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COURSE BROCHURE

# Oil Production and Processing Facilities Training Course

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Registered in the United Kingdom and Saudi Arabia

# Oil Production and Processing Facilities Training Course

Oil Production and Processing Facilities is a 2-week advanced training course for production engineers, facility operators and process supervisors who run the surface plant between the wellhead and the export line, and it ends with a facility debottlenecking and troubleshooting dossier. Ageing fields, rising water cuts and stricter crude and discharge specifications put new strain on separators, treaters and compressors. Jupiter Prime Training offers this course on oil production and processing facilities.

## Why Oil Production and Processing Facilities Matters Now

Three pressures shape surface facilities today: maturing reservoirs that deliver more water, sand and gas per barrel than the plant was designed for, buyers and pipelines that reject crude outside salt, water and vapour pressure limits, and environmental expectations on produced water discharge and flaring. A facility that handles these well keeps export quality on target, avoids trips and defers costly expansions. One that handles them poorly suffers off-specification cargoes, emulsion upsets, compressor surges and shut-ins. The course rests on separation physics, phase behaviour and established equipment sizing practice rather than any single vendor design.

## Who Gains Most from Oil Production and Processing Facilities

- Production engineers responsible for well allocation, back-pressure and plant throughput
- Control room and field operators who run separators, heater treaters and desalters
- Process supervisors who set operating envelopes and approve chemical dosing
- Water handling specialists who treat and reinject or discharge produced water
- Rotating equipment staff who keep gas compression trains available

An operating asset gains most when its production engineers, shift supervisors and process specialists attend together and agree one diagnostic routine for upsets.

## Oil Production and Processing Facilities Capabilities

Participants trace every barrel from choke to storage tank and learn to read where the plant is losing quality, capacity or uptime.

- Assess wellhead, choke and manifold arrangements for flow routing and well testing — production allocation
- Calculate separator retention time and liquid levels for changing water cuts — throughput decisions
- Specify stabilisation, dehydration and desalting conditions to meet crude export limits — buyers and pipeline operators
- Design produced water treatment trains for reinjection or discharge — environmental and reservoir teams
- Test gas compression performance against surge and capacity limits — rotating equipment owners
- Build a troubleshooting routine using hydrate, wax and scale indicators and plant trends — shift supervisors

## Key Oil Production and Processing Facilities Terms

- Production Manifold — a header of valves that routes each well's flow to the test or production separator.
- Retention Time — the time liquid spends in a separator, setting how completely oil, water and gas part.
- Crude Stabilisation — removing light ends from crude to lower its vapour pressure for safe storage and shipment.
- Desalting — washing crude with fresh water and coalescing the droplets electrostatically to cut salt content.
- Produced Water — formation and injected water brought up with oil, treated before reinjection or discharge.
- Water Cut — the fraction of water in a well's total liquid production, rising as a field matures.

## Oil Production and Processing Facilities Day by Day

## Day 1: The Surface Plant From Wellhead to Export

- Process Flow Diagrams — Mapping the Plant From Choke to Storage
- Reservoir Fluid Properties — Gas-Oil Ratio and Water Cut Effects
- Crude Export Specifications — Salt, Water and Vapour Pressure Limits
- Phase Envelope Basics — Predicting Gas and Liquid Splits
- Facility Design Basis — Comparing Original and Current Throughput

## Day 2: Wellheads, Chokes and Manifolds

- Christmas Tree Components — Safe Isolation and Well Control
- Choke Sizing and Erosion — Setting Well Back-Pressure
- Production and Test Manifold Layouts — Flexible Well Routing
- Well Testing Separators — Allocation Accuracy for Each Well
- Multiphase Flowmeters — Continuous Rate Measurement Without Separation

## Day 3: Multiphase Separation

- Two-Phase and Three-Phase Separators — Matching Vessel to Fluid
- Separator Internals and Mist Extractors — Carry-Over Prevention
- Retention Time and Level Control — Handling Rising Water Cut
- Slug Catchers and Inlet Devices — Damping Flow Surges
- Staged Separation Pressures — Maximising Stock Tank Liquid Recovery

