COURSE OVERVIEW PE0101
Certified Gas Plant Operator Program (CGO)



Course Title
Certified Gas Plant Operator Program (CGO)

Course Date/Venue
Session 1: August 08-12, 2027/Meeting Plus 9, City Centre Rotana, Doha, Qatar
Session 2: October 17-21, 2027/Meeting Plus 9, City Centre Rotana, Doha, Qatar

Course Reference
PE0101

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

Course Description



This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.



This course is designed to provide participants with a detailed and up-to-date overview of gas plant operation. It covers the proper knowledge and skills expected in a competent process operator including process operations, process equipment, process control, process instrumentation and modern troubleshooting techniques; the various types of separators, hydrates, gas dehydration, gas sweetening, condensate stabilization and fractionation; the liquefied petroleum gases and the operation, control and troubleshooting process of equipment including centrifugal pumps, positive displacement and vacuum pumps, centrifugal compressors, displacement compressors as well as fan and blowers; and the various types of valves and its applications, functions, operation, maintenance and troubleshooting.



During this interactive course, participants will learn the various measurement in process control such as pressure measurement, level measurement, temperature measurement and flow measurement and their corresponding principles; the principles of control valves including its body types, cavitation, valve coefficient and characteristics; the main types of actuators and accessories; the pressure relief valves and rupture discs including its types and functions; the proper application, operation, maintenance and troubleshooting; and the operation, control, maintenance and troubleshooting of storage tanks and its types, auxiliaries and internals, applications and constrains and functions.

Course Objectives/Outcomes & Benefits for the Participants

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

- Get certified as a *"Certified Gas Plant Operator (CGO)"*
- Apply proper knowledge and skills expected in a competent process operator including process operations, process equipment, process control, process instrumentation and modern troubleshooting techniques
- Identify various types of separators and explain hydrates, gas dehydration as well as gas sweetening, condensate stabilization and fractionation
- Recognize liquefied petroleum gases and operate, control and troubleshoot process equipment including centrifugal pumps, positive displacement & vacuum pumps, centrifugal compressors, displacement compressors as well as fan and blowers
- Discuss the various types of valves and carryout its applications, functions, operation, maintenance and troubleshooting
- Distinguish the various measurement in process control such as pressure measurement, level measurement, temperature measurement and flow measurement and differentiate their corresponding principles
- Recognize the principles of control valves including its body types, cavitation, valve coefficient and characteristics and list the main types of actuators and accessories
- Explain pressure relief valves and rupture discs including its types and functions and employ its proper application, operation, maintenance and troubleshooting
- Operate, control, maintain and troubleshoot storage tanks and enumerate its types, auxiliaries and internals, applications and constrains as well as its functions

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 conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides an overview of all significant aspects and considerations of gas plant operation for process operators and technical staff of all levels.

Accommodation

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

Course Fee

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 Certificate(s)

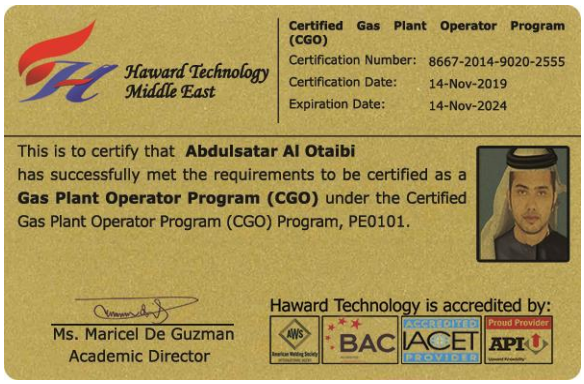
(1) Internationally recognized Competency Certificates and Plastic Wallet Card Certificates will be issued to participants who completed a minimum of 80% of the total tuition hours and successfully passed the exam at the end of the course. Successful candidate will be certified as a "*Certified Gas Plant Operator (CGO)*". Certificates are valid for 5 years.

Recertification is FOC for a Lifetime.

