JUPITER PRIME

Consulting • Training • Advisory

جوبيتر برايم للاستشارات والتدريب

COURSE BROCHURE

Advanced Flow Assurance and Production Chemistry Training Course

jupiterprime.uk

info@jupiterprime.uk

Registered in the United Kingdom and Saudi Arabia

Advanced Flow Assurance and Production Chemistry Training Course

Flow Assurance and Production Chemistry is the subject of this 2-week advanced training course for production engineers, flow assurance engineers and subsea operations staff, who prepare a Field Flow Assurance Strategy for a well, flowline or export system they support. Longer tie-backs, maturing reservoirs with rising water cut and pressure to cut chemical spend make blockages and slugging costlier than ever. Jupiter Prime Training delivers this course in flow assurance and production chemistry.

Why Flow Assurance and Production Chemistry Matters Now

Three pressures shape flow assurance today: longer subsea and onshore tie-backs that cool fluids before they reach the host, maturing fields where water cut and souring change scale and corrosion behaviour, and operators keen to cut chemical injection costs and environmental discharge. A field that manages flow assurance well keeps lines open through shutdowns and restarts, doses chemicals precisely and avoids costly interventions; one that manages it poorly faces hydrate plugs, wax build-up and unplanned pigging or deferral. The course rests on hydrate equilibrium curves, the Wax Appearance Temperature WAT concept, SARA analysis Saturates, Aromatics, Resins, Asphaltenes and scaling tendency prediction.

Who Gains Most from Flow Assurance and Production Chemistry

- Engineers responsible for keeping wells and flowlines flowing within their thermal and hydraulic limits
- Specialists who model multiphase behaviour and define operating envelopes for new tie-backs
- Chemists who select, qualify and optimise inhibitors, dispersants and scale treatments
- Operations staff who run shutdown, cool-down and restart procedures on subsea systems
- Integrity leads who balance flow assurance chemicals against corrosion and materials limits

A field group combining a production engineer, a production chemist and a subsea operations lead gains most when attending together, because each owns part of the same blockage risk.

Flow Assurance and Production Chemistry Capabilities

Participants leave able to predict where solids and slugs will form, choose between thermal, chemical and operational remedies, and set dosing and restart rules a control room can follow.

- Assess hydrate, wax, asphaltene and scale risk along a flow path — informing field development choices
- Calculate inhibitor and thermal requirements for steady state and shut-in — serving production chemists
- Specify chemical injection strategies with dosage, compatibility and monitoring — supporting operations
- Design cool-down, depressurisation and restart procedures — protecting subsea crews and assets
- Apply multiphase models to slugging and liquid surge risks — informing facilities engineers
- Communicate flow assurance risks and remedies — supporting asset managers and partners

Key Flow Assurance and Production Chemistry Terms

- Hydrate — an ice-like solid of water and light gas molecules that forms at high pressure and low temperature and can plug lines.
- Wax Appearance Temperature — the temperature at which wax crystals first form in crude oil as it cools.
- Asphaltenes — heavy, polar crude oil components that can precipitate when pressure or composition changes, fouling wells and equipment.
- Slugging — irregular flow of alternating liquid and gas bodies in a pipeline that causes pressure swings and surges at the receiving facility.
- Cool-Down Time — the period after shut-in before fluid in a line reaches hydrate or wax formation temperatures.
- Kinetic Hydrate Inhibitor — a low-dose chemical that delays hydrate crystal growth rather than shifting the formation conditions.

Flow Assurance and Production Chemistry Day by Day

Day 1: The Flow Assurance Landscape

- Flow Assurance Threat Map — Ranking Hydrates, Wax, Asphaltenes, Scale and Slugging
- Tie-Back Length and Fluid Cooling — Linking Architecture to Blockage Risk
- Late-Life Field Changes — Anticipating Water Cut and Souring Effects
- Offshore and Onshore Case Histories — Learning From Plugging and Deferral Events
- Flow Assurance Responsibility Matrix — Assigning Ownership Across Disciplines

Day 2: Fluid Characterisation

- Reservoir Fluid Sampling Quality — Avoiding Misleading Laboratory Results
- Phase Envelopes and PVT Data — Defining Operating Boundaries
- SARA Analysis and Stability Indices — Screening Asphaltene Risk
- Water Chemistry and Ion Analysis — Predicting Scaling Tendency
- Fluid Property Database — Keeping One Agreed Set of Inputs

Day 3: Multiphase Flow Behaviour

- Flow Regime Maps — Recognising Stratified, Annular and Slug Flow
- Pressure Drop and Liquid Holdup — Sizing Flowlines and Risers
- Terrain and Riser-Induced Slugging — Predicting Surge Volumes
- Slug Catcher and Separator Capacity — Matching Facilities to Surges
- Transient Multiphase Simulation — Testing Rate Changes and Ramp-Up

