



Oil, Gas and Chemical

Electrical Submersible Pump :Design, Installation, Commissioning

Course Introduction

ESPs have advantages over some of the other artificial lift methods because they can generate a higher formation drawdown and achieve a higher rate. However, their performance is impacted by gas interference and formation sand production, both of which have to be addressed when setting ESPs in production wells.

This course will familiarize the user with the ESP system and its optimum application. All components will be described in detail. The course uses computer software for numerous design and analysis class problems. Some films will be shown to illustrate installation, operation, and removal of failed equipment, new products, and best practices. Discussion is encouraged concerning experiences of successes and failures. Comparisons are made to other lift methods to help facilitate the optimum method selection.

Target Audience

- Process design
- Unit Operator
- Environmental
- Process safety engineer
- Gasoline blender engineer
- Lab supervisor
- Supply chain engineer
- Distillates analyst
- Models engineer
- Chemical Operator
- Chemical Plant Operator
- Chemical Process Technician
- Control Room Supervisor
- Gas Plant Process Operator
- Gas Production Operator
- Gas Terminal Operations and Storage
- Gathering Pipeline engineer

- Oil Terminal / Storage engineer
- Pipeline Maintenance / Equipment / Compliance / Repair
- Pipeline Testing / Technician / Supervisor / Safety
- Plant Equipment Operator
- Plant Operations Technician
- Plant Shutdown
- Plant Supervisor
- Power Distribution
- Power Plant Manager
- Process Supervisor
- Refinery Operations Technician / Manager
- Terminal Operator / Manager
- Utilities Operator

Learning Objectives

- Optimize well productivity using ESP systems
- Identify the function of each component of the ESP system, and to select optional components and add-ons
- Design and analyze a system using computer software
- Apply best practices to extend system life
- Optimize system power efficiency
- Manage gas, solids, corrosion, and viscosity associated with produced fluids
- Determine if an ESP system is the optimum artificial lift system for a given producer
- Monitor system performance using the different types of sensors available
- Run ESP system troubleshooting.

Course Outline

- 01 Day One

Well Completion / Artificial Method Selection

- Introduction for Reservoir and Production Considerations
- Well Completion types, design & accessories
- Artificial lift systems comparison and selecting criteria

• 02 Day Two

ESP Onshore / Offshore Design, Installation (Rig-less) & Application

- ESP Equipment, Operation and Installation
- Description of all components of the electrical submersible system starting at the surface to the pump, transformers, controllers/VSD, wellhead, tubing cable, cable guards, motor lead cable, pump, intake/gas separator, equalizer/protector, motor and instrumentation
- Design of an ESP system to fit current and future well conditions,
- Operation of a given design
- Analysis of an ESP system using diagnostics from installed instrumentation and using diagnostic computer programs
- Removal of failed equipment
- Teardown analysis of failed equipment and RCFA considerations,
- Controls for ESP systems including variable speed drives, ESP instrumentation available in the industry

• 03 Day Three

Pump Construction

- Compression Pumps
- Floater Pumps

• 04 Day Four

Downhole Packer

- Quantum Packer
- Quantum Packer Setting Mechanism

Downhole Packer

- Quantum Packer
- Quantum Packer Setting Mechanism

• 05 Day Five

Isolation Valve

- MFIV setting Procedure

- MFIV/Quantum Packer Completion Table
- Running MFIV Shifting Tool
- ESP Production Packer

• 06 Day six

ESP Run-In-Hole Procedure

- Typical Completion Table
- Typical Completion Schematic

• 07 Day Seven

Operational Considerations

- Importance of data keeping
- Maintenance and monitoring
- Installation considerations and cautions
- Analysis of an ESP system using diagnostics from installed instrumentation and using diagnostic

• 08 Day Eight

New Pump Innovations

- Cross Flow
- ESP – TCP – Y-tool
- Hybrid ESP – Gas Lift Application
- Recirculation System
- Intelligent Completion Combined with ESP System

• 09 Day Nine

Failure Analysis & Root Causes

- Pump Performance and Troubleshooting
- Motor Pump Performance at Different Speed Frequencies
- Amp. Charts, and Failure Analysis and Troubleshooting.
- Amp. Chart Interpretation:
- Normal
- Power fluctuations or spikes
- Gas lock

• 10 Day Ten

Erratic current

- Under-load heavy kill fluid
- Pump off with gas interference

- Failed restart and False start
- Excessive cycling
- Fuzzy
- Free gas in pump
- Under current load
- Overload
- Pump handling solids and debris
- Emulsion surface loads...etc.
- Failure analysis, Data keeping, Maintenance and monitoring.
- Case Histories

Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
May 26, 2025	June 6, 2025	10 days	8950.00 \$	UAE - Dubai
July 7, 2025	July 18, 2025	10 days	11950.00 \$	Austria - Vienna
Oct. 13, 2025	Oct. 24, 2025	10 days	8950.00 \$	UAE - Dubai
Feb. 9, 2025	Feb. 20, 2025	10 days	8950.00 \$	KSA - Riyadh
Dec. 30, 2024	Jan. 10, 2025	10 days	8950.00 \$	UAE - Dubai