process engineers, operators and planners new to refining, built around a refinery unit flow overview each participant prepares. As crude supply shifts and product demand moves towards lighter, cleaner fuels, the choice of which units a site runs, and in what sequence, decides whether a barrel earns or loses margin. Jupiter Prime Training delivers this course.

Why Refinery Configuration Design and Crude Slate Matching Matters Now

Three forces press on refinery configuration today: a crude supply that changes in density and sulphur from cargo to cargo, product specifications that keep tightening on sulphur and aromatics, and an energy transition that is reshaping refining margins. A site whose unit line-up fits its crude diet turns heavy residue into valuable distillates; a mismatched site sells fuel oil at a discount, overloads its hydrotreaters and burns energy for little return. The course rests on crude assay interpretation, cut-point logic and refinery complexity indices.

Who Gains Most from Refinery Configuration Design and Crude Slate Matching

- Process engineers responsible for unit performance, yields and constraints across distillation and conversion
- Planners and schedulers who select crude cargoes and set monthly run plans
- Operations staff who run crude units and feel upstream choices first
- Technical services staff who evaluate debottlenecking and new unit proposals
- Commercial and supply staff who weigh crude purchases against product slates

A planning and technical services group from one site gains most when several members attend together and share one view of crude selection and unit capacity.

Refinery Configuration Design and Crude Slate Matching Capabilities

Participants leave able to read a crude assay as a set of unit feeds and to test a configuration against the crudes a site can actually buy.

- Assess a crude assay by cut yields, sulphur and metals content — crude purchase screening
- Calculate atmospheric and vacuum cut points for a given crude blend — distillation operating targets
- Weigh hydrocracking, fluid catalytic cracking and coking routes for residue — conversion investment choices
- Specify hydrotreating and reforming duties for each product stream — product specification compliance
- Build a simple product blending balance for gasoline and diesel pools — scheduling and sales commitments

- Communicate a unit flow overview linking crude diet to product slate — planning and operations alignment

Key Refinery Configuration Design and Crude Slate Matching Terms

- Crude slate — the mix of crude oils a refinery processes over a period.
- Crude assay — a laboratory profile of a crude oil giving yields and properties for each boiling range.
- Cut point — the boiling temperature dividing two distillation products.
- Complexity index — a measure comparing a refinery's conversion and treating capacity with its crude distillation capacity.
- Bottom of the barrel — the heavy vacuum residue left after distillation.
- Hydroskimming refinery — a simple configuration with distillation, reforming and hydrotreating but no residue conversion units.

Refinery Configuration Design and Crude Slate Matching Day by Day

Day 1: Crude Supply and Refinery Context

- Crude Classification by Density and Sulphur — Light Sweet Versus Heavy Sour Choices
- Crude Assay Reading and True Boiling Point Curves — Cargo Screening
- Refinery Margin Drivers and Crack Spreads — Configuration Economics
- Product Demand Shifts and Fuel Specifications — Future Unit Needs
- Hydroskimming, Cracking and Coking Configurations — Site Archetype Comparison

Day 2: Separation Units and Cut Strategy

- Atmospheric Distillation Column Layout — Naphtha, Kerosene and Gasoil Yields
- Vacuum Distillation and Residue Handling — Feed for Conversion Units
- Cut Point Selection Against Downstream Capacity — Yield Versus Bottleneck
- Desalting and Crude Compatibility Checks — Fouling and Corrosion Avoidance
- Crude Blending at the Tank Farm — Stable Feed to Distillation

Day 3: Conversion and Treating Routes

- Fluid Catalytic Cracking Feed and Yields — Gasoline Versus Olefins Focus
- Hydrocracking for Middle Distillates — Diesel and Jet Pool Growth
- Delayed Coking for Heavy Residue — Bottom of the Barrel Upgrading
- Hydrotreating Severity and Hydrogen Balance — Sulphur Specification Compliance
- Catalytic Reforming and Isomerisation — Octane Supply and Hydrogen Production

Day 4: Matching Crude Slate to Configuration

- Complexity Index Calculation for a Site — Capacity Benchmarking
- Crude Valuation Against Unit Constraints — Purchase Ranking
- Gasoline and Diesel Pool Blending Balances — Product Slate Commitments
- Linear Programming Planning Model Basics — Monthly Run Plan Decisions
- Debottlenecking Versus New Unit Options — Capital Allocation Choices

Day 5: Practising the Refinery Unit Flow Overview

- Assay-Based Yield Estimate for a Chosen Crude Blend — Feed Rates
- Conversion Route Selection for a Petrochemical Site Case — Unit Line-Up
- Treating and Hydrogen Balance Check — Specification Feasibility
- Blending Balance for a Fuels Marketing Case — Product Slate Fit
- Refinery Unit Flow Overview Completion — Shared Planning Reference

Applying Refinery Configuration Design and Crude Slate Matching After the Course

- Screen the next three candidate crudes against current unit capacities using assay yields and cut-point estimates.
- Map the site's own units into a flow diagram showing where a debottleneck would pay.

Refinery Configuration Design and Crude Slate Matching Questions FAQ

What is refinery configuration design and crude slate matching, and why does it matter now?

It is the practice of fitting a refinery's units to the crudes it processes. A good fit protects margin and upgrades residue as crude quality varies.

Which roles gain most from refinery configuration design and crude slate matching?

Process engineers, planners and operations staff new to refining gain most. You see how a crude choice travels through every unit to the product pool.

How does refinery configuration design and crude slate matching differ from a refinery process fundamentals course?

It focuses on choosing and matching units rather than describing each process in depth. It asks which units a site needs for a given crude diet.

What do you bring back from refinery configuration design and crude slate matching?

You bring back a unit flow view of a site linked to its crude slate. It includes yield estimates, conversion choices and a blending balance.

Refinery Configuration Design and Crude Slate Matching: The Way Forward

The refinery unit flow overview first informs which crudes the site should screen for its next purchase cycle. Planners use it to rank cargoes, process engineers to locate constraints and operations to anticipate feed changes. After its first use, revisit the conversion route assumptions, since product demand and residue outlets change faster than unit capacity.