Specially Designed for

The course is designed for all employees who are associated with reservoir simulation such as reservoir engineer and petroleum engineers. Attendees are assumed to have a reasonably good understanding of terms and methods applied in reservoir simulation.

Practical Aspects of Reservoir Simulation

Optimize Your Reservoir Simulation By Learning Practical Aspects From The Expert!

13th October 2014 - 17th October 2014, Kuala Lumpur, Malaysia

Petrosync Distinguished Lecturer

Prof. Dr. Ahmed Aly
- Chairman and Technical Director, Technical Petroleum Services, Inc.
- Schlumberger - Scientific Advisor, Reservoir & Production Eng.
- Associate Professor, Petroleum Eng, American Univ. in Cairo
- Technical Member, SPE Reservoir Testing Technical Committee

Course Objectives

- Understand The Principles and Equations Involved in Reservoir Simulation
- Understand The Data Requirements For Conducting A Reservoir Simulation Study
- Understand Current Gridding Practice In Using Coarse And Finely Gridded Models To Incorporate Heterogeneity
- Understand The Simulation Study Approach Which Leads To A Quality Result
- Understand The Different Types Of Models Available
- Understand and practice History Matching techniques
- Understand the errors present in numerical simulators and how it impacts the results
- Understand the different types of Advanced simulation techniques (fractured reservoir simulation or streamline simulation and compositional simulation)
- Be Aware of the different tools, packages and recent software utilized in the conducting reservoir simulation studies

Specially Designed for

The course is designed for all employees who are associated with reservoir simulation such as reservoir engineer and petroleum engineers. Attendees are assumed to have a reasonably good understanding of terms and methods applied in reservoir simulation.
By completing the Practical Aspects of Reservoir Simulation Course, the attendees should learn how to:

- Apply the principles of reservoir engineering to numerical modeling
- Set up, run, and analyze the results for single well, pattern and full-field models
- Prepare fluid and rock property data in the manner required for simulation studies
- Identify and eliminate causes of numerical problems
- Perform a history match
- Use the matched model to predict future performance under a variety of assumptions

### Course Agenda

**DAY 1**

Overview of Reservoir simulation: Day 1 will cover the objectives and the benefits of using reservoir simulation in oil industry along with the different types of reservoir simulation and giving examples of the application commonly used. An explanation of the reservoir simulation process will be demonstrated with the steps needed to accomplish a complete reservoir study.

- Introduction
  - Course Objectives
  - Simulation Process
- Classical Analysis
- Reservoir Simulation Overview
- Overview of the Workflow
- Characterizing the Reservoir
- Benefits of Reservoir Simulation
- Formulation of Equations
- Linearization and Solution Process
- Minimum Data Requirements
- Well Calculations

**DAY 2**

Building the Dynamic Reservoir Model: Day 2 will address the different data used in building the reservoir model starting from the static model importing, passing through selecting and assigning the PVT/SCAL data and ending with assessment of the equilibrium regions. By the end of the day, the attendees will be able to estimate the OOIP figure and QC the saturation and pressure at the zero time (Initialization phase).

- Data Preparation
  - Introduction
  - Static Model
  - Conventional and special core analysis
  - Fluid Properties - PVT
- Initialization and OOIP Calculation
- Demonstration on the state of the Art software showing how to Build Dynamic Reservoir Model
- Case studies to show how the best practices to build dynamic models and the pitfalls that the Reservoir Engineers need to avoid
DAY 3

Dynamic Data & Run Control: Day 3 will cover all the aspects related to the dynamic data (representing wells, well types, production data, pressure data, and observed data, etc.). In addition, the day will cover what are the needed controls for the simulation runs and how the student will able to manage each control according to the nature of each different study.

- Incorporating the Dynamic Data
  - Well Data
    - Representing Wells in Simulation
    - Spacing of Wells in Simulation Grid
  - Production Controls
- Simulation Run control
  - Time steps
  - Run Time
  - Reporting frequency
  - Simulator control Data
- Diagnostic plots
- Demonstration on the state of the Art software showing how to; Incorporate Dynamic Data, to build data files, apply simulation run controls and how to do diagnostic plots to analyze the data
- Case studies to show how the best practices to show how to incorporate dynamic data and run controls

DAY 4

History Matching: Following completion of this section, the student will be able to plan and conduct a history match, use classical reservoir engineering tools to assist in the history matching process and decide when to use automatic history matching.