## Day 4: Crude Stabilisation and Storage

- Stabiliser Columns and Reboilers — Lowering Reid Vapour Pressure
- Heater Treaters — Combined Heating and Settling Choices
- Storage Tank Vapour Recovery — Limiting Emissions and Product Loss
- Crude Sampling and Metering — Custody Transfer Accuracy
- Off-Specification Crude Handling — Rerun or Blend Decisions

## Day 5: Dehydration and Desalting

- Emulsion Formation and Stability — Choosing Demulsifier Strategy
- Electrostatic Coalescers — Voltage and Grid Settings for Dry Crude
- Desalter Wash Water and Mix Valve — Salt Removal Efficiency
- Bottle Testing of Demulsifiers — Chemical Selection and Dosing Rate
- Interface Level Instruments — Avoiding Rag Layer Upsets

## Day 6: Produced Water Treatment

- Skim Tanks and Corrugated Plate Interceptors — Primary Oil Removal
- Hydrocyclones and Flotation Units — Polishing Oil-in-Water Content
- Filtration and Deoxygenation — Water Quality for Reinjection
- Oil-in-Water Sampling Methods — Discharge Quality Decisions
- Water Reuse and Disposal Options — Reservoir and Environmental Trade-Offs

## Day 7: Gas Handling and Compression

- Gas Scrubbers and Knock-Out Drums — Protecting Compressor Inlets
- Centrifugal and Reciprocating Compressors — Selection by Duty
- Compressor Performance Maps — Surge and Stonewall Margins
- Glycol Gas Dehydration — Water Dew Point for Export Gas
- Flare and Vent Systems — Relief Loads and Gas Conservation

## Day 8: Flow Assurance in Surface Facilities

- Hydrate Curves and Inhibitor Injection — Preventing Line Blockage
- Wax Appearance Temperature — Pigging and Heating Decisions
- Scale Prediction and Inhibition — Protecting Vessels and Exchangers
- Sand Production Monitoring — Erosion and Desanding Choices
- Corrosion Coupons and Inhibitors — Integrity of Flowlines and Vessels

## Day 9: Performance Monitoring and Troubleshooting

- Key Facility Indicators — Uptime, Throughput and Export Quality
- Plant Historian Trends — Spotting Drift Before Upsets
- Root Cause Trees for Process Upsets — Separator and Treater Failures
- Bottleneck Identification Methods — Capacity Limits Across Units
- Operating Envelope Updates — Safe Limits for Changed Fluids

## Day 10: Practising the Facility Debottlenecking and Troubleshooting Dossier

- Case Plant Fluid and Flow Review — Applying Days 1 and 3
- Crude Treating Diagnosis — Applying Days 4 and 5
- Water and Gas Constraint Assessment — Applying Days 6 and 7
- Peer Challenge of Proposed Fixes — Testing Each Assumption
- Facility Debottlenecking and Troubleshooting Dossier — Final Recommendations

## Applying Oil Production and Processing Facilities After the Course

- Recalculate separator retention time at the current water cut and compare it with the vessel design basis, then brief the shift teams on new level settings.
- Run a bottle test campaign on the main crude stream to confirm demulsifier choice and dosing rate against salt and water results.

## Oil Production and Processing Facilities Questions FAQ

### What are oil production and processing facilities and why do they matter now?

Oil production and processing facilities are the surface plants that separate, treat and condition well fluids into saleable crude, gas and clean water. They matter now because mature fields send more water, gas and solids into plants built for different conditions.

### Which roles gain most from oil production and processing facilities training?

Production engineers, control room operators and process supervisors gain most from oil production and processing facilities training. Water treatment and compression specialists also benefit, because they see how their units affect export quality and overall plant uptime.

### How does oil production and processing facilities training differ from refinery process training?

Oil production and processing facilities training covers field plant upstream of the refinery. You work with manifolds, separators, desalters, produced water and gas compression rather than distillation, cracking and refinery product yields.

## What do you bring back from oil production and processing facilities training?

You bring back a debottlenecking and troubleshooting dossier for a case plant. It holds retention time checks, treating diagnoses, water and gas constraints and prioritised fixes that you can adapt to your own facility.

## Oil Production and Processing Facilities: The Way Forward

The facility debottlenecking and troubleshooting dossier first informs which unit limits throughput or export quality and what fix to fund. Production engineers, shift supervisors and asset leaders use it to agree priorities. After its first use, revisit the separator and water treatment checks as water cut, gas-oil ratio and solids loading change over the life of the field.