

TRAINING TITLE

ARTIFICIAL LIFT SYSTEMS

Training Duration

5 days

Training Venue and Dates

Ref. No. ME109	Artificial Lift Systems	5	13-17 Jan. 2025	\$5,500	Abu Dhabi, UAE
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In any of the 4 or 5-star hotels. The exact venue will be informed later.

Training Fees

- \$5,500 per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Lunch

Training Certificate

Define Management Consultants Certificate of course completion will be issued to all attendees.

TRAINING OVERVIEW

TRAINING DESCRIPTION

Artificial lift is a collection of methods employed in the oil and gas sector to increase the flow of hydrocarbons from a well to the surface when the natural pressure in the reservoir is insufficient. It utilizes mechanical or electrical systems to elevate the extracted fluids, like oil or gas, from the wellbore to the surface.

Understanding artificial lift methods allows engineers and personnel to optimize oil and gas wells production. They can analyze well conditions, identify the most suitable artificial lift method, and implement effective strategies for hydrocarbon flow. Strong fundamentals of artificial lift methods can also expand their expertise, making them valuable assets to their organizations. The knowledge gained can lead to career advancement opportunities and the ability to take on more complex projects and responsibilities.

TRAINING OBJECTIVES:

After completing the training, the employee will:

- Principles behind artificial lift systems

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- Make basic PVT properties and inflow performance (IPR) calculations related to artificial lift (PROSPER)
- Understand and apply multiphase tubing and pipe flow principles
- Select the appropriate artificial lift system
- Compare various artificial lift systems-determine which one is most economically feasible
- Specify components and auxiliary equipment needed for each system. Design system features that allow for gassy production, production with solids, viscous production, and for other harsh environments
- Know what best practices are available to extend the life of equipment and installed lift systems
- Apply basic design and analysis concepts

WHO SHOULD ATTEND?

This course is ideal for senior management members and managers overseeing PVT studies, practicing reservoir engineers, researchers specializing in phase behavior, miscible displacement, and compositional complex black-oil reservoir simulation, as well as process or chemical engineers. It is also suited for petroleum engineering students, legal consultants, and advisors responsible for project evaluation, professionals in the petroleum industry aspiring to become PVT studies experts, and anyone interested in becoming certified as a PVT studies expert.

TRAINING METHODOLOGY

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions, and motivate everybody find the right answers. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course.

All presentations are made in excellent colourful power point. Very useful Course Materials will be given.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Group Work & Practical Exercises

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- 20% Videos & General Discussions

COURSE PROGRAM

Day-1 -Module 1: Oil Field Production System, including:

- Oil origin and Geology
- Well-drilling and completion types
- Surface production facilities
- Reservoir recovery methods

Module 2: Reservoir Performance IPR & VLP

- Wellbore and reservoir performance overview
- Pressure losses in the system
- Well Productivity
- Concepts of productivity index
- IPR & VLP
- Nodal System Analysis

Day-2 -Module 3: Why & When Artificial Lift is Required?

- Well-production problems
- Formation damage
- Formation damage causes and prevention techniques
- The change in the reservoir conditions and impact on well performance
- When is the artificial lift recommended? Why? Which system?
- Overview of artificial lift technology: GL, SRP, HPs, ESP, PCP, Plunger system.
- Application of artificial lift technology and limitations
- Artificial lift screening methods
- Basis for selection of artificial lift system

Module 4: Gas Lift (GL)

- Introduction
- Components and Operation concept
- Design
- Lifting capability compared to other artificial lift methods
- Case Study: Understanding & improving gas lift compressor,

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- Gas lift optimization and Gas lift well performance prediction

Day-3- Module 5: Sucker Rod Pump (SRP)

- Concept, types, limitations, and advantages
- Design, components, and operations
- Limitations and advantages
- Main equipment parts
- Production system operations by SRP
- Lifting capability compared to other artificial lift methods
- Production Optimization
- Design Sucker Rod Pump
- Factors affecting the movement of the rod
- Lifting capability compared to other artificial lift methods
- Importance of correctly matching well productivity to pump performance
- Use of data to diagnose well/equipment problems
- SRP Troubleshooting
- Case Study: Pump stroke optimization and Sucker rod failure analysis

Module 6: Progressive Cavity Pump (PCP)

- Concept, types, limitations, and advantages
- Design, components, and operations
- Limitations and advantages
- Main equipment parts
- Production system operations by PCP
- Lifting capability compared to other artificial lift methods
- Elastomer
- Design
- Lifting capability compared to other artificial lift methods
- Importance of correctly matching well productivity to pump performance
- Use of data to diagnose well/equipment problems
- PCP troubleshooting
- Case Study: Rotor failure analysis and Pump performance

Day-4 - Module 7: Electric Submersible Pump (ESP)

- Concept, types, limitations, and advantages
- Design, components, and operations

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- Limitations and advantages
- Main equipment parts
- Production system operations by ESP
- Lifting capability compared to other artificial lift methods
- Basics of ESP calculations
- ESP Construction
- Pump Selection
- Applications in the Field
- Importance of correctly matching well productivity to pump performance
- Use of data to diagnose well/equipment problems
- ESP Troubleshooting
- Case Study: Pump failure analysis, Y-tool system & reservoir surveillance, Power saving with permanent magnet motor, and Change in contract strategy save millions

Module 8: Hydraulic Pump (HP)

- Surface Equipment components and Operation concept
- Types of Pump Units
- Pump Sizing
- Pump selection
- Lifting capability compared to other artificial lift methods
- Importance of correctly matching well productivity to pump performance
- Use of data to diagnose well/equipment problems
- Pumps Troubleshooting
- Case Study

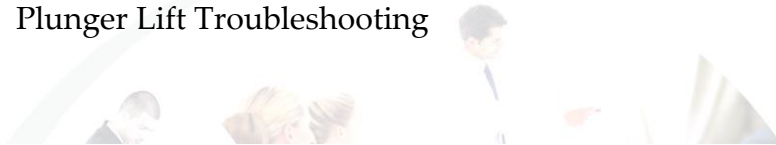
Module 9: Jet Pump (JP)

- Introduction
- Components and Operation concept
- Gas issue
- Nozzle & Throat sizing
- Jet pump calculations
- Pump performance graph
- Lifting capability compared to other artificial lift methods
- Importance of correctly matching well productivity to pump performance
- Use of data to diagnose well/equipment problems
- Jet pump troubleshooting
- Case Study: Flow analysis inside the jet pump and Pump failure analysis

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Day-5 -Module 10: Plunger System

- Introduction
- Components and Operation Concept
- Conventional and Continuous Plunger Lift
- Lifting capability compared to other artificial lift methods
- Drawdown and IPRs for Plunger Lift
- Importance of correctly matching well productivity to system performance
- Use of data to diagnose well/equipment problems
- Plunger Lift Troubleshooting



NOTE:

Pre & Post Tests will be conducted.

Case Studies, Individual and group Exercises, Project works (making into groups), Role plays, Group Discussions, Last Reviews, and assessments will be carried out.



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