

Artificial Lift Methods

Enhance your Knowledge and understanding of Artificial Lift Methods From The Expert !
Course Level : Basic - Intermediate

27th November - 01st December 2023 at Kuala Lumpur, Malaysia



Petrosync Distinguished Instructor

Magdi El Naggar

Managing Director

Oil Fields Global Consultants (OFGC)

- ▶ Officially Certified as Professional Petroleum Engineering Consultant (License 116/7)
- ▶ Technical Advisor for several companies in the Middle & Far Easts, Africa and Gulf countries
- ▶ 46 years of professional experience in various phases of Petroleum/Reservoir/Production/Drilling & Workover Engineering and field operations with several multi-national international companies including ARAMCO (Saudi Arabia) and ADCO (UAE).
- ▶ Professional in all phases of well intervention operations utilizing coiled tubing and well control as well as extended reach operations.

A lot of
Practical Things,
Case Studies
and Exercises!

Course Objectives

- ▶ Understand the fundamentals & production performance of various artificial lift methodologies.
- ▶ Increase awareness and knowledge of artificial lift methodologies and factors affecting optimal designs and operations, including fluid properties and multiphase flow regimes.
- ▶ Overview of lift techniques, technologies, and equipment also covers alternate deployment scenarios and multisensory applications for surveillance and optimization.
- ▶ Possess the basic skills required to select and size artificial lift systems
- ▶ Be able to select suitable artificial lift system, plan its operation, monitor and analyze its performance.
- ▶ Learn strategies and best practices for field production optimization
- ▶ Apply techniques to maximize oil production economically with artificial lift systems
- ▶ Make basic PVT properties and inflow performance calculations related to artificial lift
- ▶ Select the appropriate artificial lift system by examining the drawdown potential of each method, the initial and operating expense and the range of production and depth possible with each method as well as special problems such as sand/scale/deviation etc.
- ▶ Design and operate system features for each method under harsh condition

HYBRID TRAINING SOLUTIONS

FOCUS TRAINING • REDUCE COST • ENHANCED RESULTS

Over the years, there has been a growing demand for hybrid training programs. It is an excellent option to maximize your training dollar for your specific training needs. We make it possible to run a training program that is customized totally to your training needs at a fraction of an in-house budget!

If you like to know more about this excellent program, please contact us on +65 3159 0800 or email general@petrosync.com

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Course Overview

This course is designed to introduce an overview of various artificial lift solutions and related production optimization concepts as well as the reservoir life cycle. After introducing the need for an artificial lift system, training will include various lift methods such as: Gas lift, Reciprocating Rod Lift, Progressive Cavity Pumping (PCP), Hydraulic Pumping (HP), Electrical Submersible Pumping (ESP), Plunger and Capillary System, etc. For each lift type, the course covers main components, application envelope, relative strength and weakness points. The course will further include discussion sessions wherein trainees would discuss their challenges and plans for lift systems with view to understand applicability of the concepts learned during the training.

Who Should Attend?

- ▶ Production Engineers with 0-10 Years Experience
- ▶ Field operations Engineers with 0-10 Years Experience
- ▶ Operators with 0-10 Years Experience
- ▶ Geoscientists with 0-10 Years Experience
- ▶ Reservoir Engineers with 0-10 Years Experience
- ▶ Petroleum Engineers with 0-10 Years Experience

Training Methods

The course is based on a balanced combination of classroom teaching and syndicate exercises supported by case studies and exercises. It is designed based on leading industry knowledge and practical case studies discussions and analysis to provide an interactive learning environment. The course further includes practical video clips as visual aids to further develop easier approach for understanding the technical information. During the course, in addition to the group discussions and exercises quizzes are conducted on daily basis to keep the information live, however, evaluation of the learning process will be concluded throughout conducting pre & post course tests at the start and end of the course session.

PROGRAM SCHEDULE

| | |
|---------------|---------------------------|
| 08:00 | Registration (Day1) |
| 08:10 - 10:00 | Session I |
| 10:00 - 10:15 | 1 st Tea Break |
| 10:15 - 12:30 | Session II |
| 12:30 - 13:30 | Lunch Break |
| 13:30 - 15:00 | Session III |
| 15:00 - 15:15 | 2 nd Tea Break |
| 15:15 - 16:00 | Session IV |
| 16:00 | End of Day |

**Schedule may vary for each training*

IN-HOUSE SOLUTIONS

SAVE COST • IMPROVE PERFORMANCE • REDUCE RISK

PetroSync understands that in current economic climate, getting an excellent return on your training investment is critical for all our clients. This excellent training can be conducted exclusively for your organization. The training can be tailored to meet your specific needs at your preferred location and time. We will meet you anywhere around the globe.

