Practical Well Completion Design

Learn the modern techniques in well completion design & installation to ensure safe, effective, and successful well production

20th April 2015 - 24th April 2015 at Kuala Lumpur, Malaysia

PetroSync Distinguished Instructor:
MICHAEL ETUHOKO, P.Eng., PMP
President & Founder, Protekz Inc Canada

- Over 22 years of engineering, operations, and management experience in Completion, Workover & Well Services, and Drilling
- Highly sought after Consultant, President & Founder of Protekz Inc Canada, an independent well and production engineering consultancy
- Leads major completion and workover projects with companies such as Shell Canada, KNOC, KPO etc in North America, Europe, Africa, Central Asia, & Far East Asia
- Authored and presented SPE Papers at the SPE Asia Pacific Oil & Gas Conference (Australia, 2004) & SPE Annual Technical Conference & Exhibition (Texas USA, 2004)

Course Objectives

- IDENTIFY & UNDERSTAND the parameters that influence selection and design of completion components
- GAIN practical methods in well completion from casing, cementing, perforating, packing, and installation of production tree
- MANAGE well environments with extreme chemical, temperature, and pressure characteristics
- BRIDGE the importance of well design in relation to the ability to carry out well interventions
- EXPLORE new technological developments in well completions and workovers
- PLAN an appropriate intervention and workover strategy to maintain or increase field production

Specially designed for

The course is designed for, but not limited to Completion Engineers, Workover Engineers, Production Engineers, and those who are involved with well completions, workovers, well interventions, and production.

- Completion Engineer
- Workover Engineer
- Well Services / Intervention Engineer
- Production Engineer
- Drilling Engineer
- Well Site Engineer

Supported by:

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The course focuses on the practical applications of various techniques and methodologies in well completion — from the selection of completion type, perforating strategies, fluid selection, and installation of production heads. The training relates these elements to the various subsurface problems that are encountered in the field including various reservoir properties (sandstones and carbonates, subsurface chemical environment, etc). The delegates will perform one major completion design project which they will have to complete and present within the week. Moreover, well control and well workover techniques will also be covered to complement the insurance of well longevity of the installation. This course provides a good link to how the techniques in well completion would ensure better well performance and production later in the life of the well.

**TESTIMONIALS FROM PREVIOUS ATTENDEES:**

“Everything was in good arrangement. What I can say is that this training is Easy, Clear, and Practical! It has a good combination between theoretical and real life work.” - Petroleum Engineer, NOEX (2012)

“Good training!” - Well Integrity Engineer, BP Indonesia (2012)

“A lot of new things can be obtained from this training course. The flow of the topics are organized very effectively.” - Petroleum Engineer, NOEX (2012)

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**Course Content**

**Day One: Well Completion & Well Performance**

**Course Introduction & Overview**

- Introduction to Completion Design
  - Field Life Cycle

**Completion Types & Characteristics**

- Open Hole Completion
- Slotted Liner Completion
- Perforated Liner Completion
- Single String
- Monobore Completion
- Tubingless Completion
- Multilateral Completion
- Sand Control Completion

**Planning**

- Concept Selection Workflow
- Completion Delivery Process Roadmap
- Completion Design Data Requirements
- Designing an Efficient and Safe Well

**Well Performance**

- Inflow and Outflow Performance
- Well Performance Stability
- Tubing Size & PI Impact
- Skin Impact
- Artificial Lift Needs (Well Performance over Time)

**Perforation**

- Shaped Charge
- Perforating Tools & Techniques

**Reservoir Completion (Well Stimulation)**

- Fluid Types
- Sandstone Reservoir Stimulation (Acidizing, Well Design, & Perforation Strategy)
- Carbonate Reservoir Stimulation (Acidizing, Well Design, & Perforation Strategy)
- Hydraulic Fracturing (Completion Design, Perforation Strategy, Fluid Selection)

**Work Session 1: Completion Design Project**

**Introduction to Completion Design Project Exercise**

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**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. This 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 program, please contact Jerry Tay (Conference Director) on +65 6415 4502 or email jerry.t@petrosync.com
Day Two: Well Completion in Challenging Subsurface Environments

