COURSE OVERVIEW DE0373
Plunger Lift System
(E-Learning Module)

Course Title
Plunger Lift System (E-Learning Module)

Course Reference
DE0373

Course Format & Compatibility
SCORM 1.2. Compatible with IE11, MS-Edge, Google Chrome, Windows, Linux, Unix, Android, IOS, iPadOS, macOS, iPhone, iPad & HarmonyOS (Huawei)

Course Duration
30 online contact hours
(3.0 CEUs/30 PDHs)

Course Description

This E-Learning course is designed to provide participants with a detailed and up-to-date overview of plunger lift system. It covers the plunger lift monitoring and plunger lift system application considerations; the plunger lift well requirements, applications and benefits; the installation and operation considerations; the tubing fluid height and volume, sufficient volume and pressure, casing pressure required, critical flow rate and standard cubic foot; the plunger lift systems in gas wells; the economic and environmental benefits; the decision process; the revenue from increased production, revenue from avoided emissions, avoided costs and additional benefits; and the alternate technique for calculating avoided emissions when replacing blowdowns.

During this course, participants will learn the artificial lift technology, field and oil production phases, modes of artificial lift, selection parameters and artificial lift methods; the reciprocating rod lift systems, progressing cavity pumping systems, gas lift systems, plunger lift systems, hydraulic lift systems and electric submersible pumping systems; the wellsite optimization equipment, lift system selection approach, artificial lift selection and project scope; the selection and elimination process, systems analysis, final selection, follow-up analysis and artificial lift methods; the various types of artificial lift methods including selection parameters, sucker rod pump, SRP application considerations and gas lift; and the hydraulic jet pumping, progressive cavity pumping, reciprocating pumps, effect of viscosity, piston/plunger pump, diaphragm pump and pump efficiency.

Course Objectives

Upon the successful completion of this course, participants will be able to:-

- Apply and gain an in-depth knowledge on plunger lift system
- Recognize plunger lift system and carryout plunger lift monitoring and plunger lift system application considerations
- Identify plunger lift well requirements, applications and benefits as well as apply installation and operation considerations
- Discuss tubing fluid height and volume, sufficient volume and pressure, casing pressure required, critical flow rate and standard cubic foot
- Install plunger lift systems in gas wells and discuss the economic and environmental benefits
- Apply decision process and identify the revenue from increased production, revenue from avoided emissions, avoided costs and additional benefits
- Estimate incremental production for declining wells and apply alternate technique for calculating avoided emissions when replacing blowdowns
- Recognize artificial lift technology, field and oil production phases, modes of artificial lift, selection parameters and artificial lift methods
- Determine reciprocating rod lift systems, progressing cavity pumping systems, gas lift systems, plunger lift systems, hydraulic lift systems and electric submersible pumping systems including its advantages, limitations and application considerations
- Identify wellsite optimization equipment and employ lift system selection approach, artificial lift selection and project scope
- Illustrate selection and elimination process, systems analysis, final selection, follow-up analysis and artificial lift methods
- Recognize the various types of artificial lift methods including selection parameters, sucker rod pump, SRP application considerations and gas lift
- Describe hydraulic jet pumping, progressive cavity pumping, reciprocating pumps, effect of viscosity, piston/plunger pump, diaphragm pump and pump efficiency

Who Should Attend

This course provides an overview of all significant aspects and considerations of plunger lift system for petroleum engineers, production engineers, reservoir engineers and field supervisors.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course.

Certificate Accreditations

Certificates are accredited by the following international accreditation organizations: -

- USA International Association for Continuing Education and Training (IACET)

  Haward Technology is an Authorized Training Provider by the International Association for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 1-2013 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 1-2013 Standard**.

  Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Association for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

  Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

- British Accreditation Council (BAC)

  Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

Course Fee

As per proposal

Training Methodology

This Trainee-centered course includes the following training methodologies:-

- Talking presentation Slides (ppt with audio)
- Simulation & Animation
- Exercises
- Videos
- Case Studies
- Gamification (learning through games)
- Quizzes, Pre-test & Post-test

Every section/module of the course ends up with a Quiz which must be passed by the trainee in order to move to the next section/module. A Post-test at the end of the course must be passed in order to get the online accredited certificate.

