CORE CONCEPT

Oilfield Production Chemistry: Scale, Wax, Hydrate and Emulsion Treatment

23 – 27 November 2026
Istanbul - Levent business district hotel

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Introduction:

Oilfield production chemistry problems rarely announce themselves: a barium sulphate deposit chokes a tubing string, a wax layer narrows a flowline, a hydrate plug stops a gas well, or a tight emulsion sends wet crude to export, while chemical spend climbs without proof it works. This Core Concept course trains chemists and engineers to diagnose these deposits and emulsions from water and fluid analyses, select and qualify the right treatment chemicals in the laboratory and set dose rates that can be monitored. Participants produce a Production Chemistry Treatment Programme for a field case.

Course Objectives:

- Interpret produced water and crude analyses to identify scaling, deposition, emulsion and souring risks for each well and system
- Predict mineral scale tendency with saturation index calculations and design continuous or squeeze scale inhibitor and dissolver treatments
- Select wax, asphaltene and gas hydrate inhibitors, including thermodynamic and low-dosage chemistries, from laboratory data and operating conditions
- Run and read demulsifier bottle tests to choose an emulsion breaker and set its injection point and rate
- Specify chemical injection systems, compatibility checks and qualification tests before a product is used in the field
- Build a treatment programme with monitoring KPIs, residual targets and cost per barrel review for an operating field

Target Audience:

- Production chemistry functions responsible for chemical selection, laboratory testing and treatment performance
- Process engineering functions responsible for separation, crude dehydration and water handling within chemical limits
- Production engineering functions responsible for well deliverability affected by scale, wax, asphaltene or hydrate
- Flow assurance functions responsible for deposit and blockage risk in wells, flowlines and pipelines
- Laboratory functions responsible for water analysis, bottle tests and inhibitor residual measurement
- Chemical service coordination functions responsible for injection equipment, dosing records and supplier performance

Course Outline:

Day 1: Produced Water Chemistry and Fluid Analysis

- Produced Water Ion Analysis: Cations, Anions, TDS, pH and Alkalinity
- Formation Water and Injection Seawater Mixing Ratios and Incompatibility
- Crude Oil SARA Fractions and Wax Content Characterisation
- Sampling Procedures for Water, Oil and Gas Composition
- Field Chemistry Baseline: Problem Wells, Deposit Samples and Chemical Inventory

Day 2: Scale Formation, Prediction and Inhibition

- Calcium Carbonate, Barium and Strontium Sulphate and Iron Sulphide Scale Mechanisms
- Saturation Index and Scaling Tendency Modelling Across Pressure and Temperature Profiles
- Threshold Scale Inhibitors: Phosphonates and Polymers with Minimum Inhibitor Concentration Testing
- Scale Squeeze Treatment Design: Preflush, Main Pill, Overflush and Return Residual Curve
- Scale Dissolvers and Acid Treatments for Carbonate and Sulphate Deposits

Day 3: Wax, Asphaltene and Gas Hydrate Control Chemicals

- Wax Appearance Temperature and Pour Point Testing with Wax Inhibitor and Pour Point Depressant Selection
- Asphaltene Onset Pressure, Dispersant and Inhibitor Screening and Solvent Soaks
- Hydrate Equilibrium Curve and Thermodynamic Inhibitor Dosing with Methanol and MEG
- Low-Dosage Hydrate Inhibitors: Kinetic Inhibitors and Anti-Agglomerants Qualification
- Rocking Cell and Cold Finger Test Interpretation for Deposit Control Chemicals

Day 4: Emulsions, Souring Control and Chemical Injection

- Water-in-Oil Emulsion Stability, Interfacial Films and Demulsifier Chemistries
- Demulsifier Bottle Test Protocol: Water Drop, Interface Quality and Oil Dryness
- Film-Forming Corrosion Inhibitor, Biocide and H2S Scavenger Programmes at Overview
- Chemical Injection Skids, Quills, Capillary Strings and Dose Rate Calculation
- Chemical Compatibility Matrix: Product-to-Product, Material and Downstream Process Effects

Day 5: Treatment Programme Case Study and Cost Optimisation

- Field Case: Seawater-Flooded Oil Field with Sulphate Scale and Tight Emulsions
- Field Case: Subsea Gas Condensate Tieback with Hydrate and Wax Risk
- Chemical Qualification Test Plan and Supplier Trial Scorecard
- Monitoring KPIs: Inhibitor Residuals, Ion Trends, Deposit Frequency and Cost per Barrel
- Production Chemistry Treatment Programme Drafting and Peer Challenge

Skills You Will Gain:

- Produced Water Interpretation
- Scale Tendency Prediction
- Squeeze Treatment Design
- Deposit Control Chemical Screening
- Hydrate Inhibitor Selection
- Demulsifier Bottle Testing
- Chemical Dosing Calculation
- Treatment Cost Optimisation

Why Attend This Course:

- Return with a Production Chemistry Treatment Programme built on two field cases with dose rates, tests and KPIs
- Stop paying for chemicals that are not working by linking every product to a residual, trend or deposit measure
- Avoid field trials that fail because of incompatible products, wrong injection points or untested low-dosage chemistries
- Compare treatment practice with chemists and engineers from onshore, offshore, oil and gas condensate operations

Conclusion:

Production chemistry succeeds when each deposit or emulsion is traced to its chemistry, treated with a product proven in the laboratory and tracked with a measurable residual. The course moves from produced water and crude analysis, through scale prediction, inhibitors, squeezes and dissolvers, to wax, asphaltene and hydrate control chemicals, then to demulsifiers, souring control, injection systems and compatibility. The final day applies this to field cases and produces a Production Chemistry Treatment Programme ready for review.