SUBSURFACE PRODUCTION OPERATIONS AND ARTIFICIAL LIFT TECHNOLOGIES



GENTEX®
TRAINING CENTER

GENTEX Training Center LLC | Orlando - FL, USA
Info@gentextraining.com

Introduction

Subsurface production operations form the backbone of efficient oil and gas extraction. These operations deal with everything that happens below the surfacewhere hydrocarbons move from the reservoir to the wellbore and eventually to the surface facilities. A clear understanding of these processes is essential for maximizing recovery, improving well productivity, and reducing operational risks.

This five-day professional training offered by Gentex Training Center provides participants with a strong foundation in subsurface production and artificial lift systems. The course focuses on how production engineers can analyze inflow and outflow performance, identify formation damage, and select the most suitable artificial lift method. It offers real-world insights that help engineers and field professionals design, operate, and optimize oil wells in various reservoir conditions.

Participants will explore both theoretical and practical aspects of well performance, stimulation, and artificial lift technologies. From understanding the reservoirs natural drive mechanisms to using modern lifting techniques like ESP, gas lift, and PCP systems, the course covers all critical stages of production enhancement. Each module builds on practical examples, interactive discussions, and problem-solving exercises to ensure a solid learning experience.

Subsurface Production Operations and Artificial Lift Technologies Course Objectives

- Apply and gain in-depth knowledge on subsurface production operations.
- Discuss the inflow and outflow performances.
- Make analysis and evaluation of formation damage and its effect on production performance.
- Improve the technical background about formation damage in terms of causes, prevention, and finding remedies and solutions.

- Describe perforation methods, formation damage, matrix acidizing, and hydraulic fracturing.
- Apply and gain proper techniques on artificial lift systems and optimization technology.
- Discuss gas lift systems, ESP systems, sucker rod pumping, jet pumps, hydraulic pumps, and progressive cavity pumps.
- Discuss criteria for artificial lift system selection and artificial lift screening methods.
- Select the appropriate artificial lift system.
- Compare systems to determine what system is most economically feasible.
- Specify components and auxiliary equipment needed for each system.
- Classify best practices available to extend the life of the equipment and installed lift systems.
- Design system features that allow for gassy production, production with solids, viscous production, and for other harsh environments.

Course Methodology

The course combines lectures, interactive discussions, and practical examples from field operations. Participants will review case studies, work on group exercises, and apply problem-solving techniques to real-life challenges in production optimization and artificial lift design.

Who Should Take This Course

- Petroleum engineers and production engineers
- Field and operations supervisors
- Reservoir engineers and completion engineers
- Well services and maintenance specialists
- Anyone involved in production optimization and well performance

LEARN BOLD. **LEAD BEYOND**
GENTEX Training Center LLC | Orlando - FL, USA
Info@gentextraining.com

Subsurface Production Operations and Artificial Lift Technologies Course Outlines

Day 1 : Reservoir Performance: Inflow and Outflow Relationships

- Reservoir Performance: Wellbore and Reservoir Performance Overview
- Pressure Loss in the Wellbore
- Well Productivity Concepts
- Productivity Index Fundamentals
- Inflow and Outflow Relationships

Day 2 : Formation Damage

- Formation Damage Overview
- Well Production Problems: Asphaltenes, Waxes, Hydrates, Inorganic Scale, Corrosion
- Drilling-Induced Formation Damage
- Damage Mechanisms How Sandstones and Carbonates are Damaged
- Influence of Mineralogy and Clay Chemistry
- Formation Damage Causes and Prevention
- Damage from Completion and Workover Fluids
- Damage during Perforating and Cementing
- Fines Migration, Swelling Clays, and Injection Well Damage
- Formation Damage from Paraffins, Asphaltenes, Emulsions, Condensate Banking, Gas Breakout, Water Blocks, Wettability Alteration, and Bacterial Plugging

GENTEX® TRAINING CENTER

Day 3 : Stimulation Operations and Artificial Lift Needs

- Damage Prevention Strategies
- Production Performance and Pressure Analysis Review
- Damage Removal: Acidizing Treatments and Chemical Solvents
- Acid Types, Concentration, and Evaluation
- Changing Well Conditions and the Need for Artificial Lift
- Overview of Artificial Lift Technology: Sucker Rod Pump, Hydraulic Pump, Jet Pump, Gas Lift, and ESP
- Applications and Limitations
- Artificial Lift Screening Methods

Day 4 : Sucker Rod Pumping and Gas Lift Systems

- Sucker Rod Pump Concepts, Components, Design, and Troubleshooting
- Limitations and Advantages
- Gas Lift Concept and System Components
- Continuous and Intermittent Gas Lift
- Mandrels and Valves, Temperature and Choke Effects
- Valve Spacing and Continuous Flow Design
- Injection Gas Requirements
- Advantages and Limitations of Gas Lift Systems

Day 5 : ESP, Hydraulic, Jet, and PCP Systems

- Electric Submersible Pump (ESP) System: Concept, Design, Performance Curves
- Equipment, Installation, and Troubleshooting

- Sizing Pumps, Motors, and Cables
- Matching Well Productivity with Pump Performance
- Diagnosing Well/Equipment Problems
- Hydraulic and Jet Pump Concepts
- Progressive Cavity Pump (PCP) Design, Applications, and Maintenance
- Selection Criteria for Artificial Lift Systems and Screening Methods

Conclusion

By successfully completing this program with Gentex Training Center, participants will gain comprehensive knowledge of subsurface production processes and artificial lift technologies. They will be able to analyze reservoir behavior, prevent and solve formation damage, and select appropriate lift systems to optimize well performance. This deep understanding supports better decision-making, cost efficiency, and improved field productivity across the production lifecycle.

FAQs

Q1 What is the "Subsurface Production Operations and Artificial Lift Technologies" course about?

The course provides practical knowledge of subsurface production operations, well performance, formation damage, stimulation, and artificial lift technologies. It covers inflow and outflow relationships and systems such as sucker rod pumps, gas lift, ESP, hydraulic pumps, jet pumps, and PCP.

Q2 What are the key benefits of the "Subsurface Production Operations and Artificial Lift Technologies" course?

The course helps participants analyze well and reservoir performance, identify formation damage, evaluate production problems, and select suitable artificial lift systems. It also develops practical understanding of stimulation methods, equipment troubleshooting, and optimization techniques that support improved well productivity and cost-efficient production.

Q3 What skills will I gain from the "Subsurface Production Operations and Artificial Lift Technologies" course?

Participants develop skills in subsurface production analysis, formation damage evaluation, artificial lift system selection, and well performance optimization. They also learn to evaluate inflow and outflow performance, identify production problems, compare lifting systems, and apply appropriate technologies under different well conditions.

Q4 What tools, methods, or standards are covered in the "Subsurface Production Operations and Artificial Lift Technologies" course?

The course covers inflow and outflow relationships, productivity index analysis, formation damage evaluation, acidizing and chemical solvent treatments, artificial lift screening methods, and pump performance curves. It also examines sucker rod pumps, gas lift, ESP, hydraulic and jet pumps, and progressive cavity pumps.

GENTEX Training Center LLC | Orlando - FL, USA
Info@gentextraining.com

Q5 How is the "Subsurface Production Operations and Artificial Lift Technologies" course applied in real-world practice?

The course applies production engineering concepts through field-based examples, case studies, group exercises, and problem-solving activities. Participants evaluate formation damage, analyze well performance, troubleshoot lifting equipment, and compare artificial lift options to select systems suited to productivity, solids, gas, viscosity, and harsh operating conditions.