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Fluid Catalytic Cracking and Reformer Operations Training Course

27 September – 1 October 2027
Vienna

Fluid Catalytic Cracking and Reformer Operations Training Course

Ref: 1902_69948 **Date:** 27 September – 1 October 2027 **Location:** Vienna **Fees:** 6600 GBP

Fluid Catalytic Cracking and Reformer Operations is a 1-week training course for refinery process engineers and console operators who run conversion units, built around a unit health dashboard that links riser, regenerator and reformer reactor readings to yield and octane decisions. Tighter gasoline specifications, hydrogen demand from hydrotreaters and heavier crude slates make conversion unit stability central to refinery margin. Jupiter Prime Training delivers this course on Fluid Catalytic Cracking and Reformer Operations.

Why Fluid Catalytic Cracking and Reformer Operations Matters Now

Three forces shape conversion units today: heavier and more variable feeds carrying metals and Conradson carbon, rising hydrogen demand as product sulphur limits tighten, and pressure to cut flue gas emissions from the regenerator. A refinery that runs its cracker and reformer well captures more gasoline and propylene per barrel, keeps hydrogen flowing to downstream hydrotreaters and extends catalyst life. One that runs them badly faces afterburn, catalyst losses, coke make swings and unplanned shutdowns. The course rests on heat balance and pressure balance principles, catalyst activity testing practice and structured root-cause troubleshooting.

Who Gains Most from Fluid Catalytic Cracking and Reformer Operations

- Engineers responsible for daily cracker riser and regenerator performance
- Engineers who monitor reformer reactor temperatures, recycle gas and catalyst chloride balance
- Shift operators who adjust slide valves, feed preheat and stripping steam
- Technical staff who track equilibrium catalyst samples and fresh catalyst additions
- Planners who translate conversion unit yields into gasoline and hydrogen balances

Conversion unit teams gain most when the cracker engineer, the reformer engineer and the shift operators attend together and build one shared view of the units.

Fluid Catalytic Cracking and Reformer Operations Capabilities

Participants move from reading individual instrument tags to judging the riser, regenerator and reformer reactors as linked systems with shared catalyst and hydrogen constraints.

- Calculate the cracker heat balance and catalyst-to-oil ratio — feed rate and preheat decisions
- Assess equilibrium catalyst activity, metals and fines — fresh catalyst addition rates
- Apply pressure balance checks to standpipes and slide valves — circulation stability on shift
- Weigh reformer severity against catalyst life and hydrogen yield — octane targets set by planners
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Design a troubleshooting sequence for afterburn, coking and chloride loss — shift supervisors
- Communicate conversion unit performance through a single dashboard — refinery management

Key Fluid Catalytic Cracking and Reformer Operations Terms

- Catalyst-to-oil ratio — The mass of circulating catalyst per mass of feed in the riser, driving conversion and coke make.
- Equilibrium catalyst — The circulating catalyst inventory after ageing, sampled to track activity, metals and particle size.
- Afterburn — Combustion of carbon monoxide above the regenerator dense bed, raising dilute-phase and cyclone temperatures.
- Delta coke — The difference in carbon on spent and regenerated catalyst, which sets the regenerator heat release.
- Research octane number — A laboratory measure of gasoline knock resistance, raised in the reformer by aromatics formation.
- Weighted average inlet temperature — The reformer reactor inlet temperatures weighted by catalyst mass, used to set severity.

