

COURSE OVERVIEW PE0140
Surface Production Operations in
Oil & Gas Field Production Facilities

Course Title

Surface Production Operations in Oil & Gas Field Production Facilities

Course Reference

PE0140

Course Duration/Credits

Five days/3.0 CEUs/30 PDHs



Course Date/Venue

Session(s)	Date	Venue
1	January 28-February 01, 2024	The Mouna Meeting Room, The H Dubai Hotel, Sheikh Zayed Rd - Trade Centre, Dubai, UAE
2	February 11-15, 2024	Kizkulesi, Crown Plaza Istanbul Asia Hotels & Convention Center, Istanbul, Turkey
3	March 03-07, 2024	Oryx Meeting Room, Doubletree By Hilton Doha-Al Sadd, Doha, Qatar

Course Description



This practical and highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.

This course covers the basic concepts and techniques necessary to design, specify and manage oil and gas field production facilities. It provides a clear understanding of the equipment and processes used in common separation and oil and water treating systems as well as the selection of piping and pumping systems.



The course will cover gas dehydration, gas processing and the selection of compressor system. The gathering, separation and final treatment systems for crude oil and natural gas, before transport to refinery are discussed. The concepts of export quality crude oil and natural gas, field and fiscal measurements error is explained. Hydrocarbon reconciliation and allocation of produced fluids to the contributing reservoirs are explained. Exercises are used to cement the learning of the various topics treated.



This course will enable participant to develop a “feel” for the important parameters of designing and operating a production facility. The participant will understand the uncertainties and assumptions inherent in designing and using the equipment in these systems and the limitations, advantages and disadvantages associated with their use.

Course Objectives

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

- Apply and gain an in-depth knowledge on surface production operations within oil and gas field production facilities
- Enumerate the different types and functions of a petroleum production facility and how to make equipment work
- Implement the proper methodology of choosing a process that would be applicable to the system and identify the system configuration
- Describe the basic principles of fluid properties, its flash calculations and characterization as well as the principles of pressure drop in piping and calculate fluid flow equations
- Discuss the factors affecting two-phase oil and gas separation including equipment description, difference between horizontal and vertical vessel selection, identify potential operating problems and cite examples
- Explain and demonstrate the process of oil and water separation and gas dehydration including the equipments used in each process
- Explain crude oil treating systems through the emulsion treating theory, gravity separation, treating equipment and equipment sizing and theory
- Employ the theory of produced-water treating systems through listing the information required for design and implementing the equipment selection procedure with its specification by taking into consideration the criteria of measurement
- Identify the different classification of pumps, principles, selection criteria, installation and specific speed in accordance with related codes and standards
- Apply the proper methodology of gas processing including absorption and refrigeration
- Enumerate the different types of compressors and explain the components, sizing and process consideration of each type
- Employ the role of optimization and its practical application in the upstream industry

Exclusive Smart Training Kit - H-STK®



Participants of this course will receive the exclusive “Haward Smart Training Kit” (H-STK®). The H-STK® consists of a comprehensive set of technical content which includes **electronic version** of the course materials, sample video clips of the instructor’s actual lectures & practical sessions during the course conveniently saved in a **Tablet PC**.

Who Should Attend


This course covers systematic techniques and methodologies on surface production operations in oil and gas field production facilities for newly engaged production engineers, process engineers, facility engineers and petroleum engineers. It is also suitable for technical and operations staff from other disciplines, who require a cross-training to or a basic understanding of the surface production operation in oil and gas fields. Further, this course is suitable for all technical and operational staff who are working in onshore and offshore oil/gas fields.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations


Certificates are accredited by the following international accreditation organizations: -

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The International Accreditors for Continuing Education and Training (IACET - USA)

Haward Technology is an Authorized Training Provider by the International Accreditors 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 2018-1 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 2018-1 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 Accreditors 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.

