Artificial Lift

ESP & Lift-System Optimization PRD046

Course Description

The course will help the participant to perform their work properly in artificial lift operations, focusing on both ESP and sucker rod pump systems, covering design, optimization, and troubleshooting. It includes the use of equipment, performance evaluation, and analysis of associated systems with well operations.

Course Goal

To enhance the participants' knowledge, skills, and attitudes necessary to understand artificial-lift methods, including system optimization and troubleshooting of ESP and related lift systems.

Course Objectives

By the end of this course, participant will be able to:

- Evaluate the current production system of a well for efficiency.
- Recognize and correct problems with equipment and operating procedures.
- Design the most effective system for a producing well.
- Learn about electrical submersible pumps and sucker rod pumps lift system applications, design, installation, optimization & troubleshooting.

Who should attend

- Supervisors.
- Production engineers.
- S. Operators.
- Operators.

Course Duration

5 Working Days

Course Outlines

1. Introduction to Artificial Lift
    - Overview of lift systems.
    - Importance of optimization in artificial lift.
    - Troubleshooting principles.

2. Production System Analysis

- Well and reservoir inflow performance.
- Vertical and outflow performance.
- Multiphase flow and pressure drop.
- Deliverability vs injection depth.
- Effect of water cut and wellhead pressure.

3. Artificial Lift Methods

- Overview of lift techniques: ESP, Gas Lift, Sucker Rod.
- Selection criteria for lift systems.
- Comparative performance and limitations.

4. Electrical Submersible Pumps (ESP)

- Operating principles and performance curves.
- Surface and subsurface equipment overview.
- Optimization techniques for ESP.
- Troubleshooting ESP system issues.
- Advantages and limitations.

5. Sucker Rod Pumping Systems

- Operating characteristics and performance.
- Components: Mandrels, Running and Pulling tools.
- System design and installation.
- Troubleshooting and optimization.

6. System Performance and Well Modelling

- Conducting well tests for performance analysis.
- Using well simulation software (PROSPER).
- Optimizing lift performance through modeling.
- Diagnosing and solving gas lift issues.
- Designing new gas lift installations.
- Full cycle: Performance evaluation and troubleshooting