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Course Agenda

Day 1

Pre-course Test

Module 1: Oil Field Production System, including:

- Oil origin and Geology
- Well drilling and completion types
- Surface production facilities
- Reservoir recovery methods
 - ▶ Reservoir life cycle and phase change concept
 - ▶ Natural depletion (production) system
 - ▶ Artificial lift production systems

Module 2: Reservoir Performance IPR & OPR

- Wellbore and reservoir performance overview
- Pressure losses in the system
- Well productivity
- Concepts of productivity index
- IPR & OPR
- Nodal System Analysis

Day 2

Quizzes & Recap

Module 3: Why & When Artificial Lift is Required?

- Well production problems
- Formation damage
- Formation damage causes and prevention techniques
- The change in the reservoir conditions and impact on well performance
- When artificial lift is recommended? Why? Which system?
- Overview of artificial lift technology: GL, SRP, HPs, ESP, PCP, Plunger system & Capillary system.
- Application of artificial lift technology and limitations
- Artificial lift screening methods
- Basis for selection of artificial lift system

Module 4: Gas Lift (GL)

- Introduction
- Components and Operation concept
- Elastomer
- Design
- Lifting capability compared to other artificial lift methods
- PCP troubleshooting

Case Study:

Understanding & improving gas lift compressor

Gas lift optimization

Gas lift well performance prediction

Day 3

Quizzes & Recap

Module 5: Sucker Rod Pump (SRP)

- Concept, types, limitations and advantages
- Design, components and operations
- Limitation and advantages
- Main equipment parts
- Production system operations by SRP
- Lifting capability compared to other artificial lift methods
- Intake Pump Curve
- Production Optimization
- Design Sucker Rod Pump
- Factors affecting the movement of the rod

- Lifting capability compared to other artificial lift methods
- Importance of correctly matching well productivity to pump performance
- Use of data to diagnose well/equipment problems
- SRP Troubleshooting

Case Study:

Pump stroke optimization

Sucker rod failure analysis

Module 6: Progressive Cavity Pump (PCP)

- Concept, types, limitations and advantages
- Design, components and operations
- Limitation and advantages
- Main equipment parts
- Production system operations by PCP
- Lifting capability compared to other artificial lift methods
- Elastomer
- Design
- Lifting capability compared to other artificial lift methods
- Importance of correctly matching well productivity to pump performance
- Use of data to diagnose well/equipment problems
- PCP troubleshooting

Case Study:

Rotor failure analysis

Pump performance

Day 4

Quizzes & Recap

Module 7: Electric Submersible Pump (ESP)

- Concept, types, limitations and advantages
- Design, components and operations
- Limitation and advantages
- Main equipment parts
- Production system operations by ESP
- Lifting capability compared to other artificial lift methods
- Basics of ESP calculations
- ESP Construction
- Pump Selection
- Applications in the Field
- Importance of correctly matching well productivity to pump performance
- Use of data to diagnose well/equipment problems
- ESP Troubleshooting

Case Study:

Pump failure analysis

Y-tool system & reservoir surveillance

Power saving with permanent magnet motor

Change in contract strategy save millions

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Module 8: Hydraulic Pump (HP)

- Surface Equipment components and Operation concept
 - Types of Pump Units
 - Pump Sizing
 - Pump selection
 - Lifting capability compared to other artificial lift methods
 - Importance of correctly matching well productivity to pump performance
 - Use of data to diagnose well/equipment problems
 - ESP Troubleshooting
 - Pumps Troubleshooting
- Case Study

Module 9: Jet Pump (JP)

- Introduction
 - Components and Operation concept
 - Gas issue
 - Nozzle & Throat sizing
 - Jet pump calculations
 - Pump performance graph
 - Lifting capability compared to other artificial lift methods
 - Importance of correctly matching well productivity to pump performance
 - Use of data to diagnose well/equipment problems
 - ESP Troubleshooting
 - Jet pump troubleshooting
- Case Study:
Flow analysis inside the jet pump
Pump failure analysis