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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.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:



Dr. Chris Kapetan, PhD, MSc, BSc, is a Senior Process & Petroleum Engineer with over 30 years of international experience within the onshore and offshore oil and gas industry. His wide experience covers Surface Production & Operation, Petroleum Production Facility, Offshore Platform Consideration, Oil & Gas Separation, Oil & Water Separation, Crude Oil Treating, Centrifugal & Reciprocating Pumps, Gas Dehydration & Processing, Reciprocating Compressors, Cased Hole Formation Evaluation, Cased Hole Logs, Production Operations, Surface Facilities, Production Management, Drilling Operations, Directional Drilling, Gas Lift Operations, Petroleum Business, Petroleum Economics, Gas Lift Valve Changing & Installation, Horizontal & Multilateral Wells, Directional Planning, Completion Design, Directional Surveying, Drilling Fluids, Matrix Acidizing, Hydraulic Fracturing, Well Completion Design & Operation, Well Stimulation & Control and Workover Planning, Completions & Workover, Rig Sizing, Hole Cleaning & Logging, Well Completion, Servicing and Work-Over Operations, Practical Reservoir Engineering, X-mas Tree & Wellhead Operations, Maintenance & Testing, Advanced Petrophysics/Interpretation of Well Composite, Construction Integrity & Completion, Coiled Tubing Technology, Corrosion Control, Wireline & Coil Tubing, Pipeline Pigging, Corrosion Monitoring, Cathodic Protection as well as Root Cause Analysis (RCA), Root Cause Failure Analysis (RCFA), Gas Conditioning & Process Technology, Production Safety and Delusion of Asphalt. Currently, he is the Operations Manager at GEOTECH and an independent Drilling Operations Consultant of various engineering services providers to the international clients as he offers his expertise in many areas of the drilling discipline and is well recognized & respected for his process and procedural expertise as well as ongoing participation, interest and experience in continuing to promote technology to producers around the world.

Throughout his long career life, Dr. Chris has worked for many international companies and has spent several years **managing technically complex wellbore interventions** in both **drilling & servicing**. He is a **well-regarded** for his **process and procedural expertise**. Further, he was the **Operations Manager at ETP Crude Oil Pipeline Services** where he was fully responsible for optimum operations of crude oil pipeline, **workover and directional drilling, drilling rigs** and equipment, drilling of various geothermal deep wells and **exploration wells**. Dr. Chris was the **Drilling & Workover Manager & Superintendent for Kavala Oil** wherein he was responsible for supervision of **drilling operations and offshore exploration**, quality control of performance of **rigs, coiled tubing**, crude oil transportation via pipeline and abandonment of **well** as per the API requirements. He had occupied various key positions as the **Drilling Operations Consultant, Site Manager, Branch Manager, Senior Drilling & Workover Manager & Engineer and Drilling & Workover Engineer** in several petroleum companies responsible mainly on an **offshore sour oil field** (under water flood and gas lift) and a gas field. Further, Dr. Chris has been a **Professor of the Oil Technology College**.

Dr. Chris has **PhD in Reservoir Engineering** and a **Master's degree in Drilling & Production Engineering** from the **Petrol-Gaze Din Ploiesti University**. Further, he is a **Certified Surfaced BOP Stack Supervisor of IWCF**, a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management (ILM)** and has conducted **numerous short courses, seminars and workshops** and has published several technical books on **Production Logging, Safety Drilling Rigs and Oil Reservoir**.

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures
- 20% Practical Workshops & Work Presentations
- 30% Hands-on Practical Exercises & Case Studies
- 20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Course Fee

Dubai	US\$ 5,500 per Delegate + VAT . This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Istanbul	US\$ 6,000 per Delegate + VAT . This rate includes Participants Pack (Folder, Manual, Hand-outs, etc.), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Doha	US\$ 6,000 per Delegate. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1

0730 – 0800	<i>Registration & Coffee</i>
0800 – 0815	<i>Welcome & Introduction</i>
0815 – 0830	PRE-TEST
0830 – 0930	The Petroleum Production Facility <i>Facility Description • Making the Equipment Work • Facility Types</i>
0930 – 0945	<i>Break</i>
0945 – 1100	Choosing a Process <i>Process Selection • Controlling the Process</i>
1100 – 1230	Choosing a Process (cont'd) <i>Basic System Configuration • Well Testing • Gas Lift • Offshore Platform Considerations</i>
1230 – 1245	<i>Break</i>
1245 – 1330	Fluid Properties <i>Basic Principles • Flash Calculations • Characterizing the Flow Stream • Approximate Flash Calculations • Other Properties</i>
1330 – 1420	Project Assignment
1420 – 1430	Recap
1430	<i>Lunch & End of Day One</i>

