

COURSE OVERVIEW PE0140 Surface Production Operations

Course Title

Surface Production Operations

Course Date/Venue

November 10-14, 2024/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Course Reference

PE0140

Course Duration/Credits

Five days/3.0 CEUs/30 PDHs

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 is 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

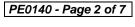
This course covers systematic techniques and methodologies on surface production operations in oil and gas field production facilities for newly engaged production engineers, process engineers, facility engineers and petroleum engineers. It is also suitable for technical and operations staff from other disciplines, who require a crosstraining 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: -



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.



*BAC 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.

Course Fee

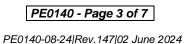
US\$ 5,500 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.



















Course Instructor

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



Mr. Henry Beer (Gert Hendrick De Beer) is a Senior Process Engineer with over 40 years of in-depth industrial experience within the Petrochemical, Oil & Gas and Refinery industries. His wide expertise covers in the areas of Petrochemical Processing Units Operations & Maintenance, Gas Processing Plant Operations & Control, Gas Processing Monitoring & Troubleshooting, Root Cause Analysis (RCA) Methods for Application in Oil & Gas Processing, Root Cause Failure

Pump Operation & (RCFA). Maintenance, **Pump** Installation Troubleshooting, Compressor Operation & Maintenance, Fired Heaters, Air Coolers, Pressure Vessels & Valves, Propylene Compressor & Turbine-Model No.: D12R7S, Heat Exchangers & Fired Heaters Operation & Troubleshooting, Distillation-Column Operation, Control & Troubleshooting, Fluidized Bed Reactor Startup, Operation & Troubleshooting, Process Simulation using HYSYS, Plant Start-up & Shutdown Procedures using HYSYS Simulation, Process Plant Start-up, Commissioning & Troubleshooting, Process Plant Optimization Technology & Continuous Improvement, Operations Abnormalities & Plant Upset, Process Plant Performance & Efficiency, Process Plant Troubleshooting & Engineering Problem Solving, Process Equipment Design & Sizing, Troubleshooting Process Operations, DOX Unit Operation & Troubleshooting, Aviation Fuelling, Fuel Quality Monitoring System, Clean Fuel Technology & Standards, Naphtha & Condensate in Petrochemicals, Feedstock Handling & Storage, Liquid Bulk Cargo Handling, Crude Oil & LNG Storage & Handling, Oil Movement Storage & Troubleshooting, Refinery Induction, Refinery Configuration, Oil Refinery Cost Management, Flare, Blowdown & Pressure Relief Systems, Refinery SRU, Tail Gas Treating, Sour Water & Amine Recovery Units, Start-Up & Shutdown of Process Reactors, Polyethylene & Polypropylene Manufacturing & Process Troubleshooting, Plastic Extrusion Technology, Polymers & Polymerization, Chemical Engineering Process Design, Efficient Shutdowns, Turnaround & Outages, Water Pipes & Valves Maintenance and Water Hydraulic Modelling. Currently, he is the Director and Senior Technical Consultant wherein he is deeply involved in developing new industrial process and designing new process plants and equipment.

During his career life, Mr. Beer has gained his practical and field experience through his various significant positions and dedications as the Global Commissioning Manager, Senior Business Analyst, Process Engineer, Chemical Engineer, Technical Sales Engineer, Senior Technician, Entrepreneur, Financial Consultant, Business Analyst, Business Financial Planner, Independent Financial Planner, Investment Independent Financial Advisor, Financial Broker, Trainer/Instructor and Technical Consultant for various international companies such as the Sasol, TAG Solvents, Virgin Solvent Products, RFS Financial Services (Pty) Ltd, FNB and GHC Trading.

Mr. Beer has a **Bachelor's** degree in **Chemical Engineering**. Further, he is a **Certified Instructor/Trainer**, a **Certified Financial Planner** and a **Certified Internal Verifier/Assessor/ Trainer** by the **Institute of Leadership & Management (ILM)**. He has further delivered numerous trainings, courses, seminars and conferences internationally.



















Training Methodology

All our Courses are including Hands-on Practical Sessions using equipment, Stateof-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.