Sample of Certificates

The following are samples of the certificates that will be awarded to course participants:-







(2) Official Transcript of Records will be provided to the successful delegates with the equivalent number of ANSI/IACET accredited Continuing Education Units (CEUs) earned during the course



Haward Technology Middle East

Continuing Professional Development (HTME-CPD)

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CEU Official Transcript of Records

TOR Issuance Date: 14-Nov-19

HTME No. 8667-2014-9020-2555

Participant Name: Abdulsatar Al Otaibi

Program Ref.	Program Title	Program Date	No. of Contact Hours	CEU's
PE0101	Certified Gas Plant Operator Program (CGO)	November 10-14, 2019	30	3.0

Total No. of CEU's Earned as of TOR Issuance Date **3.0**

TRUE COPY

Maricel De Guzman
Academic Director

Haward Technology has been approved as an Authorized Provider by the International Association for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this approval, Haward Technology has demonstrated that it complies with the ANSI/IACET 1-2013 Standard which is widely recognized as the standard of good practice internationally. As a result of their Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for programs that qualify under the ANSI/IACET 1-2013 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 Association 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 is accredited by

P.O. Box 26070, Abu Dhabi, United Arab Emirates | Tel.: +971 2 3091 714 | Fax: +971 2 3091 716 | E-mail: info@haward.org | Website: www.haward.org

Certificate Accreditations

Haward's certificates are accredited by the following international accreditation organizations:

- British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). 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.

- 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.

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:



Mr. Henry Beer is a **Senior Process Engineer** with over **30 years** of in-depth industrial experience within the **Petrochemical**, **Oil & Gas** industries specializing in **Hydrocarbon Process** Equipment, **DOX Unit** Operation & Troubleshooting, **Polyethylene & Polypropylene** Processing, **Oil Movement** Storage & Troubleshooting, **Power Plant Chemistry**, **Fuel Quality** Monitoring System Fundamentals, **Liquid Bulk Cargo Handling**, **Oil Refinery Cost Management**, **Flare & Blowdown** Operation, **Pressure Relief Systems** Maintenance & Troubleshooting, Refinery **SRU**, **Tail Gas** Treating, **Sour Water & Amine Recovery** Units, **Propylene** Compressor and Turbine, **Clean Fuel** Technology & Standards, Principles of **Operations Planning**, **Heat Exchangers & Fired Heaters** Operation & Troubleshooting, **Plastic Extrusion Technology** Operation & Troubleshooting, **Chemical Engineering** for Non-Chemical Engineers, **Process Plant** Troubleshooting, **Process Plant Optimization** Technology, **Engineering Problem Solving**, **Process Plant** Performance & Efficiency, **Process Plant** Start-up & Shutdown, **Process Plant** Commissioning, **Process Plant** Turn-around & Shutdown, **Pumps & Compressors** Troubleshooting, **Fired Heaters & Air Coolers** Maintenance, **Pressure Vessels & Valves** Repair, **Polymers**, **Plastics**, **Polyolefin** & **Catalysts**, **Polymerization**, **Thermal Analysis Techniques**, **Rheology**, **Thermoplastics**, **Thermosets**, **Coating Systems** and **Fibre Reinforced Polymer Matrix Composites**. Further, he is also well-versed in **Water Hydraulic Modelling**, **Efficient** Shutdowns, Turnaround & Outages, **Pump** Selection and Installation, Operation and Maintenance of **Pumps**, **Demand & Supply** Management, **Catalyst Manufacturing Techniques**, **Fuel Systems Management**, **Aviation Fuel**, **Diesel**, **Jet Fuel**, **Petrol** and **IP Octane**, **Cetane Control** and related Logistics, Road, Rail and Pipeline Distribution, **Process Design** and **Optimisation**, **Boiler Feed Water Preparation**, **Flocculation Sedimentation**, **Hot Lime Water Softening Processes**, **Desalination Processes**, **Reverse Osmosis**, **Molecular Sieves**, activated **Sludge Aerobic/Anaerobic**, **Sludge Removal** and **Incineration Process Control**, **Domestic Sewage Plants Optimisation**, **Process Cooling Water System**, **High Pressure** and **Low Pressure Tank Farm Management**, **Hydrocarbon** and **Chemical products** and **GTL** (**Gas to Liquids**).

During his career life, Mr. Beer holds significant key positions such as the **Director**, **Global Commissioning Manager**, **Process Engineering Manager**, **Senior Business Analyst**, **Process Engineer**, **Chemical Engineer**, **Senior Technician**, **Technical Sales Engineer**, **Entrepreneur**, **Financial Consultant**, **Business Analyst**, **Business Financial Planner** and **Independent Financial Planner** to various international companies such as the **Sasol**, **SASOLChem**, **TAG Solvents**, **Virgin Solvent Products**, **SARS** & **SAPIA** (**South African Petroleum Industry Association**) and **RFS Financial Services** (**Pty**) **Ltd**.

