

Refinery Process Integration and Yield Management Training Course

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Overview

Refinery Process Integration and Yield Management Training Course is a one-week course for refinery process, chemical, operations, planning, control, and technical-services functions who leave with a Refinery Process Integration and Yield Decision File. Participants connect crude properties, separation, conversion, treatment, utilities, blending, unit interactions, yields, and constraints. The course uses block-flow maps, feed-product matrices, balance sheets, constraint registers, and decision records. Agile Leaders Training Center presents refinery process integration and yield management.

Who Should Attend

- Process engineering functions responsible for refinery unit interfaces and performance studies
- Operations functions responsible for production targets, operating constraints, and unit coordination
- Production planning functions responsible for crude, intermediate streams, yields, and product commitments
- Technical-services functions responsible for process balances, studies, and operating recommendations
- Process control functions responsible for connecting unit conditions with refinery-wide objectives
- Operations supervision functions responsible for cross-unit decisions and shift priorities

The course assumes participants interpret process-flow diagrams, material balances, operating data, and product specifications at work, and it leaves out chemical-engineering foundations, detailed equipment design, console operation, unit-specific troubleshooting, crude trading, and accredited process-safety instruction.

Departments and Industries

The course supports departments and industries that convert hydrocarbon feedstocks into fuels, chemical feedstocks, and finished products.

- Petroleum refining and fuel production
- Petrochemical and chemical-process manufacturing
- Refinery planning, scheduling, and technical services
- Operations engineering, process control, and production coordination
- Energy integration, utilities, hydrogen, and sulfur operations

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Learning Objectives

By the end of this course, participants will be able to:

- Build a refinery block-flow and stream-interface map
- Analyze crude properties, separation, and conversion pathways
- Compare catalytic and hydrogen-based upgrading routes
- Evaluate hydrogen, sulfur, energy, and utility constraints
- Use product-blending and yield decision sheets
- Prioritize refinery-wide actions across interacting units

Course Agenda

Day 1: Map Crude and Refinery Objectives

- Crude API Gravity, Sulfur, and Assay Comparison Sheet
- Product Slate, Specification, and Yield Objective Register
- Refinery Separation, Conversion, Treatment, and Blending Map
- Unit Feed, Intermediate Stream, and Product Matrix
- Refinery Process Integration and Yield Decision File Structure

Day 2: Connect Distillation and Conversion

- Atmospheric Distillation Cut-Point and Yield Balance
- Vacuum Distillation Feed and Residue Allocation Diagram
- Fluid Catalytic Cracking Feed-Product and Constraint Sheet
- Hydrocracking Severity, Hydrogen, and Product Decision Chart
- Thermal Conversion Interface and Boundary Register

Day 3: Integrate Upgrading and Treatment

- Catalytic Reforming Octane, Hydrogen, and Naphtha Map
- Hydrotreating Sulfur, Nitrogen, and Hydrogen Balance
- Alkylation and Isomerization Gasoline Component Matrix
- Gas Treating, Sour-Water, and Sulfur Recovery Flow Map
- Intermediate Stream Quality and Routing Decision Table

Day 4: Balance Utilities and Products

- Refinery Hydrogen Production and Consumption Network
- Steam, Power, Fuel-Gas, Cooling, and Water Constraint Register
- Heat Integration and Furnace-Duty Opportunity Sheet
- Gasoline, Distillate, and Jet-Fuel Blending Decision Sheet
- Refinery Yield, Energy, Quality, and Bottleneck Dashboard

Day 5: Practice Refinery Integration Decisions

- Suggested Exercise: Select Processing Routes for Two Crude Assays
- Suggested Exercise: Reconcile Distillation and Conversion Yields
- Suggested Exercise: Close a Hydrogen, Sulfur, and Utility Balance
- Suggested Exercise: Resolve a Product Quality and Blending Constraint
- Capstone Exercise: Complete the Refinery Process Integration and Yield Decision File

Practical Exercises

The course uses suggested activities to turn refinery streams, unit relationships, constraints, and product targets into traceable integration decisions.

- Suggested activity: compare crude properties and route fractions through atmospheric, vacuum, cracking, reforming, and treatment units.
- Suggested activity: reconcile feed, intermediate, product, hydrogen, sulfur, fuel-gas, steam, power, and water balances.
- Suggested activity: test how a conversion-unit constraint changes product yields, utility demand, and blend availability.
- Suggested activity: choose blend components against product specifications and record refinery-wide tradeoffs.

FAQs

Who suits refinery process integration and yield management training, and what does it assume?

Refinery process integration and yield management training suits process, chemical, operations, planning, control, technical-services, and supervisory functions. It assumes working ability with process diagrams, balances, operating data, and product specifications.

How does refinery process integration differ from unit troubleshooting training?

Refinery process integration connects crude, unit feeds, intermediate streams, utilities, yields, constraints, and blending across the site. Unit troubleshooting training concentrates on diagnosing and correcting abnormal behavior within a specific processing unit.

How do crude properties affect refinery process integration and yields?

Crude density, sulfur, boiling distribution, contaminants, and fraction quality influence distillation cuts, conversion demand, hydrogen use, treating severity, sulfur load, utility demand, product yields, and blending options.

What refinery units determine conversion and product flexibility?

Conversion and product flexibility depend on atmospheric and vacuum distillation, catalytic cracking, hydrocracking, reforming, hydrotreating, alkylation, isomerization, gas treating, hydrogen production, sulfur recovery, utilities, and blending capacity.

How are refinery yield and blending decisions connected?

Refinery yield and blending decisions connect unit yields and intermediate qualities with product specifications, component inventories, hydrogen and utility constraints, processing opportunities, and production commitments.

Conclusion

Participants take back a Refinery Process Integration and Yield Decision File linking crude properties, process routes, stream balances, utilities, constraints, yields, and blending choices. It changes separate unit records into one refinery-wide decision basis. The file supports planning, operating coordination, constraint review, product-quality decisions, and technical communication.

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