Day 4: Hydrate Management

- Hydrate Equilibrium Curves — Locating the Operating Point Against Risk
- Thermodynamic Inhibitors Methanol and MEG — Calculating Required Dosage
- Low-Dose Hydrate Inhibitors — Choosing Kinetic or Anti-Agglomerant Products
- Hydrate Plug Remediation — Planning Safe Depressurisation and Heating
- MEG Regeneration and Reclamation — Managing Salts and Losses

Day 5: Wax and Asphaltene Control

- Wax Appearance and Pour Point Testing — Setting Thermal Limits
- Wax Deposition Modelling — Planning Pigging Frequency
- Pigging Schedules and Pig Selection — Removing Deposits Without Sticking
- Asphaltene Onset Pressure — Managing Drawdown and Commingling
- Dispersants and Solvent Treatments — Restoring Well and Line Performance

Day 6: Scale, Corrosion and Emulsions

- Scaling Tendency Prediction — Identifying Carbonate and Sulphate Scale Zones
- Scale Inhibitor Squeeze Treatments — Protecting Wells From Downhole Scale
- Chemical Compatibility Testing — Avoiding Interactions Between Treatments
- Corrosion Inhibitor Interaction — Balancing Integrity and Flow Assurance Needs
- Emulsion and Foam Control — Supporting Separation at the Host

Day 7: Thermal Management

- Insulation and Pipe-in-Pipe Systems — Extending Cool-Down Time
- Direct Electrical Heating and Heat Tracing — Maintaining Temperature Actively
- Burial and Bundled Flowlines — Using Soil and Bundles for Heat Retention
- Overall Heat Transfer Coefficients — Validating Design With Field Data
- Thermal Strategy Trade-Offs — Comparing Capital and Chemical Costs

Day 8: Chemical Injection Strategy

- Chemical Injection System Design — Sizing Umbilicals, Pumps and Valves
- Dosage Optimisation and Monitoring — Cutting Spend Without Raising Risk
- Chemical Qualification Testing — Approving Products for Field Use
- Residual and Discharge Considerations — Managing Produced Water Quality
- Chemical Logistics and Storage — Securing Supply for Remote Assets

Day 9: Operating Procedures and Surveillance

- Shutdown and Cool-Down Procedures — Protecting Lines After Unplanned Trips
- Restart and Warm-Up Sequences — Avoiding Blockage During Ramp-Up
- Flow Assurance Surveillance Dashboards — Tracking Pressure, Temperature and Dosage
- Early Warning Indicators of Deposition — Acting Before Blockage Forms
- Operating Envelope Documentation — Giving Control Rooms Clear Limits

Day 10: Practising the Field Flow Assurance Strategy

- Tie-Back Risk Assessment Case — Applying Fluid and Hydraulic Screening
- Hydrate and Wax Remedy Selection — Weighing Thermal and Chemical Options
- Restart Procedure Exercise — Testing Cool-Down and Ramp-Up Rules
- Peer Challenge of Chemical Treatment Plans — Checking Dosage and Compatibility
- Field Flow Assurance Strategy — Completing Risks, Remedies and Operating Rules

Applying Flow Assurance and Production Chemistry After the Course

- Compare current hydrate inhibitor dosage against the hydrate equilibrium curve for one flowline and propose an optimised rate.
- Review the shutdown and restart procedure for one subsea system against its calculated cool-down time.

Flow Assurance and Production Chemistry Questions FAQ

What is flow assurance and production chemistry and why does it matter now?

It is the discipline of keeping hydrocarbons flowing from reservoir to facility by controlling hydrates, wax, asphaltenes, scale and slugging. It matters now because longer tie-backs, maturing fields and pressure on chemical costs make blockages more likely and more expensive.

Which roles gain most from flow assurance and production chemistry training?

Production engineers, flow assurance engineers, production chemists and subsea operations staff gain most. They define operating envelopes, select chemicals and run shutdowns and restarts, so fluid behaviour, inhibitor sizing and thermal strategy feed straight into their decisions.

How does flow assurance and production chemistry differ from a pipeline integrity course?

It focuses on what flows inside the line rather than the pipe wall. A pipeline integrity course covers corrosion, inspection and defect assessment, while this subject manages solids, slugging, thermal limits and chemical treatment plans that keep production moving.

What do you bring back from flow assurance and production chemistry training?

You bring back a Field Flow Assurance Strategy for a system you support. It ranks blockage threats, sets thermal and chemical remedies and defines shutdown and restart rules, ready to share with operations and chemistry teams.

Flow Assurance and Production Chemistry: The Way Forward

The Field Flow Assurance Strategy first informs how much inhibitor a line needs and how long it can stay shut in safely. Production engineers, chemists and control room staff use it to dose chemicals, plan pigging and restart systems. After the first full shutdown and restart, it is worth revisiting cool-down assumptions, since field data often differs from design models.