- Plan history match
- Prepare preliminary model
- Perform history match
- Monitor reservoir performance
- Automatic history matching and latest techniques
- Demonstration on the state of the Art software showing how to perform history matching using the different techniques available in the software including automatic history matching
- Case studies to show how the best practices to perform history matching and the pitfalls that the Reservoir Engineers need to avoid

DAY 5

Predicting Future Performance: Following completion of this section, the student will cover how to predict reservoir behavior, estimate performance in new reservoirs, optimize operating conditions and maximize economic gain.

- Objectives and limitations of future performance predictions
- Types of future performance predictions
- Data requirements for predicting future performance
- Transitioning from history to prediction
- Advanced methods of reservoir simulation
- Demonstration on the state of the Art software showing how to perform future predictions using the different techniques available in the software including smooth transition from history to prediction
- Case studies to show how the best practices to predict future performance and to show the results from several studies performed all around the world to emphasize using the right reservoir simulation techniques
Petrosync Lecturer
Prof. Dr. Ahmed Aly
Integrated Gas Reservoir Management Expert

Prof. Dr. Ahmed Aly has over 26 years of industry experience in the area of petroleum engineering projects & services in the Oil & Gas Industry. Since 2008 until now, Prof. Dr. Ahmed Aly is the:

- Chairman and Technical Director, Technical Petroleum Services, Inc.
- Schlumberger Scientific Advisor, Reservoir & Production Eng.
- Associate Professor, Petroleum Eng., American Univ. in Cairo

Most of Prof. Dr. Ahmed Aly’s experience is in leading a multi-disciplinary team for gas reservoir management, development planning, production optimization and improving recovery.

Prof. Dr. Ahmed Aly hold more than 30 publications. A lot of them are about integrated reservoir study with focus on Gas reservoir development.

Prof. Dr. Ahmed Aly conduct more than 50 Oil and Gas technical trainings.

**EXPERIENCED IN**

- Unconventional Gas (Tight Gas and Shale Gas) integrated field development projects & reservoir management
- Gas reservoir engineering and reservoir management
- Applied reservoir simulation
- Pressure transient testing and analysis
- Production data analysis & predictions
- Formation Evaluation Interpretation
- Reserve audit and economic evaluation

**MAJOR PROJECTS**

- Tight gas field development project using Horizontal wells
- Gas Condensate field development project using Hydraulic Fracture
- Mega Gas field development project using Multi-stage Hydraulic Fracture
- Gas field production optimization project
- Gas condensate waterflood development
- Gas field development project.
- Investment Bank Gas Asset field development Project.
- Advisor for Tight Gas development project (HPHT)

**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

**CLIENT LIST**

- Schlumberger
- BP Egypt
- PDO
- Oman Oil
- QP and Sahara Oil & Gas
- Ras Al Khaima (RAK) petroleum
- EGPC
- CCED
- PICO
- Apache Egypt
- EFG Hermes Investment Bank
INVESTMENT PACKAGES

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<tr>
<td>Standard Price</td>
<td>10th Oct 14</td>
<td>SGD $5,995</td>
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<tr>
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<td>12th Sep 14</td>
<td>SGD $5,795</td>
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<td>Group Discount (3 or more</td>
<td>10th Oct 14</td>
<td>10% discount for groups of 3 registering from the</td>
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*Group Discount is based on Standard Price*

*To enjoy the promotion & discount offer, payment must be made before deadline*

*For 7 or more delegates, please inquire for more attractive package.*

*Prices include lunches, refreshments and materials. Promotion & discount cannot be combined with other promotional offers.*

*Important: Please note that registration without payment will incur a SGD 200 administration fee.

DELEGATES DETAILS

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INVOICE DETAILS

Attention Invoice to:

Direct Line Number: Fax:

Company: Industry:

Address: Postcode:

Country: Email:

Please note:
- If you have already registered by Phone or Fax or Email or Web, please tick this box.
- If you have not received an acknowledgement before the training, please call us to confirm your booking.

PAYMENT METHODS

- By Credit Card: Visa □ MasterCard □ AMEX □ Security Code: Expiry Date:
- By Direct Transfer: Please quote invoice number(s) on remittance advice

PETROSYNC LLP Bank details:

- Account Name: PETROSYNC LLP
- Bank Number: 7144 - Branch Code: 013 - Account No: 13-1-005531-6
- Name of Correspondent Bank: Standard Chartered Bank, 6 Battery Road, Singapore 049909

SWIFT Code of Correspondent Bank: SCBLSGSGXXX

All bank charges to be borne by payer. Please ensure that PETROSYNC LLP receives the full invoiced amount.

Course Confirmation

I agree to PETROSYNC’s terms & conditions, payment terms and cancellation policy.

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