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Course Name

Advanced Artificial Lift and Optimization Skills

Sector Name
Oil, Gas and Chemical

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Advanced Artificial Lift and Optimization Skills

Course Introduction

This course covers the selection, design, diagnosis and troubleshooting of the major artificial lift methods (primarily ESPs and gas lift, although others will be considered) for both conventional and unconventional reservoirs. You will gain an appreciation of the key concepts involved in the analysis of artificial lift methods for challenging environments and a practical understanding of trend analysis and pattern recognition to solve operational problems. Well modelling software (Prosper) will be used by the instructor to illustrate design and troubleshooting techniques and applications with real field examples.

This course ensures that fundamental concepts of artificial lift systems are well explained and clearly understood before progressing to the application of these concepts in difficult or complex well conditions. A clear and logical workflow will be explained so that diagnosis and troubleshooting becomes easy. This technique means that participants have a solid foundation to build a deep understanding of artificial lift systems and the confidence to apply the principles learned in challenging situations.

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Target Audience

- ✓ Petroleum Engineers specializing in Production Engineering
- ✓ Production Managers and Supervisors in the Oil and Gas Industry
- ✓ Field Operations Engineers and Technicians
- ✓ Artificial Lift Specialists and Consultants
- ✓ Reservoir Engineers involved in Production Optimization
- ✓ Professionals in Well Management and Optimization Services
- ✓ Researchers and Academics in Petroleum Engineering and related fields.

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Learning Objectives

- ✓ Artificial lift methods, concepts of operation, and equipment
- ✓ Selection criteria for challenging well conditions
- ✓ How to perform design procedures for artificial lift wells
- ✓ How to recognise the correct data required for well analysis
- ✓ Diagnosing and troubleshooting artificial lift well performance following a logical workflow
- ✓ Optimizing the artificial lift system for production and long-term reliability

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Course Outline

✓ 01 Day One

Recap of well and reservoir performance (fluid properties, outflow, and inflow performance)

- ✓ Use of pressure gradient plots for artificial lift well design and diagnosis
- ✓ Review of artificial lift systems components and physics of operation
- ✓ Special considerations for the application of artificial lift to unconventional reservoirs
- ✓ Design, diagnosis, and practical troubleshooting techniques for start-up and operation
- ✓ Workshop sessions and tutorials covering building and matching of well models
- ✓ Reservoir performance: wellbore and reservoir performance overview
- ✓ Pressure loss in the wellbore
- ✓ Well productivity
- ✓ Concepts of productivity index
- ✓ Inflow and outflow relationships
- ✓ Formation damage

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Course Outline

✓ 02 Day Two

Well production problems: asphaltenes, waxes, hydrates, inorganic, scale formation, corrosion

- ✓ Formation damage causes and prevention techniques
- ✓ Impact of changing well conditions and need for artificial lift
- ✓ Overview of artificial lift technology: sucker rod pump design, hydraulic pump design, jet pump, gas lift, ESP
- ✓ Application of artificial lift technology and its limitations
- ✓ Artificial lift screening methods
- ✓ Damage prevention
- ✓ Evaluation of damage, production performance, and pressure analysis review
- ✓ Damage removal: two basic acidizing treatments and acidizing materials, and methods
- ✓ Damage removal by chemical solvents
- ✓ Acid type and concentration
- ✓ Evaluation of acid treatments
- ✓ Impact of changing well conditions and need for artificial lift
- ✓ Overview of artificial lift technology: sucker rod pump design, hydraulic pump design, jet pump, gas lift, Electric Submersible Pump (ESP)
- ✓ Application of artificial lift technology and its limitations
- ✓ Artificial lift screening methods

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Course Outline

✓ 03 Day Three

Formation damage

- ✓ Well production problems: asphaltenes, waxes, hydrates, inorganic, scale formation, corrosion
- ✓ Drilling-induced formation damage
- ✓ Damage mechanisms - how are sandstones and carbonates damaged, how do formation mineralogy and clay chemistry influence damage, what about scale, paraffin, etc.
- ✓ Formation damage causes
- ✓ Concept, limitations, and advantages of the sucker rod pumping system
- ✓ Design and components of the sucker rod pump
- ✓ Troubleshooting of the sucker rod pump systems
- ✓ Concept and types of the gas lift system
- ✓ Design and components of the gas lift system
- ✓ Limitations and advantages of the gas lift system

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Course Outline

✓ 04 Day Four

Concept, equipment, and accessories of the ESP system

- ✓ ESP design: pump performance curves, pump intake curves, typical problems, installation, troubleshooting; best practices for installation and maintenance;
- ✓ Steps to correctly size an electric submersible pump (ESP) system. basic sizing principles for the pump, motor, and cable
- ✓ Importance of correctly matching well productivity to pump performance
- ✓ Use of data to diagnose well/equipment problems
- ✓ Limitations and advantages of the ESP system
- ✓ Concept, limitations, and advantages of the hydraulic pumps

Concept, equipment, and accessories of the ESP system (Continuation)

- ✓ Concept, limitations, and advantages of the jet pumping
- ✓ Concept, limitations, and advantages of the PCP pumps
- ✓ Operating conditions of the hydraulic, jet, and PCP pumps
- ✓ Best practices for installation and maintenance of the artificial lift techniques
- ✓ Criteria for selection of artificial lift systems and artificial lift screening methods

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Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
April 19, 2027	April 22, 2027	4 days	4250.00 $	UAE , Dubai
Aug. 16, 2027	Aug. 19, 2027	4 days	4950.00 $	Malaysia , Kuala Lumpur
Nov. 30, 2026	Dec. 3, 2026	4 days	4250.00 $	UAE , Abu Dhabi
Jan. 17, 2027	Jan. 20, 2027	4 days	4250.00 $	KSA , Riyadh

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