

# Coiled Tubing Operation

Improve your Coiled Tubing Operations, Concept and Applications from the Expert!

Course Level : Basic - Intermediate

12<sup>th</sup> - 16<sup>th</sup> June 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 & concept of the coiled tubing unit
- ▶ Increase awareness and knowledge of the coiled tubing operations and factors affecting its performance.
- ▶ Acquire necessary knowledge of the coiled tubing operational techniques, technologies and equipment
- ▶ Understand alternate deployment scenarios and multisensory applications for surveillance and optimization.
- ▶ Possess the basic skills required to select and implement various coiled tubing techniques as per operational requirements.
- ▶ Be able to handle various coiled tubing emergency situations, plan its operations, monitor and analyze its performance.
- ▶ Learn strategies and best practices for coiled tubing operations optimization.
- ▶ Understand the geological and basic reservoir properties Understand the formation damage concept and mechanism.
- ▶ Understand the effect of formation damage on revenue of the operator.
- ▶ Understand the impact of skin damage effect on productivity for both vertical and horizontal wells.
- ▶ Gain knowledge about various types of wellbore treatments to remove formation damage.
- ▶ Acquire knowledge on how to select the best fluid (less damaging) at every phase of the well development: drilling, completion, cementing, perforating, stimulation, gravel packing, workover, production and injection operations.

## 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](mailto:general@petrosync.com)

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## Course Overview

This course is designed to introduce an overview of the coiled tubing operations concept and its applications in oil fields. It introduces variety of the coiled tubing technologies with special attention to the unit as surface equipment and downhole tools. The course also covers the main components, application envelope and coiled tubing special applications as well as the contingency plan for all possible situations which could be encountered throughout various operations. Moreover, the course provides better understanding, enhance knowledge and strengthen the decision-making capability of the participants about all types of wellbore treatments implemented to recover or enhance the well performance throughout presentations, case studies, group discussions and exercise as well as practical videos of actual cases.

## Who Should Attend?

- ▶ Production Engineers with 0-10 Years Experience
- ▶ Drilling Engineers with 0-10 Years Experience
- ▶ Petroleum Engineers with 0-10 Years Experience
- ▶ Coiled Tubing Operators with 0-10 Years Experience
- ▶ Operations Supervisors with 0-10 Years Experience
- ▶ Field Service Engineers with 0-10 Years Experience
- ▶ Field Operations Engineers with 0-10 Years Experience
- ▶ Reservoir Engineers with 0-10 Years Experience
- ▶ Coiled tubing Supervisors with 0-10 Years Experience
- ▶ Operations 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

09:00	Registration (Day1)
09:10 - 11:00	Session I
11:00 - 11:15	1 <sup>st</sup> Tea Break
11:15 - 13:30	Session II
13:30 - 14:30	Lunch Break
14:30 - 16:00	Session III
16:00 - 16:15	2 <sup>nd</sup> Tea Break
16:15 - 17:00	Session IV
17:00	End of Day

\*Schedule may vary for each training

## 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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## Course Agenda

### Day 1

#### Pre-course test

#### Module 1 : Well Completion Types

- Definition of well completion
- Well completion Classification
- X-masTree
- Wellhead
- Casings
- Liners
- Production Tubing String
- Packers
- Sub-Surface Control System (SC-SSSVs)
- Wellhead Control System
- Artificial lift completions (ESP, GL)
- RSmart Completions
- Impact of well completion selection on future well intervention operations in wells

#### Module 2 : Well Completion Operations

- Definition of well completion concept
- Perforation
  - ▶ Types
  - ▶ Guns
  - ▶ Bullets
  - ▶ Phasing
  - ▶ TCP
- Stimulation operations
  - ▶ Basics and concept
  - ▶ Candidates selection
  - ▶ Reservoir lithology & impact on stimulation methodology
- Hydraulic Fracturing

