JUPITER PRIME

Consulting • Training • Advisory

جوبيتر برايم للاستشارات والتدريب

COURSE BROCHURE

Advanced Oil Water Treatment Technologies Training Course

jupiterprime.uk

info@jupiterprime.uk

Registered in the United Kingdom and Saudi Arabia

Advanced Oil Water Treatment Technologies Training Course

Oil Water Treatment Technologies is an advanced 2-week training course for production chemists, process engineers and water treatment specialists who must select, size and troubleshoot produced water trains and leave with a Produced Water Train Performance Review for their facility. Rising water cuts in mature fields now push more water through separators than they were designed for. Jupiter Prime Training runs this course for practitioners operating oil and gas water handling systems.

Why Oil Water Treatment Technologies Matter Now

Three forces shape oil water treatment technologies today: maturing reservoirs whose water cut climbs year on year, reinjection schemes that demand low oil and solids content to protect injectivity, and discharge limits that tighten scrutiny of every overboard or onshore outfall. A facility that matches its separators, hydrocyclones, flotation units and filters to its real fluids keeps wells flowing and injection pressures stable; one that runs mismatched equipment suffers carry-over, plugged injectors and deferred production. The course rests on gravity separation principles, Stokes' law for droplet settling and recognised oil in water OiW measurement practice.

Who Gains Most from Oil Water Treatment Technologies

- Engineers who size and specify separators, hydrocyclones and flotation units
- Production chemists who select demulsifiers, clarifiers and scale inhibitors
- Operators and supervisors who run produced water trains day to day
- Water injection specialists who protect reservoir injectivity
- Environmental advisers who report discharge quality from offshore and onshore sites

An asset that sends its process engineer, production chemist and water treatment supervisor together gains most, because they can agree one OiW target per stage and one chemical strategy for the whole train.

Oil Water Treatment Technologies Capabilities

Participants move from fighting carry-over incidents to designing produced water trains where each stage has a defined removal duty.

- Assess produced water composition, droplet sizes and solids loading — engineers choosing the treatment sequence
- Calculate separator, hydrocyclone and flotation capacities against current and forecast water rates — asset owners approving upgrades
- Specify demulsifier, reverse emulsion breaker and clarifier dosing regimes from bottle and jar tests — chemical suppliers and site chemists
- Design nutshell and media filtration to meet reinjection water quality — reservoir engineers protecting injectivity
- Test OiW measurement methods and online analysers for reliable readings — environmental advisers reporting discharges
- Build troubleshooting routines for upsets such as tight emulsions and solids surges — operations supervisors

Key Oil Water Treatment Technologies Terms

- Produced water — water brought to surface with oil and gas, carrying dispersed oil, dissolved organics, salts and solids.
- Oil in water OiW — the concentration of dispersed and dissolved hydrocarbons remaining in treated water.
- Hydrocyclone — a vessel that uses swirling flow to separate oil droplets from water by centrifugal force.
- Induced gas flotation IGF — attaching fine gas bubbles to oil droplets so they rise and are skimmed off.
- Walnut shell filter — a deep-bed filter using crushed nutshell media to remove fine oil and solids.
- Reverse emulsion breaker — a chemical that destabilises oil droplets dispersed in water so they coalesce and separate.

Oil Water Treatment Technologies Day by Day

Day 1: Produced Water Context and Drivers

- Water Cut Forecasts — Anticipating Future Hydraulic Load on Trains
- Reinjection Versus Discharge Pathways — Choosing a Water Disposal Strategy
- Produced Water Characterisation — Measuring Oil, Solids, Salts and Dissolved Gases
- Water Quality Targets per Stage — Setting Removal Duties Along the Train
- Offshore and Onshore Constraints — Weighing Footprint, Weight and Power

Day 2: Separation Fundamentals

- Stokes' Law and Droplet Size Distribution — Predicting Gravity Separation
- Emulsion Stability Factors — Diagnosing Why Oil Refuses to Separate
- Shear and Droplet Break-Up in Valves and Pumps — Protecting Separability
- Coalescence Mechanisms — Growing Droplets Before Treatment
- Residence Time and Flow Distribution — Avoiding Short-Circuiting

Day 3: Primary Separation

- Three-Phase Separator Internals — Improving Water Quality at the Source
- API Separators and Corrugated Plate Interceptors — Sizing Onshore Primary Units
- Skim Tanks and Settling Tanks — Using Volume for Polishing
- Interface Level Control — Preventing Oil Carry-Under
- Sand Removal and Desanding — Keeping Solids Out of Downstream Units

