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Course Name

Electrical Submersible Pump :Design, Installation, Commissioning

Sector Name
Oil, Gas and Chemical

Document Type
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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.

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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

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Learning Objectives

- ✓ Optimize well productivity using ESP systems
- ✓ Identify the function of each component of the ESP system, and 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.

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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

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Course Outline

✓ 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, and ESP instrumentation available in the industry

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Course Outline

✓ 03 Day Three

Pump Construction

- ✓ Compression Pumps
- ✓ Floater Pumps

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Course Outline

✓ 04 Day Four

Downhole Packer

- ✓ Quantum Packer
- ✓ Quantum Packer Setting Mechanism

Downhole Packer

- ✓ Quantum Packer
- ✓ Quantum Packer Setting Mechanism

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Course Outline

✓ 05 Day Five

Isolation Valve

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

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Course Outline

✓ **06 Day six**

ESP Run-In-Hole Procedure

- ✓ Typical Completion Table
- ✓ Typical Completion Schematic

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Course Outline

✓ 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

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Course Outline

✓ 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

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Course Outline

✓ 09 Day Nine

Failure Analysis & Root Causes

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

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Course Outline

✓ 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 at the pump
- ✓ Under the current load
- ✓ Overload
- ✓ Pump handling solids and debris
- ✓ Emulsion surface loads…etc.
- ✓ Failure analysis, Data keeping, Maintenance, and monitoring.
- ✓ Case Histories

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Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
June 14, 2027	June 25, 2027	10 days	8950.00 $	UAE , Dubai
July 19, 2027	July 30, 2027	10 days	11950.00 $	Austria , Vienna
Jan. 4, 2027	Jan. 15, 2027	10 days	8950.00 $	UAE , Dubai
March 14, 2027	March 25, 2027	10 days	8950.00 $	KSA , Jeddah

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