



Artificial Lift Training

Course Objective: The course provides an overview of Artificial Lift system . The course covers the selection, design and diagnosis of the major artificial lift systems. The effectiveness for NODAL systems analysis for lifting performance optimization is demonstrated. It also covers the detailed designing, applications ,operational aspects of SRP,ESP,PCP & Gas lift. Workshop format with presentations, discussions and hands-on exercises.

Course Pre-requisites: This will be the Intermediate Level Training for Completion, Process and Production Engineers. The participants should have basic knowledge of production & completion engineering (Artificial Lift Systems)

Course Language: English

Course Duration : 45 Hours

Resources Provided:

- Case studies & Assignments
- Q & A Clearing Sessions



Lead Instructor

Vinnavadi C Babu Sivakumar
Principal Consultant ,GOTS
Production Technologist (40+ Exp)



Previous experience with companies like

- ONGC, India (Onshore and Offshore fields)
- QP, Qatar (Offshore Gas Field)
- Bahrain Petroleum Company

Course Outline

Nodal Analysis and Artificial lift selection (12 Hours)

- **Basic of Nodal** Analysis (IPR-VLP; Darcy's Law, Skin models, IPR models ,Tubing performance and correlations, Multiphase flow pressure and Temp drop)
- **PVT**(Basic PVT properties , PVT correlations ,PVT calculations)
- **Selection of Artificial Lift** (Basics of Each Artificial Lift, Basic designing of (SRP, PCP, ESP), Designing of Gas LiFT , Selection of AL on basis of well data)
- **Artificial Lift Equipment** (ESP,PCP, Gas Lift, SRP)
- **Miscellaneous** (CT Rod pump, For Abrasive condition, For Sour conditions ,Economics and Cost)

Sucker Rod Pump Designing (10 Hours)

- **Downhole Reservoir** (Basic mechanism, Downhole pump type, Designing the pump)
- **Each Component** (Surface System, Prime Mover, Sucker Rods, Pumping System)
- **Dynamometer**(Forces & calculations ,Dynamometer, Concept of Dynamometer, Other diagnostics)
- **Operational Details & Best Practices** (Installation, Troubleshooting, Running & Diagnostics ,Miscellaneous downhole equipment)

Electrical Submersible Pump Designing (8 Hours)

- **Downhole Reservoir** (Basics of pumps, Designing and Selection , Calculations of TDH, Pump sizing & performance curves)
- **Components** (Motors and Protectors ,Surface Equipment ,Gas and Sand Handling - viscosity & corrosion related fluids ,Pumping System)
- **Installation & Operation** (Data diagnostics ,Installation - Run-in, Splicing, etc. ,Operation - Surface and Long term, MTBF ,Other diagnostics and type)

Progressive Cavity Pump (5 Hours)

- **Fundamentals**(Pump Basics and Types of Pumps ,Pump calculations)
- **Each Component** (Downhole Pumps, Surface System ,Elastomers ,Pump Diagnostics)
- **Operational** (Operational Installation)

Gas Lift (10 Hours)

- **Introduction** (Gas Lift Basics and Principles, Well Model, The Unloading Process, Gas Lift)
- **Gas Lift Equipment's** (Details of GL Equipment - their installation and operation, Gas Lift Design)
- **Gas Lift Valves** (Types of GL Valves, Operating principles of GL valves, Calibration of Gas Lift Valves)
- **GL Operations** (Unloading of Well on GL,GL Optimization and Troubleshooting, Field Gas Distribution and Optimization)
- **Exercise (Final quiz for Certification)**