
Flow Assurance Leadership: Hydrate, Wax, Asphaltene and Scale Risk Course

30 August – 3 September 2027
Geneva





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Programme Summary

Flow assurance leadership for hydrate, wax, asphaltene and scale risk is a one-week training course for production and asset leaders at managerial level, culminating in a flow assurance risk register and management plan for one of their own production systems. A single blockage in a well, flowline or export pipeline can halt production for weeks, and chemical, pigging and restart plans often lack clear owners. The approach links the physics and chemistry of each threat to decisions on design margins, operating envelopes and monitoring. Mars Training Centre UK delivers this programme in flow assurance leadership.

The Business Case

Deposits build quietly until a pig sticks, a restart fails or a line needs costly remediation, while chemical spend grows without evidence that it works. Leaders who govern flow assurance as a managed risk keep production available, spend chemicals where they matter and restart safely after planned and unplanned shutdowns.

- Production Availability: Rises as blockages and slugging events are prevented or detected before they stop flow.
- Chemical and Intervention Cost: Falls as injection programmes are justified, optimised and checked against performance data.
- Integrity and Safety Exposure: Reduces as hydrate plugs, corrosion and uncontrolled restarts are managed through defined procedures.

Principles and Evidence Base

- Hydrate Equilibrium Curves and Subcooling: Define the safe operating envelope and inhibitor choices examined in Session 2.
- Wax Appearance Temperature and SARA Analysis With the de Boer Plot: Screen wax and asphaltene deposition risk in Session 3.
- Scaling Saturation Index Prediction: Identifies where mineral scale will form as pressure, temperature and water chemistry change in Session 3.
- Multiphase Flow Regime Maps and Transient Modelling: Explain slugging, cooldown and restart behaviour in Sessions 1 and 4.



Intended Participants

- Leaders accountable for production availability from wells, flowlines and export systems.
- Managers who approve production chemical budgets and contractor programmes.
- Heads of production engineering who set operating envelopes and shutdown procedures.
- Asset managers who must weigh design, operating and intervention options for ageing fields.

The programme serves upstream oil and gas operators, subsea and pipeline operators, gas processing and production chemical service companies.

Learning Outcomes

1. Participants will be able to diagnose the dominant flow assurance threats in a production system from fluid and operating data.
2. Participants will be able to evaluate hydrate prevention options, including thermal, pressure and chemical strategies.
3. Participants will be able to prioritise wax, asphaltene, scale and corrosion risks by likelihood and consequence.
4. Participants will be able to construct shutdown, cooldown and restart strategies that avoid blockage.
5. Participants will be able to justify production chemical and pigging programmes against measured performance.
6. Participants will be able to design monitoring and governance for a flow assurance management plan.

Programme Structure

Day 1: Flow Assurance Leadership and Multiphase Flow

How does fluid behaviour from reservoir to export create risk for production?

- Flow Assurance Threat Landscape and Ownership
- Fluid Characterisation and Sampling Quality
- Multiphase Flow Regimes and Slugging
- Pressure and Temperature Profiles Along the System
- Flow Assurance Risk Screening Matrix

Day 2: Hydrate Risk Management

How are hydrate plugs prevented, detected and safely removed?

- Hydrate Equilibrium Curves and Subcooling Margin
- Thermodynamic Inhibitors: Methanol and MEG
- Kinetic Inhibitors and Anti-Agglomerants
- Insulation, Heating and Depressurisation Options
- Hydrate Plug Remediation Procedures



Day 3: Wax, Asphaltene, Scale and Corrosion

Which deposits threaten the system, and how is each controlled?

- Wax Appearance Temperature, Pour Point and Gelling
- Asphaltene Stability Screening Using SARA and the de Boer Plot
- Scaling Index Prediction and Scale Inhibition
- Internal Corrosion and Emulsion Interactions
- Pigging Programmes and Deposit Removal

Day 4: Operating Strategy and Production Chemical Governance

How are shutdowns, restarts and chemical programmes managed as one system?

- Planned and Unplanned Shutdown Response
- Cooldown Time and Restart Procedures
- Transient Modelling Results for Operating Decisions
- Chemical Injection Performance Monitoring
- Contractor Management and Chemical Cost Review

Day 5: Applying the Flow Assurance Management Plan

How are threats, controls and monitoring combined into one plan for a real system?

- Threat Diagnosis of a Participant Production System
- Control Selection for Hydrate and Deposit Risks
- Monitoring Indicators and Alarm Limits
- Peer Challenge of Risk Rankings
- Flow Assurance Risk Register and Management Plan Presentation

Methodology

The programme relies on case analysis supported by data exercises. Participants examine blockage and restart events from subsea tiebacks, onshore gathering networks and gas export lines, interpret fluid and operating data, and test control choices against cost and risk.

- Suggested activity: Plotting operating points against a hydrate curve to set an inhibitor strategy.
- Suggested activity: Ranking deposit threats for a waxy crude export line.
- Suggested activity: Reviewing a chemical injection programme against performance data.



Capstone Output

Each participant completes a flow assurance risk register and management plan for one production system. It sets out the ranked threats, chosen controls, shutdown and restart rules, chemical and pigging programmes, monitoring indicators and owners, ready to review with asset leadership and contractors.

Frequently Asked Questions

Is flow assurance leadership suitable for managers without a chemistry background?

Yes. It suits production, asset and engineering leaders who make decisions on flow assurance risk. It assumes operating experience but no training in production chemistry.

Which models underpin flow assurance leadership for hydrate, wax, asphaltene and scale risk?

It draws on hydrate equilibrium curves, wax appearance temperature, SARA analysis with the de Boer plot, scaling index prediction, flow regime maps and transient multiphase modelling.

How is the flow assurance management plan used at work?

You take back a risk register and plan that asset leadership can approve, with owners, controls and monitoring indicators that guide daily operation and chemical spending.

How does flow assurance leadership differ from production chemistry programmes for specialists?

It focuses on decisions, risk ranking, governance and cost across the whole system, rather than laboratory methods and chemical formulation.