Multi-Stage Fracturing Design & Diagnostic in Carbonate Reservoir
- Sand Control Completion Design & Well Stimulation

Sand Control Problem Exercise

Artificial Lift
- Guidelines for Lazy Wells
- Methods: Gas Lift; Rod Pumping; Rod Pumping; Progressive Cavity Pump; Hydraulic Pumping; ESP
- Well Performance Analysis

Production Chemistry
- Introduction to Reservoir Fluid
- Completion Technology Preventive Solutions to: Scales, Wax, Asphaltenes, Hydrates, Reservoir Souring, H2S

Problem Identification Exercise

Day Three: Well Completion Equipments, Components, & Installation

Tubing Stress Analysis
- Purpose of Stress Analysis

TSA Exercise
- Stress Loads (Stress and Strain, Axial Loads, Burst/Collapse, Tri-Axial Analysis)
- Safety Factors VS Design Factors
- Load Cases
- Packer Envelope
- Analysis of Wellcat Results

Material Selection
- Hostile Environment
- Special Consideration to Materials Selection
- Types of Materials (Metals, Elastometers, Seals, Packings, Coatings)
- Ensuring Completion Longevity

Completion Components
- Completion Philosophy
- Completion Components (Christmas Tree, Tubing Hangers, Tubing Downhole Safety Valve, Packers, Tail Pipes, Expansion Devices, Nipples, Mandrels, Gauges, Etc)

Work Session 2: Completion Design Project

Work Session 3: Completion Design Project
Day Four: Modern Well Completion & Intro to Well Intervention

**Completion Operation Base Preparation**
- Equipment Purchasing & Factory Acceptance
- Service Contract (Call for Tender)
- Equipment Preparation
- Technical Program

**Rig Preparation and Completion Installation Process**
- Operation Planning
- Equipment Shipping & Reception
- Pre-Job Meeting
- Completion Installation
- Packer Fluid Displacement
- Well Clean-up
- After-Action Review

**Emerging Completion Techniques (Review & Evaluation)**
- Horizontal Completion
- Multilateral Completion
- Intelligent and Smart Completion
- Fiber Optics Application
- Expandable Completions
- Underbalanced Completion
- CHCD Completion

**Work Session 4: Completion Design Project**
**Group Presentation & General Review of the Project**

Day Five: Well Control & Well Workover

**Well Control Equipment**
- Blowout Preventer System Requirements
- Circulating System
- Closing System

**Well Control Exercise**

**Accumulator Calculations Exercise**

**Well Killing Operation**
- Forward Circulation
- Reverse Circulation
- Bullheading
- Lubricate and Bleed

**Workover Operations**
- Workover Definition and Description
- Workover Types
  - Safety Workover (SWO)
  - Long Term Suspension (LTS)
  - Plug and Abandonment (P&A)
  - Production Enhancement (PE)
  - Fishing Operations

**Workover Feasibility Case Study**
**Well Control Exercise 2**

**Conclusion & Course Wrap-up**

*Participants are requested to bring their drilling data handbook, laptop, and scientific calculator for the course exercises and case studies*

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**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 needs. We make it possible to run a program that is customized to your training requirements at a fraction of an in-house budget!

If you would like to know more about this program, please contact us on +65 6415 4500 or email general@petrosync.com
Mike operates his own consultancy firm, which provides well and production engineering services to various international oil & gas companies in Europe, North America, Africa, Central Asia, and Far East Asia. He specializes and consults for Well Completion, Workover and Well Services, Sand Control, and Formation Damage Prevention and Treatments. Before becoming a consultant, he trained and worked in Shell and Total E&P.

