COURSE BROCHURE

Production Optimization and Well Performance Analysis

An advanced course that equips production engineers to diagnose underperforming wells with nodal analysis, select artificial lift and stimulation remedies, and rank production gain opportunities by value.

Code	HT-OGE-122
Category	Oil & Gas, Engineering & Maintenance
Duration	1 week
Level	Advanced

Introduction

In mature fields the cheapest incremental barrels usually come from existing wells rather than new drilling, provided the team knows exactly where pressure is being lost between the reservoir and the wellhead. As water cuts rise and reservoir pressures decline, structured well performance analysis becomes the backbone of any production maintenance program.

Objectives

- Build IPR curves for oil and gas wells using the Vogel, Fetkovich and composite methods
- Calculate pressure losses in tubing and chokes with multiphase flow correlations
- Apply nodal analysis to find the operating point and test the effect of tubing size or wellhead pressure changes
- Diagnose the causes of low production from well tests, decline curves and diagnostic plots
- Compare artificial lift and stimulation options and rank them economically

Who should attend

- Production engineers and production technologists
- Reservoir and field surveillance engineers
- Artificial lift and well intervention engineers
- Production operations supervisors in mature fields

Skills you will develop

- Nodal analysis of the production system
- Data-based well problem diagnosis
- Artificial lift optimization
- Screening and ranking of production gain opportunities

Learning Outcomes

- Set up a nodal model for a well and match it to actual test data
- Calculate the critical unloading velocity for a gas well and judge whether it needs remedial action
- Identify the optimum injection rate for a well from its gas lift performance curve
- Draft a ranked list of optimization opportunities for a group of wells with expected gain and cost for each

Course Outline

Day 1: Reservoir Inflow Performance

- Darcy's law, the productivity index and its limits below bubble point pressure
- Vogel, Fetkovich and composite IPR curves, and gas well deliverability equations
- Skin factor and its components: formation damage, perforation and partial penetration

Day 2: Tubing Performance and Nodal Analysis

- Multiphase flow correlations: Hagedorn-Brown, Beggs-Brill and Duns-Ros
- VLP curves and surface choke performance with the Gilbert equation
- Nodal analysis at bottomhole and wellhead, with sensitivities on tubing size and water cut

Day 3: Diagnosing Underperforming Wells

- Matching the model to well tests and flowing gradient surveys to locate the pressure loss
- Arps decline curves and Chan plots to distinguish water coning from channeling
- Liquid loading in gas wells and the Turner critical velocity

Day 4: Artificial Lift Selection and Optimization

- Lift method screening by rate, depth, gas-liquid ratio and sand production
- Gas lift: valve spacing, the performance curve and allocation of lift gas between wells
- Electric submersible pumps: pump curve, recommended operating range and reading ammeter charts

Day 5: Stimulation and Field-Level Optimization

- Candidate selection for matrix acidizing and hydraulic fracturing and estimating the expected gain
- Gathering network back pressure and periodic well performance reviews
- Applied workshop in which each team runs a nodal analysis of an underperforming well and presents recommendations ranked by economic value

Training methodology

Step-by-step construction of IPR and VLP curves in Excel
Case studies of underperforming wells from mature fields
Exercises on pressure gradient curves and gas lift performance curves
Closing workshop where optimization recommendations are presented and challenged

Certification

Participants receive a Harbor Training Center certificate of attendance on completing the course.

Upcoming dates

City	Dates	Language	Fee
Istanbul	22 – 26 February 2027	AR-EN	EUR 5,400
Dubai	1 – 5 March 2027	AR-EN	EUR 4,800
London	8 – 12 March 2027	AR-EN	EUR 5,800
Amsterdam	15 – 19 March 2027	AR-EN	EUR 6,100
Online	22 – 26 March 2027	AR-EN	EUR 2,800
Istanbul	23 – 27 August 2027	AR-EN	EUR 5,400
Dubai	6 – 10 September 2027	AR-EN	EUR 4,800
London	13 – 17 September 2027	AR-EN	EUR 5,800
Amsterdam	20 – 24 September 2027	AR-EN	EUR 6,100
Online	27 September 2027 – 1 October 2027	AR-EN	EUR 2,800

Fees are per participant.

Contact us

Email info@harbor4training.com

Address istanbul Turkey

To register and for details, scan the code or visit:

https://harbor4training.com/en/courses/production-optimization-well-performance