Day 5

Quizzes & Recap

Module 10: Plunger System

- Introduction
 - Components and Operation concept
 - Conventional and Continuous Plunger Lift
 - Lifting capability compared to other artificial lift methods
 - Drawdown and IPRs for Plunger Lift
 - Importance of correctly matching well productivity to system performance
 - Use of data to diagnose well/equipment problems
 - ESP Troubleshooting
 - Plunger Lift Troubleshooting
- Case Study:
Impact of the well deviation angle on system performance

Module 11: Capillary System

- Introduction
 - Components and Operation concept
 - Lifting capabilities and performance
 - Applications in the field
 - Importance of correctly matching well productivity to system performance
 - Use of data to diagnose well/equipment problems
 - ESP Troubleshooting
 - Troubleshooting
- Q & A and exercises
Post-course Test

WHY YOU SHOULD ATTEND PETROSYNC'S EVENTS

To ensure that all objectives of the course matches yours, all PetroSync programs are developed after intensive and extensive research within the industry

PetroSync programs focus on your immediate working issues to ensure that you are able to apply and deliver immediate results in real work situations

Application and implementation of industry knowledge and experience are the drivers for our course design, not theoretical academic lectures

PetroSync training focuses on practical interactive learning tools and techniques including case studies, group discussions, scenarios, simulations, practical exercises and knowledge assessments during the course. Invest a small amount of your time to prepare before attending the course to ensure maximum learning

PetroSync follows a rigorous selection process to ensure that all expert trainers have first-hand, up-to-date and practical knowledge and are leaders of their respective industrial discipline

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He has 46 years of professional experience in various phases of Petroleum Engineering including Petroleum/Reservoir/ Production /Drilling & Workover Engineering as well as field operations with several multi-national international companies including ARAMCO (Saudi Arabia) and ADNOC (UAE).

He has extensive professional experiences in all phases of well intervention operations including coiled tubing, especially during well emergency cases, well control and extended reach operations.

He specialized in well intervention operations, especially, during emergency cases and well blowouts. He also has extensive experiences in full field development studies, Production Enhancement for oil fields as well as various types of wells, CO₂ Injection and EOR operations, IWCF & IADC certification.

Publications

- ▶ Coiled tubing Operations Standard Procedures
- ▶ Production Engineering Operations Standard Procedures
- ▶ Recently, completed a total of 3,000 research papers in various topics of O & G industry since 2014.

Partial Client List

- | | |
|-----------------------------------|-------------------------|
| ▶ SHELL | ▶ OGS (Egypt) |
| ▶ TOTAL (Indonesia) | ▶ APEX (Dubai) |
| ▶ Schlumberger (Iraq) | ▶ Petromentor (China) |
| ▶ EXXON - ARAMCO | ▶ CNPCIC (China) |
| ▶ ADCO | ▶ Oman Gas |
| ▶ Murphy | ▶ Oman Petrogas |
| ▶ Sapura (Malaysia) | ▶ Sohar Aluminum (Oman) |
| ▶ Arabian Gulf | ▶ Petrofac |
| ▶ GUPCO (Egypt) | ▶ OXY (Oman) |
| ▶ ARAMCO | ▶ Talisman |
| ▶ Osterreichische Mineralol (OMV) | |

Petrosync Quality

Limited Attendees

The course has limited seats to ensure maximum learning and experience for all delegates.

Certificate of Attendance

You will receive a Certificate of Attendance bearing the signatures of the Trainer upon successful completion of the course. This certificate is proof of your continuing professional development.

Interactive Training

You will be attending training designed to share both the latest knowledge and practical experience through interactive sessions. This will provide you with a deeper and more long-term understanding of your current issues.

Soft copy Course Materials

Soft copy course material will be provided and will be an invaluable source of reference for you and your colleagues afterward. You can follow course progress on your laptop with soft copies provided.

COURSE DETAILS

Title : Artificial Lift Methods
Date : 27th November - 01st December 2023
Location : Kuala Lumpur, Malaysia

INVESTMENT PACKAGES

Please checklist the package that you are attending!

| Artificial Lift Methods SCHEDULE | LOCATION | PRICE |
|---|------------------------|-----------|
| <input type="checkbox"/> 27 th November - 01 st December 2023 | Kuala Lumpur, Malaysia | USD 4,195 |

* All prices are subject to change without notice and are not guaranteed, except that prices for an order that have been accepted by PetroSync is not subject to change after acceptance

* Price is nett excluding Withholding Tax if any and will be quoted separately. Please send us the withholding tax payment receipt.

