ELECTRICAL SUBMERSIBLE PUMPS – ADVANCED ESP DESIGN AND TROUBLESHOOTING ENVIRONMENTAL PROTECTION

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TRAINING TITLE

ELECTRICAL SUBMERSIBLE PUMPS - ADVANCED ESP DESIGN AND TROUBLESHOOTING ENVIRONMENTAL PROTECTION

VENUE

Dubai, UAE

DURATION

5 Days

DATES

22 - 26 December 2019

PRICE

US$4,000 per attendee including training material/handouts, morning/afternoon coffee breaks and Lunch buffet.

TRAINING INTRODUCTION

The Electric Submersible Pump System (ESP) is considered an effective and economical means of lifting large volume of fluids from great depths under a variety of well conditions. Over the years, the ESP companies, in conjunction with the major oil companies, have gained considerable experience in producing high viscosity fluids, gassy wells, high temperature wells, etc. With this experience and improved technology, wells that were once considered non-feasible for submersibles are now being pumped economically. This course is designed to provide recommendations for designing ESP systems for special applications including gassy wells, production of fluids with solids, viscous oil, dual completions, Ytool applications, shrouded motors, production through the annular, high temperature and recirculation. Pump curves (Head vs. Flow rate) for several pump speeds are generated in class as an exercise.

TRAINING OBJECTIVES

Provide in depth knowledge of the advantages and limitations of the Electric Submersible Pumps used in aggressive environment applications. Participants will learn well optimization and troubleshooting.

TRAINING AUDIENCE

Production Engineers, technologists, people who are involved in Production Optimization. Specifically people who want to gain more knowledge about ESP

TRAINING OUTLINE

- Introduction to artificial lift and electrical submersible pumping
- Introduction for reservoir and production considerations
- 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; instrumentation
- Installation considerations and cautions
- 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
- Controls for ESP systems including variable speed drives
- ESP instrumentation available in the industry
- Failure analysis
- Data keeping
- Maintenance and monitoring

DAILY OUTLINE

Day 1

Review of Reservoir Performance

Productivity Index – Darcy Exercise

Vogel Exercise

Centrifugal Pump Curve Development

Applications 3.1 Standard 3.1 Non-Standard

Equipment Selection - Exercise

Day 2

Affinity Laws & Nodal Analysis 4.1. Exercise

Amperimetric Charts

Design of High Gas Application - Exercise

Day 3

ESP Design for Highly Deviated Wells

Viscous Fluids and Emulsion Application

Production of Abrasive Fluids

Day 4

New Technologies

CrossFlow

ESP – TCP – Ytool

Hybrid ESP – Gas Lift Application

Recirculation System

Day 5

Troubleshooting

Evaluation of Specific Cases Using Appropriate Software (DesignPro, Prosper, SubPump, etc.)

Equipment Handling

Introduction to ESP Failure Analysis

TRAINING OUTCOME

By end the training participants will have an in depth knowledge of the advantages and limitations of the Electric Submersible Pumps used in aggressive environment applications. Participants will learn well optimization and troubleshooting.

TRAINING CERTIFICATE

MAESTRO CONSULTANTS Certificate of Completion for delegates who attend and complete the training course

METHODOLOGY

Our courses are highly interactive, typically taking a case study approach that we have found to be an effective method of fostering discussions and transferring knowledge. Participants will learn by active participation during the program through the use of individual exercises, questionnaires, team exercises, training videos and

discussions of “real life” issues in their organizations. The material has been designed to enable delegates to apply all of the material with immediate effect back in the workplace.