#### Module 3 : Well Intervention Operations

- Conventional :
  - ▶ Coiled Tubing Operations
    - Well kick-off operations
    - Stimulation
    - Scale Removal
    - Cement Squeeze
    - Fishing Operations
- Well killing & securing for well routine maintenance operations
  - ▶ Wireline (Slick, E-line)
  - ▶ Snubbing operations
  - ▶ Well Testing (PTS, MPFM)
- Non-Conventional
  - ▶ Well Control
  - ▶ Emergency
- Impact of well completion and well intervention operations

#### Module 4 : Introduction to the Coiled Tubing Unit

- Introduction
- Coiled tubing description
- Coiled tubing equipment design
- Coiled tubing applications
- Coiled tubing advantages
- Coiled tubing disadvantages
  - Group discussion & exercises

### Day 2

#### Quizzes & recap

#### Module 5 : Coiled Tubing Surface Equipment

- Depth meter
- Goose neck
- Injector head
- Coiled tubing reel
- Prime movers
- PowerPack
- Stripper (conventional, side door)
- BOP

#### Module 6 : Surface Equipment Handling & Testing Procedures

- Depth meter
- Injector head
- Reel
- Power pack
- Control cabin
- Pressure control equipment
- BOP
- Stripper (conventional, side door)
- RTMS
- Auxiliary surface equipment

#### Module 7 : Coiled Tubing Downhole Tools

- Standard threads
- Grapper connectors
- Connectors
- Check valves
- Nozzles & Jetting subs
- Swivel joint Release joints PRV Centralizers Accelerators Jars
- Overshots
- Spears
- Downhole Tractor

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## Module 8 : Pre-Job Safety Procedures

- General requirements
- General HSE aspects
- PTW
- TBM
- Coiled tubing well control drill

## Day 3

### Quizzes & recap

## Module 9 : High Pressure Coiled Tubing

## Module 10 : Coiled Tubing Applications

- Matrix treatment
- Logging operations (open hole, Cased hole)
- Drilling contingencies
- Squeeze cement
- Under reaming/milling
- Inflatable packers and bridge plugs
- Coiled tubing drilling
- Coiled tubing completion
- Well Kick-off
- Fill Cleaning
- Scale removal
- Well control/killing
- Excessive water/gas shut-off
- Fishing operations
- P&A
- Artificial lift
- Sands/non-cementitious materials placement

### Case Studies

Matrix treatment operations

Logging Operations

Cement Squeeze Operations

Mill & under-reaming operations

Fill Cleaning

Scale removal operations

Fishing operations of downhole lost tools

Well kick off & activation

Cement squeeze Operation

## Module 11 : Coiled Tubing Operation Procedure

- Pre-Job requirements
- Scaffolding
- Pre-job equipment requirements
- Coiled tubing rigging-up & function testing
- Treating line rigging-up & testing
- General running procedures
- Operational procedures:
  - ▶ Well Control/Killing
  - ▶ Well Kick-off
  - ▶ Nitrogen properties & uses
  - ▶ Fill cleaning
  - ▶ Scale removal

- ▶ Excessive water/gas shut-off
- ▶ P&A
- ▶ Well stimulation
- Production logging pressure deployment procedures
- Fishing operations
- Rigging down and HSE requirements
- Coiled tubing stability during mobilization

## Module 12 : Coiled Tubing Technical Data

- Definitions
- Coiled tubing operating limits
- Burst pressure
- Collapse pressure
- Coiled tubing ovality
- Fatigue and corrosion
- Stress and strain
- Forces affecting the coiled tubing performance
- Buckling
- Depth correction and stuck point calculations
- Helicallock-up
- Catastrophic buckling