DELEGATE DETAILS

1st Delegate Name _____ Mr Mrs Ms Dr Others

Direct Line Number: _____ Email: _____

Mobile Number: _____ Job Title: _____

Department: _____ Head of Department: _____

2nd Delegate Name _____ Mr Mrs Ms Dr Others

Direct Line Number: _____ Email: _____

Mobile Number: _____ Job Title: _____

Department: _____ Head of Department: _____

3rd Delegate Name _____ Mr Mrs Ms Dr Others

Direct Line Number: _____ Email: _____

Mobile Number: _____ Job Title: _____

Department: _____ Head of Department: _____

4th Delegate Name _____ Mr Mrs Ms Dr Others

Direct Line Number: _____ Email: _____

Mobile Number: _____ Job Title: _____

Department: _____ Head of Department: _____

*Please fill all the details including mobile number. This help us to contact participant if they are late in class or if there is any urgent update (through whatsapp/call)

INVOICE DETAILS

Attention Invoice to: _____

Direct Line Number: _____ Fax: _____

Company: _____ Industry: _____

Address: _____ Postcode: _____

Country: _____ Email: _____

Please note:

- Indicate if you have already registered by Phone Fax Email Web

- If you have not received an acknowledgement before the training, please call us to confirm your booking.

PAYMENT METHODS

By Credit Card

By Direct Transfer : Please quote invoice number(s) on remittance advice

PetroSync Global Pte Ltd Bank details:

Account Name : PetroSync Global Pte Ltd

Bank Name : DBS Bank Ltd

Bank Code : 7171 • Bank Swift Code : DBSSSGSGXXX • Branch code : 288

Account No : 0288-002682-01-6-022 (USD)

Bank Address : 12 Marina Boulevard, Level 3, Marina Bay Financial Centre Tower 3, Singapore 018982

All bank charges to be borne by payer. Please ensure that PetroSync Global Pte Ltd receives the full invoiced amount.

COURSE CONFIRMATION

I agree to PetroSync's payment terms and cancellation policy.

Signature : _____

Date : _____

PAYMENT TERMS : Payment is due in full at the time of registration. Full payment is mandatory for event attendance.

PROGRAMME CONSULTANT

Name : Cay Aagen
Email : registration@petrosync.com
Phone : +65 3159 0800

TERMS AND CONDITIONS

DISCLAIMER

Please note that trainers and topics were confirmed at the time of publishing; however, PetroSync may necessitate substitutions, alterations or cancellations of the trainers or topics or location (classroom / Virtual). As such, PetroSync reserves the right to change or cancel any part of its published programme due to unforeseen circumstances. Any substitutions or alterations will be updated on our web page as soon as possible

DATA PROTECTION

The information you provide will be safeguarded by PetroSync that may be used to keep you informed of relevant products and services. As an international group we may transfer your data on a global basis for the purpose indicated above. If you do not want us to share your information with other reputable companies, please tick this box

CANCELLATION POLICY

Delegates who cancel after the training is officially confirmed run by email, are liable to pay the full course fee and no refunds will be granted. You may substitute delegates at any time as long as reasonable advance notice is given to PetroSync.

In the event that PetroSync cancels or postpones or change the trainer or change the training location (classroom / virtual) of an event for any reason and that the delegate is unable or unwilling to attend in on the rescheduled date, you will receive a credit voucher for 100% of the contract fee paid. You may use this credit voucher for another PetroSync to be mutually agreed with PetroSync, which must occur within a year from the date of postponement.

PetroSync is not responsible for any loss or damage as a result of the cancellation policy. PetroSync will assume no liability whatsoever in the event this event is cancelled, rescheduled or postponed due to any Act of God, fire, act of government or state, war, civil commotion, insurrection, embargo, industrial action, or any other reason beyond management control.

CERTIFICATE OF ATTENDANCE

80% attendance is required for PetroSync's Certificate of Attendance.

DETAILS

Please accept our apologies for mail or email that is incorrectly addressed.

Please email us at registration@petrosync.com and inform us of any incorrect details. We will amend them accordingly.

Find us on Social Media:

 PetroSync Global Pte Ltd

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CHARGES & FEE(S)

- For Payment by Direct Telegraphic Transfer, client has to bear both local and oversea bank charges.

- For credit card payment, there is additional 4% credit card processing fee.