Course Contents

- Plunger Lift System
- Meaning of Plunger Lift
- Plunger Lift Monitoring
- Plunger Lift System Application Considerations
- Quiz – 1
- Quiz – 2
- Quiz – 3
- Introduction to Plunger Lift
- Quiz – 4
- How Does Plunger Lift Work
- Why Is Artificial Lift Required
- Quiz – 5
- Quiz – 6
- Quiz – 7
- Plunger Lift Well Requirements
- Is Liquid in the Tubing?
- Quiz – 8
- Quiz – 9

- Is Gas Volume Sufficient?
- Quiz – 10
- Quiz – 11
- Plunger Lift Well Requirements
- Applications and Benefits
- Installation and Operation Considerations
- Installation Considerations
- Operation Considerations
- Safety
- Addendum
- Tubing Fluid Height and Volume
- Quiz – 12
- Quiz – 13
- Sufficient Volume and Pressure
- Casing Pressure Required
- Critical Flow Rate
- Standard Cubic Foot
- Installing Plunger Lift Systems in Gas Wells
- Economic and Environmental Benefits
- Decision Process
- Step 1: Determine the Technical Feasibility of a Plunger Lift Installation
- Step 2: Determine the Cost of a Plunger Lift System
- Step 3: Estimate the Savings of a Plunger Lift
- Revenue from Increased Production
- Revenue from Avoided Emissions
- Avoided Costs and Additional Benefits
- Step 4: Evaluate the Plunger Lift's Economics.
- Case Studies
- BP (formerly Amoco) Midland Farm Field
- Costs and Benefits
- Increased Gas Production and Revenue
- Analysis

- ExxonMobil Big Piney Field
- Installation Tips
- Lessons Learned
- References
- Appendix
- Estimating Incremental Production for Declining Wells
- Alternate Technique for Calculating Avoided Emissions when Replacing Blowdowns
- Artificial Lift Technology
- Field Production Phases
- Oil Field Production Phases
- Producing the Well
- Modes of Artificial Lift
- Selection Parameters
- Artificial Lift Methods
- Artificial-lift in Assam Asset
- Reciprocating Rod Lift Systems
- Reciprocating Rod Lift System Advantages
- Reciprocating Rod Lift System Limitations
- Rod Lift System Application Considerations
- Progressing Cavity Pumping Systems
- Progressing Cavity Pumping System Advantages
- Progressing Cavity Pumping System Limitations
- Progressing Cavity System Application Considerations
- Gas Lift Systems
- Gas Lift System Advantages
- Gas Lift System Limitations
- Gas Lift System Application Considerations
- Plunger Lift Systems
- Plunger Lift System Advantages
- Plunger Lift System Limitations
- Plunger Lift System Application Considerations
- Hydraulic Lift Systems

- Hydraulic Jet Lift System Advantages
- Hydraulic Jet Lift System Limitations
- Hydraulic Jet Lift Application Considerations
- Electric Submersible Pumping Systems
- Electric Submersible Pumping System Advantages
- Electric Submersible Pumping System Limitations
- Electric Submersible Systems Application Considerations
- Wellsite Optimization Equipment
- Lift System Selection – How to Approach
- Artificial Lift Selection
- Project Scope
- Selection Process
- Elimination Process
- Systems Analysis
- Final Selection
- Follow-Up Analysis
- Artificial Lift Methods
- Introduction
- Types of Artificial Lift Methods
- Selection Parameters
- Quiz – 14
- Quiz – 15
- Sucker Rod Pump
- Introduction
- Advantages of Sucker Rod Pump
- Limitations of Sucker Rod Pump
- SRP Application Considerations
- Gas Lift
- Quiz – 16
- Basic Equipment
- Quiz – 17
- Advantages of Gas Lift

- Limitation of Gas Lift
- Gas Lift Application Considerations
- Electrical Submersible Pump
- Advantages of ESP
- Limitations of ESP
- ESP Application Considerations
- Hydraulic Jet Pumping
- Introduction
- Advantages of Hydraulic Jet Pumping
- Limitation of Hydraulic Jet Pumping
- Hydraulic Jet Pumping Application Considerations
- Plunger Lift
- Principle
- Advantages of Plunger Lift
- Limitations of Plunger Lift
- Plunger Lift Application Considerations
- Progressive Cavity Pumping
- Introduction
- Advantages of Progressive Cavity Pumping
- Limitations of Progressive Cavity Pumping
- Progressive Cavity Pumping Application Considerations
- Reciprocating Pumps
- Family tree
- Operating principle
- Working
- characteristics
- Effect of viscosity
- Piston/Plunger Pump
- Diaphragm Pump
- Working of diaphragm pump
- Pumping power
- Pump efficiency

- Application
- comparison
- Reciprocating pump
- Main components
- Working of Reciprocating Pump
- Classification of Reciprocating pumps
- Discharge through a Reciprocating Pump
- Slip
- Negative slip
- Power Input
- Problem-1
- Problem-2
- Troubleshooting Plunger Lift Wells