Fluid Catalytic Cracking and Reformer Operations Day by Day

Day 1: Conversion Units in the Refinery Balance

- Crude Slate and Vacuum Gas Oil Quality — Feed Selection for the Cracker
- Cracking Chemistry and Zeolite Catalysts — Gasoline Versus Propylene Yield Choice
- Naphtha Reforming Chemistry — Octane Gain and Hydrogen Release Targets
- Refinery Hydrogen Balance — Reformer Severity Linked to Hydrotreater Demand
- Conversion Unit Constraints Map — Where Margin Is Lost First

Day 2: Riser, Regenerator and Catalyst Circulation

- Riser Heat Balance Calculation — Feed Preheat and Catalyst Circulation Setting
- Full and Partial Burn Regeneration — Carbon Monoxide Control and Afterburn Risk
- Standpipe Pressure Balance — Slide Valve Differential and Circulation Stability
- Cyclone and Stripper Performance — Catalyst Losses and Hydrocarbon Carry-Under
- Flue Gas Emission Controls — Regenerator Operating Window Choices

Day 3: Reformer Reactors and Catalyst Life

- Semi-Regenerative and Continuous Regeneration Reformers — Cycle Length Decisions
- Weighted Average Inlet Temperature — Severity Versus Coke Laydown
- Chloride and Water Balance on Platinum Catalyst — Acid Function Control
- Feed Pretreatment for Sulphur and Nitrogen — Catalyst Poisoning Prevention
- Recycle Gas Purity and Hydrogen-to-Hydrocarbon Ratio — Compressor Loading Trade-Offs

Day 4: Deactivation, Feed Quality and Troubleshooting

- Equilibrium Catalyst Sample Interpretation — Fresh Catalyst Makeup Rate
- Nickel and Vanadium Poisoning — Metals Passivation and Feed Limits
- Coking and Fouling Signatures — Shutdown Versus Run-On Judgement
- Root-Cause Troubleshooting Sequence — Afterburn, Circulation Upsets and Low Octane
- Case Studies from Fuels and Petrochemical Refineries — Lessons for Shift Teams

Day 5: Practising the Unit Health Dashboard

- Heat Balance Exercise Revisited — Selecting Dashboard Indicators for the Riser
- Reformer Severity Review — Linking Octane and Hydrogen Targets on One Screen
- Catalyst Deactivation Trends — Alarm Limits for Engineers and Operators
- Troubleshooting Playbook Drill — Response Steps Tied to Each Indicator
- Unit Health Dashboard Completion — Shared Draft for the Conversion Unit Team

Applying Fluid Catalytic Cracking and Reformer Operations After the Course

- Run a heat balance and pressure balance check on the cracker using current plant data and share the gaps with the shift team.
- Review the last reformer catalyst cycle against weighted average inlet temperature and chloride data to set the next severity target.

Fluid Catalytic Cracking and Reformer Operations Questions FAQ

What is Fluid Catalytic Cracking and Reformer Operations and why does it matter now?

It is the daily running of the cracker and reformer, the units that make most refinery gasoline and hydrogen. Heavier feeds, tighter fuel specifications and hydrogen demand make stable conversion unit operation central to refinery margin today.

Which roles gain most from Fluid Catalytic Cracking and Reformer Operations training?

Process engineers and shift operators on conversion units gain most. Catalyst specialists and yield planners also benefit, because the course links catalyst condition and unit severity directly to the gasoline and hydrogen balances they manage.

How does Fluid Catalytic Cracking and Reformer Operations differ from a hydroprocessing course?

It focuses on carbon-rejection cracking and reforming rather than hydrogen-adding units. You study regenerator heat release, catalyst circulation and reformer severity, whereas hydroprocessing courses centre on high-pressure reactors that consume hydrogen to remove sulphur and saturate feeds.

What do you bring back from Fluid Catalytic Cracking and Reformer Operations training?

You bring back a draft unit health dashboard with indicators, alarm limits and response steps for both units. It gives your team one shared view of riser, regenerator and reformer performance and a troubleshooting sequence ready to test on shift.

Fluid Catalytic Cracking and Reformer Operations: The Way Forward

The unit health dashboard first informs the next fresh catalyst addition rate and reformer severity setting. Process engineers and shift operators use it together at handover, and planners read it when balancing gasoline and hydrogen. After its first month in use, the alarm limits are worth revisiting against real upsets, so the indicators reflect how the units actually behave.