## Day 4

### Quizzes & recap

## Module 13 : Coiled Tubing Contingency Procedures

## Module 14 : Coiled Tubing Operational Troubleshooting & Case History

## Module 15 : Coiled Tubing Maintenance

## Module 16: Reservoirs and Rock Properties

- Definition of Reservoir
- Reservoir Heterogeneities
- Reservoir Characteristics:
  - ▶ Porosity
  - ▶ Permeability
  - ▶ Relative Permeability
  - ▶ Saturation
  - ▶ Natural Fracturing
  - ▶ Pressures
  - ▶ Reservoir Pressure
  - ▶ Basic Pressure calculations
  - ▶ Pressure Differential
  - ▶ Well Temperature
  - ▶ Drilling Fluids
  - ▶ Completion Fluids

## Module 17 : Formation Damage

- Types of formation damage
- Classification of Formation damage by process
- Sources of formation damage
- Skin and impact on well productivity
- Formation damage laboratory tests (return permeability test, formation initiation pressure test, cake lift off test, etc.
- Formation damage from drilling mud/processes
- Formation damage from perforations

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- Formation damage from completion and Workover fluid
- Formation damage from oil and gas production activities
- Formation damage from scales
- Formation damage from organic deposits
- Formation damage from Wettability changes
- Formation damage from Acid stimulation
- Formation damage from Injection (water injection, CO2 injection, polymer flooding, steam flooding)

## Case Studies

Well productivity sudden decline and identifying proper treatment requirements

Production profile slope change & how to use the data in defining the problem

Utilizing production history graph to detect the damage

How to use PBU/PFO tests to identify the skin factor as indicator for formation damage.

Partial penetration and slanted skin effect

Impact of perforation skin factor

## Day 5

### Quizzes & recap

#### Module 18 : Stimulation of Sandstone Reservoir

- Why stimulating a Sandstone reservoir?
- Sandstone reservoir description- mineralogy
- Acid formulation and lab tests e.g., acid response curve, compatibility test, return permeability test, etc.
- How much overflush is required
- How to avoid fluoride precipitation in sandstone stimulation

Case study

#### Module 19 : Stimulation of Carbonate Reservoir

- Why stimulating a carbonate reservoir?
- Carbonate reservoir description - mineralogy
- Acid formulation and lab tests e.g., acid response curve, compatibility test, return permeability test, etc.
- What is the big deal about wormholes?
- How to ensure the best acid coverage? Open hole? Cased hole?
- Acid placement in heterogeneous reservoir? Use of diverting agents
- How to ensure the best zonal coverage?
- Practical guidelines on how to select and evaluate acid treatment

Case study

#### Module 20 : Sand Control Completion Overview

- Sand production problem
- What are the consequences of sand production?
- Sand Detection
  - ▶ Sand monitoring
  - ▶ Measuring Sand production
- Sand Prediction and Monitoring
  - ▶ What causes sand production?
  - ▶ Types of sand failure
  - ▶ How to predict sand production in new wells
  - ▶ How to predict sand failure during well production
- Sand Control Completion
  - ▶ Selective perforation method
  - ▶ Cased hole gravel pack
  - ▶ Frackpack
  - ▶ Perforating for sand control
  - ▶ Frac pack completion: success of a frac pack, frac pack limitations,
  - ▶ Frac pack fluids, frac pack installation and treatment procedure
  - ▶ Gravel pack | Frac pack evaluation
  - ▶ Sand Control field operations step

#### Case study

#### Pre-Course test

## 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.

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

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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                  |
| ▶ Schlumbergers (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) |                         |

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## COURSE DETAILS

Title : Coiled Tubing Operation  
Date : 12<sup>th</sup> - 16<sup>th</sup> June 2023  
Location : Kuala Lumpur, Malaysia

## INVESTMENT PACKAGES

Please checklist the package that you are attending!

Coiled Tubing Operation SCHEDULE	LOCATION	PRICE
<input type="checkbox"/> 12 <sup>th</sup> - 16 <sup>th</sup> June 2023	Kuala Lumpur, Malaysia	USD 2,995

\* 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 (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  
Fax : +65 6826 4322

## 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

 PetroSync

 PetroSync

## 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.