Day 4: Hydrocyclones

- De-Oiling Hydrocyclone Geometry — Matching Liner Design to Droplet Size
- Pressure Drop Ratio Control — Setting Reject and Feed Conditions
- Turndown and Liner Count Selection — Handling Variable Water Rates
- Liner Erosion and Fouling — Planning Inspection and Replacement
- Hydrocyclone Performance Curves — Judging Separation Efficiency

Day 5: Flotation and Compact Units

- Induced Gas Flotation Design — Choosing Mechanical or Hydraulic Gas Induction
- Dissolved Gas Flotation — Applying Fine Bubbles to Onshore Effluent
- Compact Flotation Units — Saving Weight on Offshore Facilities
- Skimming and Recycle Rates — Balancing Recovery and Water Quality
- Flotation Chemicals and Flocculants — Improving Bubble Attachment

Day 6: Filtration for Reinjection

- Walnut Shell Filter Operation — Removing Fine Oil and Solids
- Backwash and Fluidisation Cycles — Restoring Bed Capacity
- Cartridge and Media Filters — Polishing Water for Tight Reservoirs
- Injection Water Quality Specifications — Protecting Formation Injectivity
- Membrane Options for Produced Water — Weighing Fouling Against Quality

Day 7: Treatment Chemistry

- Demulsifier and Reverse Emulsion Breaker Selection — Running Bottle Tests
- Clarifiers and Flocculants — Optimising Dose Rates
- Scale and Corrosion Inhibitors — Protecting Pipework and Injectors
- Biocides and Souring Control — Limiting Bacterial Growth
- Chemical Compatibility Testing — Avoiding Interference Between Products

Day 8: Measurement and Monitoring

- OiW Laboratory Methods — Comparing Extraction and Infrared Techniques
- Online OiW Analysers — Calibrating Against Laboratory Results
- Sampling Points and Procedures — Obtaining Representative Samples
- Performance Dashboards per Stage — Tracking Removal Efficiency
- Discharge Reporting Records — Supporting Environmental Returns

Day 9: Troubleshooting and Optimisation

- Tight Emulsion Upsets — Tracing Causes From Wells to Treatment
- Solids Surges and Oily Sludge — Planning Handling and Disposal
- Train Debottlenecking Studies — Raising Capacity Without New Vessels
- Root Cause Analysis of Carry-Over — Correcting Control and Chemistry
- Technology Selection Matrices — Comparing Retrofit Options

Day 10: Practising the Produced Water Train Performance Review

- Applying Characterisation Results — Defining Feed Conditions for a Chosen Train
- Applying Equipment Sizing Checks — Confirming Capacity for Forecast Water Cut
- Applying Chemistry Test Results — Setting the Chemical Dosing Regime
- Applying Troubleshooting Routines — Ranking Upset Causes and Fixes
- Produced Water Train Performance Review — Presenting Stage Duties, Gaps and Upgrades

Applying Oil Water Treatment Technologies After the Course

- Lead a stage-by-stage OiW survey of the produced water train and present each unit's actual removal efficiency against its design duty.
- Run bottle and jar tests on current production fluids to confirm or change the demulsifier and clarifier dosing regime.

Oil Water Treatment Technologies Questions FAQ

What are oil water treatment technologies and why do they matter now?

Oil water treatment technologies are the separators, hydrocyclones, flotation units, filters and chemicals that remove oil and solids from produced water. They matter now because rising water cuts and stricter reinjection and discharge quality targets put more load on ageing trains.

Which roles gain most from oil water treatment technologies training?

Process engineers, production chemists and water treatment supervisors gain most from oil water treatment technologies training. Water injection specialists also benefit.

How does advanced oil water treatment technologies training differ from a refinery wastewater treatment course?

Advanced oil water treatment technologies training focuses on produced water from wells, upstream separation and reinjection quality. A refinery wastewater treatment course deals with downstream process effluents, biological treatment and sludge from refining units.

What do you bring back from oil water treatment technologies training?

You bring back a Produced Water Train Performance Review for your facility. It sets out stage duties, measured gaps, chemical dosing changes and upgrade options.

Oil Water Treatment Technologies: The Way Forward

The Produced Water Train Performance Review first informs whether a facility retunes its existing hydrocyclones and flotation or invests in new filtration before water cut rises further. Process engineers, chemists and supervisors use it to coordinate changes. After the first quarter of operation, revisit stage efficiencies against new OiW results, on an offshore platform or an onshore gathering station alike.