
Oil and Gas Production Engineering: Well Performance and Artificial Lift Course

5 – 9 April 2027
Tokyo





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Programme Summary

Oil and gas production engineering for well performance and artificial lift is a five-day training course for production and asset leaders at managerial level, culminating in a well portfolio optimisation plan for a field they manage. Output from many fields is limited less by the reservoir than by damaged completions, poorly matched lift systems and slow decisions on which wells to repair. The approach connects inflow, outflow and lift behaviour to surveillance data and intervention choices. Mars Training Centre UK delivers this programme in oil and gas production engineering.

The Business Case

Every well that produces below its potential carries lost revenue, and every failed pump or unplanned workover adds cost and deferred production. Leaders who read well performance correctly, choose lift systems on evidence and rank interventions by value raise field output without new drilling and spend their workover budget where it returns most.

- Field Production and Deferment: Improve as underperforming wells are identified and restored in order of value.
- Lifting Cost per Barrel: Falls as artificial lift systems are matched to well conditions and run longer between failures.
- Intervention Return: Rises as workovers and stimulation are justified with nodal analysis and decline forecasts.

Principles and Evidence Base

- Inflow Performance Relationship and Productivity Index: Describe what the reservoir can deliver to each well, applied in Session 1.
- Nodal Systems Analysis: Matches inflow with tubing and surface performance to locate restrictions in Sessions 1 and 2.
- Skin and Formation Damage Concepts: Separate reservoir limits from completion damage when stimulation is assessed in Session 2.
- Arps Decline Curve Analysis: Forecasts well and field output to rank interventions in Session 4.

Intended Participants

- Leaders accountable for daily and annual production from a field or group of wells.
- Managers who approve artificial lift investments, workovers and stimulation budgets.
- Heads of engineering who set well surveillance and testing standards.
- Asset managers who must decide where production effort and capital deliver most.



The programme serves national and international oil companies, gas producers, field service companies and joint venture asset teams.

Learning Outcomes

1. Participants will be able to diagnose well underperformance using inflow, outflow and nodal analysis.
2. Participants will be able to evaluate completion and stimulation options for damaged or restricted wells.
3. Participants will be able to select artificial lift methods suited to well conditions and field constraints.
4. Participants will be able to design well surveillance and testing routines that detect decline early.
5. Participants will be able to prioritise well interventions by production gain, cost and risk.
6. Participants will be able to justify a well portfolio optimisation plan to asset leadership.

Programme Structure

Day 1: Oil and Gas Production Engineering and Well Performance

What limits the rate a well can deliver?

- Production System From Reservoir to Separator
- Inflow Performance Relationship and Productivity Index
- Tubing and Flowline Outflow Performance
- Nodal Analysis of a Producing Well
- Gas, Water and Sand Production Effects

Day 2: Completions, Formation Damage and Stimulation

How are completion restrictions found and removed?

- Completion Types and Design Choices
- Skin Factor and Formation Damage Mechanisms
- Matrix Acidising Candidate Selection
- Hydraulic Fracturing Decision Criteria
- Sand Control Options and Trade-Offs

Day 3: Artificial Lift Selection and Operation

Which lift method suits each well, and how is it kept running?

- Electrical Submersible Pump Design and Failure Modes
- Gas Lift Design and Allocation
- Sucker Rod and Progressive Cavity Pumps
- Artificial Lift Selection Matrix
- Run Life, Failure Analysis and Lift Optimisation



Day 4: Surveillance, Decline and Intervention Priorities

How do leaders see decline early and decide which wells to work on?

- Well Testing and Production Allocation
- Real-Time Surveillance and Exception Reporting
- Arps Decline Curve Analysis
- Workover and Intervention Candidate Ranking
- Deferred Production and Loss Accounting

Day 5: Applying the Well Portfolio Optimisation Plan

How are performance, lift and intervention decisions combined into one field plan?

- Nodal Review of Participant Field Wells
- Lift and Stimulation Options by Well Group
- Intervention Sequence and Budget
- Peer Challenge of Field Priorities
- Well Portfolio Optimisation Plan Presentation

Methodology

The programme relies on case analysis and data exercises. Participants work with well test, pressure and lift data from oil producers, gas wells and mature waterflood fields, build simple nodal and decline models and rank interventions as an asset team would.

- Suggested activity: Locating the restriction in an underperforming well with a nodal plot.
- Suggested activity: Choosing between pump and gas lift for a field with rising water cut.
- Suggested activity: Ranking ten workover candidates against a fixed budget.

Capstone Output

Each participant completes a well portfolio optimisation plan for a field they manage. It groups wells by performance problem, sets out lift, stimulation and workover actions, surveillance routines and an intervention sequence with expected gains, ready to present to asset leadership.

Frequently Asked Questions

Is oil and gas production engineering suitable for asset managers who are not petroleum engineers?

Yes. It suits production, asset and engineering leaders who decide on wells and budgets. It assumes field experience but no specialist training in production engineering.



Which models underpin oil and gas production engineering in this programme?

It draws on the inflow performance relationship, nodal systems analysis, skin and formation damage concepts and Arps decline curve analysis.

How is the well portfolio optimisation plan used at work?

You take back a field plan your asset leadership can approve, with well groups, actions, surveillance routines and an intervention sequence for the coming budget cycle.

How does oil and gas production engineering differ from reservoir management programmes?

It focuses on wells, completions, lift and surface constraints that limit daily output, rather than reservoir description and long-term recovery strategy.