Submersible Electric Pumps

SEP installation, operation, maintenance, and selection

Introduction

Submersible Electric Pumps (SEPs) are employed in the majority of oil production activities worldwide. All ESP-related subjects are covered in detail in this training course, including foundational information, equipment selection, installation, commissioning, operation monitoring, control, and maintenance.

Additionally, by a thorough explanation of each component and an analysis of the design aspects, this Course N Carry training course will acquaint the user with the SEP system and its operation.

The participants will be informed about the latest advancements in the SEP sector through the presentation and discussion of recent advances in SEP technology.

Objectives

After completing this training session on electric submersible pumps, participants will be able to:

- Discover the many SEP system kinds and their particular uses.
- Recognise the parts and apparatus that are utilised with SEP.
- Recognise the advancements in SEP pump technology.
- Choosing the appropriate SEP s for a certain purpose.
- Perform computations for SEP performance.
- Enumerate the benefits and drawbacks of the different SEP drive systems.
- Describe the power supply needs for installations of SEP.
- Upkeep and diagnostics for SEP systems

Training Methodology

Interactive practical activities and presentations will be a part of the training process. A few chosen videos will be shown, together with an explanation from the instructor and feedback from the delegates. Along with discussions of the case studies, activities will involve basic mathematics relating to SEP selection and size exercises. Participants are expected to actively engage in connecting their areas of expertise to the subjects that

interest them.

Enough time will be provided for group discussions centred on the subject matter and the instructor's personal expertise in the field both during and after each session.

Comprehensive instruction on the topics included in the seminar outline will be provided, and the lecturer will use a range of tried-and-true adult learning teaching and facilitation strategies.

Organizational impacts

By bringing its staff members up to date on the latest technological advancements in the industry and improving their foundational knowledge, the organisation gains by sending them to this specific Course N Carry training course.

As a result, they will be able to actively take part in improving the organization's equipment for increased productivity and performance.

The following are just a few of the many things the participants will learn and become proficient in:

- Identification of equipment
- Analysis of equipment design features
- Calculations of equipment performance
- Safe equipment operation, supervision, and maintenance
- The knowledge and practice abilities that the delegates have acquired can be put to use in the workplace, which will benefit the individual companies.

Personal Imapct

Upon completion of this Course N Carry training programme, the trainee will:

- Improve their foundational understanding of ESP
- Keep up with the latest SEP technology to update their fundamental understanding.
- Utilise the knowledge they have acquired at work.
- Have faith in their ability to handle new technologies and equipment
- Show commitment to their company by using equipment in a safe and appropriate manner.
- Feel content with the anticipated advancement in their career

Who should attend?

This Submersible Electric Pumps training course is designed to give professionals who are actually involved in the selection, installation, operation, and maintenance of SEP a practical and in-depth understanding.

Though a wide range of professionals can benefit from this training, the following will be especially noted:

- Experts in Design and Maintenance
- Mechanical, chemical, and petroleum engineers
- Technicians and Field Operators in Electrical Engineering
- Engineers and Staff for Maintenance

Course Outline

Day 1

The Principles and Uses of SEP

- Historical Overview of SEP Definitions and Foundational Terms
- Overview of SEP Systems and SEPs
- Obstacles in SEP Applications
- Pump design, electric motor, wiring and connections, motor control, and related components are requirements for mainstream SEPs.
- Many types of SEP (conveyed SEP, dual and triple, booster SEP, tubing, inverted/bottom intake, inverted/bottom discharge, etc.)
- SEP application (difficulties, on- and off-shore, multiphase, viscous, emulsion, applications with abrasive impurities, high temperature and high applications, corrosive compounds)

Day 2

Equipment and Technology for SEP Pumps When SEP Evolving is used Enhancing Pump

- Design with SEP Pump Technology
- Monitoring from below
- Surface Management
- Increasing the Application Space
- Enhancing Well Performance: SEP Download Sensor-Used Components and Equipment (Vibration of the equipment, internal motor temperature, download flow rate, pump intake and discharge pressures)
- Anti-preset, high-boost, lock-out, and anti-drag SEP packs
- SEP Well Heads (high and low pressure)
- Concentrator
- Drain and examine the tubing (including the drain valves).
- Recirculation and Motor Shroud Systems
- Filters and Screens
- Y-tool versus By-pass

Day 3

Calculating SEP System Performance and Equipment Sizing

- Essential Needs Based on ESP Well Production Capacity
- Volume and Composition of the Fluid, Including the Free Gas Volume and Dynamic Head Calculation
- Pump type, motor type, and size optimisation; downhole cable configuration and sizing; drive systems, power supply, and accessory optimisation
- Variable Speed Drive: prerequisites, benefits, and drawbacks
- SEP Performance Estimates

Day 4

SEP Installation, Monitoring, Control, and Protection

- Sensors and Downhole Monitoring
- Integrated Fibre Optic Cable for Sensors and Downhole Monitoring
- ESEPSP Motors: Earthed (Grounded) and Unearthed (Ungrounded)
- Lightning Propagation and Earthing in SEP Circuits
- Equipment for Electrical Protection in SEPs
- SEP Management System (SCADA/EMS) for Both Local and Remote Installations
- Security and Shut-Down Mechanisms

Day 5

Commissioning, Running, and Upkeep

- Commissioning Conditions
- Procedures for Commissioning
- Consistently Safe Performance
- Operation Monitoring: (identifying anomalous circumstances)
- Cable reels, reel supports, cable guides, well work-over rigs, and service equipment are all included in SEP maintenance management.
- Fixing SEP issues
- Examples of SEP malfunctions and issues
- Factory Maintenance and Rebuilding
- Synopsis and Conversation