**His Current and Recent Assignments Include the Following:**

- **Lead Completions & Intervention for Karachaganak Field, Kazakhstan**
  - Completion & Intervention for Field with Characteristics: Deep wells (± 6200m TVD on the average), light oil/condensate and gas, High GOR, H2S > 7%, CO2 > 6%, low porosity, low permeability and HPHT reservoir environment

- **Subsea Intervention/Workover/Completion for Korean National Oil Company**
  - Diagnose and restore Donghae 1-4P Sub-sea well back to production

- **Completions, Sand Control, & Well Testing (Deepwater Exploration Asset) for BG Nigeria**
  - Responsible for “Well Completion and Testing” operations in deepwater exploration campaign

- **Well Productivity for Total E&P**
  - Scales Squeeze treatment for Dunbar, Alwyn, Otter and Elgin/Franklin fields; Fracturing design and operations in HPHT wells; Sand Control in HPHT wells, Water shut-off in HPHT wells

Mike has presented for several international conferences including Offshore Technology Conference, SPE Asia Pacific Oil & Gas Conference, and SPE Annual Technical Conference Exhibition. He has also authored SPE papers on “Monobore Completion Using Interventionless Technology” and “Open Hole Multistage Fracturing Completion in Carbonate Reservoir.”

In the recent years, Mike has provided intensive trainings in well completion and workovers with different oil and gas companies. Some of these training are “Well Completion & Intervention Training (Level 1&2)” for KPO, “Sub-Sea Workover Operations Training” for KNOC, and “Deep Water Sand Control” for Total E&P International.
COURSE DETAILS

Title: Practical Well Completion Design
Date: 20th-24th April 2015
Location: Kuala Lumpur, Malaysia

INVESTMENT PACKAGES

<table>
<thead>
<tr>
<th>Investment Package</th>
<th>Deadline</th>
<th>FULL MASTERCLASS</th>
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<tbody>
<tr>
<td>Standard Price</td>
<td>17 APR 2015</td>
<td>SGD $ 5,995</td>
</tr>
<tr>
<td>Early Bird Offer</td>
<td>20 MAR 2015</td>
<td>SGD $ 5,795</td>
</tr>
<tr>
<td>Group Discount</td>
<td>17 APR 2015</td>
<td>SGD $ 5,695</td>
</tr>
</tbody>
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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

1st Delegate Name ________________________________ Mr  Mrs  Ms  Dr  Others
Direct Line Number: ______________________________ Email: ______________________________
Job Title: ______________________________ Department: ______________________________
Head of Department: ______________________________

2nd Delegate Name ________________________________ Mr  Mrs  Ms  Dr  Others
Direct Line Number: ______________________________ Email: ______________________________
Job Title: ______________________________ Department: ______________________________
Head of Department: ______________________________

3rd Delegate Name ________________________________ Mr  Mrs  Ms  Dr  Others
Direct Line Number: ______________________________ Email: ______________________________
Job Title: ______________________________ Department: ______________________________
Head of Department: ______________________________

INVOICE DETAILS

Attention Invoice to: ______________________________________________________________________________
Direct Line Number: ______________________________ Fax:  _____________________________________________
Company: __________________________________________ Industry:  __________________________________
Country: ________________________Email:  __________________________________________________________
Please note:
- Indicate if you have already registered by Phone
- If you have not received an acknowledgement before the training, please call us to confirm your booking.

By Credit Card : Visa  MasterCard  AMEX  Security Code: ___________
Card Number: ______________________________ Expiry Date: ___________
Name printed on card: ______________________________

PAYMENT METHODS

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 : DBSSSXXX  •  Branch code : 288
Account No :  SGD : 288-901898-0  •  USD : 0288-002682-01-6
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 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.

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. 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
You may substitute delegates at any time as long as reasonable advance notice is given to PetroSync. For any cancellation received in writing not less than fourteen (14) working days prior to the training course, you will receive a credit voucher less a SGD $200 administration fee and any related bank or credit card charges. Delegates who cancel less than fourteen (14) working days of the training course, or who do not attend the course, are liable to pay the full course fee and no refunds will be granted. In the event that PetroSync cancels or postpones 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
70% attendance is required for PetroSync’s Certificate

CHARGES & FEE(S)
- For Payment by Direct Telegraphic Transfer, client has to bear both local and overseas bank charges.
- For credit card payment, there is additional 4% credit card processing fee.