Accommodation

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

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:

Sunday 10th of November 2024 Dav 1:

<u> </u>	Gunday 10 C. NOVOMBO. 2021
0730 - 0800	Registration & Coffee
0800 - 0815	Welcome & Introduction
0815 - 0830	PRE-TEST
0830 - 0930	The Petroleum Production Facility
	Facility Description ● Making the Equipment Work ● Facility Types
0930 - 0945	Break
0045 1100	Choosing a Process
0945 – 1100	<i>Process Selection</i> ● <i>Controlling the Process</i>
1100 – 1230	Choosing a Process (cont'd)
	Basic System Configuration • Well Testing • Gas Lift • Offshore Platform
	Considerations
1230 - 1245	Break
1245 - 1330	Fluid Properties
	Basic Principles • Flash Calculations • Characterizing the Flow Stream •
	Approximate Flash Calculations • Other Properties
1330 - 1420	Project Assignment
1420 - 1430	Recap
1430	Lunch & End of Day One

Day 2: Monday 11th of November 2024

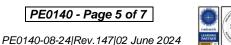
0730 – 0900	Two-Phase Oil & Gas Separation Factors Affecting Separation • Equipment Description • Horizontal vs. Vertical
	Vessel Selection • Vessel Internals
0900 - 0915	Break
0915 – 1045	Two-Phase Oil & Gas Separation (cont'd)
	Potential Operating Problems ● Theory ● Separator Sizing ● Examples
1045 - 1200	Oil & Water Separation
	Equipment Description • Vessel Internals • Emulsions



















1200 – 1215	Break
1215 – 1330	Oil & Water Separation (cont'd)
	Theory • Separator Sizing • Examples
1330 - 1420	Project Assignment
1420 - 1430	Recap
1430	Lunch & End of Day Two

Day 3: Tuesday 12th of November 2024

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0730 - 0900	Crude Oil Treating Systems
	Emulsion Treating Theory • Gravity Separation • Treating Equipment •
	Equipment Sizing & Theory • Design Procedure • Examples
0900 - 0915	Break
0015 1045	Produced-Water Treating Systems
0915 – 1045	System Description ● Theory ● Treating Equipment
	Produced-Water Treating Systems (cont'd)
1045 – 1215	Drain Systems • Information Required for Design • Influent Water Quality •
1043 - 1213	Equipment Selection Procedure • Equipment Specification • Examples: Design the
	Produced-Water Treating System for the Data Given
1215 – 1230	Break
1230 – 1330	Pressure Drop in Piping
	Basic Principles • Fluid Flow Equations • Head Loss in Valves & Pipe Fittings •
	Example Pressure Drop Calculations
1330 - 1420	Project Assignment
1420 - 1430	Recap
1430	Lunch & End of Day Three

Day 4: Wednesday 13th of November 2024

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0730 - 0900	Choosing a Line Size & Wall Thickness Line Size Criteria • Wall Thickness Criteria • Pressure Rating Classes • Examples
0900 - 0915	Break
0915 – 1100	Pumps Pump Classification • Centrifugal Pumps • Reciprocating Pumps • Diaphragm Pumps • Rotary Pumps • Multiphase Pumps • Basic Principles • Basic Selection Criteria
1100 – 1215	Centrifugal Pumps Multiples Pump Installations ● Pump Specific Speed ● Codes and Standards ● Generic Types of Centrifugal Pumps ● Bearings, Seals & Wear Rings ● Installation Considerations
1215 - 1230	Break
1230 - 1330	Reciprocating Pumps Controlling Pulsating Flow ● Bearings, Valves and Packing ● Codes and Standards ● Piping Hookup ● Operation
1330 - 1420	Project Assignment
1420 - 1430	Recap
1430	Lunch & End of Day Four

















Day 5:	Thursday 13th of November 2024
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0730 - 0900	Gas Dehydration
	Water Content Determination • Glycol Dehydration • Glycol Dehydration
	Example • Solid Bed Dehydration • Dry Desiccant Design Example
0900 - 0915	Break
0915 - 1045	Gas Processing
	Absorption/Lean Oil • Refrigeration • Choice of Process
	Compressors
1045 1200	Types of Compressors • Specifying a Compressor • Reciprocating Compressors-
1045 – 1200	Process Considerations • Centrifugal Compressors - Surge Control and
	Stonewalling • Centrifugal Compressors Process Considerations
1200 – 1215	Break
1215 – 1300	Reciprocating Compressors
	Components ● Cylinder Sizing ● Rod Load ● Cooling and Lubrication Systems ●
	Pipe Sizing Considerations • Example Problem
1300 - 1345	Optimization in Upstream Industry
1345 - 1400	Course Conclusion
1400 - 1415	POST-TEST
1415 - 1430	Presentation of Course Certificates
1430	Lunch & End of Course

Practical Sessions

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



Course Coordinator

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