Day 2

0730 – 0900	Two-Phase Oil & Gas Separation <i>Factors Affecting Separation • Equipment Description • Horizontal vs. Vertical Vessel Selection • Vessel Internals</i>
0900 – 0915	<i>Break</i>
0915 – 1045	Two-Phase Oil & Gas Separation (cont'd) <i>Potential Operating Problems • Theory • Separator Sizing • Examples</i>
1045 – 1200	Oil & Water Separation <i>Equipment Description • Vessel Internals • Emulsions</i>
1200 – 1215	<i>Break</i>
1215 – 1330	Oil & Water Separation (cont'd) <i>Theory • Separator Sizing • Examples</i>
1330 – 1420	Project Assignment
1420 – 1430	Recap
1430	<i>Lunch & End of Day Two</i>

Day 3

0730 – 0900	Crude Oil Treating Systems <i>Emulsion Treating Theory • Gravity Separation • Treating Equipment • Equipment Sizing and Theory • Design Procedure • Examples</i>
0900 – 0915	<i>Break</i>
0915 – 1045	Produced-Water Treating Systems <i>System Description • Theory • Treating Equipment</i>
1045 – 1215	Produced-Water Treating Systems (cont'd) <i>Drain Systems • Information Required for Design • Influent Water Quality • Equipment Selection Procedure • Equipment Specification • Examples: Design the Produced-Water Treating System for the Data Given</i>
1215 – 1230	<i>Break</i>
1230 – 1330	Pressure Drop in Piping <i>Basic Principles • Fluid Flow Equations • Head Loss in Valves and Pipe Fittings • Example Pressure Drop Calculations</i>
1330 – 1420	Project Assignment
1420 – 1430	Recap
1430	<i>Lunch & End of Day Three</i>

Day 4

0730 – 0900	Choosing a Line Size & Wall Thickness <i>Line Size Criteria • Wall Thickness Criteria • Pressure Rating Classes • Examples</i>
0900 – 0915	<i>Break</i>
0915 – 1100	Pumps <i>Pump Classification • Centrifugal Pumps • Reciprocating Pumps • Diaphragm Pumps • Rotary Pumps • Multiphase Pumps • Basic Principles • Basic Selection Criteria</i>
1100 – 1215	Centrifugal Pumps <i>Multiples Pump Installations • Pump Specific Speed • Codes and Standards • Generic Types of Centrifugal Pumps • Bearings, Seals and Wear Rings • Installation Considerations</i>
1215 – 1230	<i>Break</i>

1230 – 1330	Reciprocating Pumps <i>Controlling Pulsating Flow • Bearings, Valves and Packing • Codes and Standards • Piping Hookup • Operation</i>
1330 – 1420	Project Assignment
1420 – 1430	Recap
1430	<i>Lunch & End of Day Four</i>

Day 5

0730 – 0900	Gas Dehydration <i>Water Content Determination • Glycol Dehydration • Glycol Dehydration Example • Solid Bed Dehydration • Dry Desiccant Design Example</i>
0900 – 0915	<i>Break</i>
0915 – 1045	Gas Processing <i>Absorption/Lean Oil • Refrigeration • Choice of Process</i>
1045 – 1200	Compressors <i>Types of Compressors • Specifying a Compressor • Reciprocating Compressors-Process Considerations • Centrifugal Compressors – Surge Control and Stonewalling • Centrifugal Compressors Process Considerations</i>
1200 – 1215	<i>Break</i>
1215 – 1300	Reciprocating Compressors <i>Components • Cylinder Sizing • Rod Load • Cooling and Lubrication Systems • Pipe Sizing Considerations • Example Problem</i>
1300 - 1345	Optimization in Upstream Industry
1345 – 1400	Course Conclusion
1400 – 1415	POST-TEST
1415 – 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch & End of Course</i>

Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-



Course Coordinator

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