Training Methodology

Our courses employ an interactive, learner-centred methodology that integrates theoretical knowledge with practical application. The training is delivered through a suitable combination of some or all of the following methods, selected according to the course content and learning objectives:

- Instructor-led presentations and facilitated discussions
- Practical workshops and participant presentations
- Hands-on exercises and real-world case studies
- Equipment demonstrations and technical drawings
- Hardware- and software-based simulations
- Gamification & Role Play in soft-skills courses only
- Virtual Reality (VR) and Augmented Reality (AR)
- Instructional videos and other relevant training resources

This blended approach encourages active participation, strengthens practical skills and supports the effective application of acquired knowledge in the workplace.

Learning Design & Customization

This course can be customized to the exact requirements of clients. Haward Technology is so proud of our huge capabilities in tailoring our courses to the training needs of our valued clients.

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	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0915	***Introduction to Process Plant*** *Process Overview ● Plant Types ● Plant Layout ● Process Equipment ● Piping System ● Control & Instrumentation ● Safety*
0915 – 1000	***Separators*** *Types ● Application Ranges and Constraints ● Construction Features and Options ● Separators Internals*
1000 – 1015	*Break*
1015 – 1100	***Separators (cont'd)*** *Selection ● Operation ● Control ● Troubleshooting*
1100 – 1215	***Hydrates*** *Composition and Formation ● Inhibitors and Prevention ● Thermodynamics and Kinetics ● Control ● Troubleshooting*
1215 – 1230	*Break*
1230 – 1330	***Gas Dehydration*** *Technologies ● Absorption and Adsorption ● Operation ● Glycol Dehydration ● Molecular Sieve Operations*

1330 – 1420	***Gas Dehydration (cont'd)*** *Performance Capabilities and Limitations ● Operation ● Control ● Troubleshooting*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day One*

Day 2

0730 – 0900	***Gas Sweetening*** *Acid Gases ● Acid Gas Removal ● Technologies ● Absorption and Adsorption ● Operation ● Amine Sweetening*
0900 – 1000	***Gas Sweetening (cont'd)*** *Molecular Sieve Operations ● Performance Capabilities and Limitations ● Operation ● Control ● Troubleshooting*
1000 – 1015	*Break*
1015 – 1100	***Condensate Stabilization*** *Technologies ● Dew Point ● Water Content ● Heating Value ● Joule Thomson ● Product RVP ● Specific Gravity ● Corrosiveness*
1100 – 1215	***Condensate Stabilization (cont'd)*** *Sweetness ● Dryness ● Operation ● Advantages & Disadvantages ● Performance Capabilities and Limitations ● Operation ● Control ● Troubleshooting*
1215 – 1230	*Break*
1230 – 1330	***Fractionation*** *Flash Stages ● Process Design Basic ● Reflux Ratio ● Minimum Reflux Ratio ● Minimum Number of Plates ● Optimum Reflux*
1330 – 1420	***Fractionation (cont'd)*** *Flash Stages ● Process Design Basic ● Reflux Ratio ● Minimum Reflux Ratio ● Minimum Number of Plates ● Optimum Reflux*
1420 - 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Two*

Day 3

0730 – 0900	***Liquefied Petroleum Gases*** *Chemical Structure of Gases ● Saturated and Unsaturated Hydrocarbons ● Physical Properties ● Bubble Points and Dew Points For Mixtures*
0900 – 1000	***Liquefied Petroleum Gases (cont'd)*** *Reliquefaction and Enthalpy ● LPG Handling & Bulk Storage ● LPG Cold Loading System ● Vapor Recovery*
1000 – 1015	*Break*
1015 – 1100	***Centrifugal Pumps*** *Configurations and Styles ● Application Ranges and Constraints ● Construction Features and Options ● Pump Auxiliaries ● Wear Components ● Canned Motor and Magnetic Drive Pumps ● High Speed/Low Flow Pumps ● Servicing and Condition Monitoring ● Operation ● Control ● Troubleshooting*

1100 – 1215	***Positive Displacement and Vacuum Pumps*** *Reciprocating Steam and Power Pumps ● Diaphragm Pumps ● Plunger Pumps ● Gear Screw and Progressive Cavity Pumps ● Peristaltic Pumps ● Conventional and Special Vacuum Pumps ● Liquid Jet and Liquid Ring Pumps ● Combination and Staged Vacuum Pumps ● Operation ● Control ● Troubleshooting*
1215 – 1230	*Break*
1230 – 1330	***Centrifugal Compressors*** *Types, Styles and Configurations of Centrifugal and Axial Compressors ● Construction Features ● Mode of Operation ● Compressor Auxiliaries and Support Systems ● Condition Monitoring ● Application Criteria ● Performance Capabilities and Limitations ● Operation ● Control ● Troubleshooting*
1330 – 1400	***Displacement Compressors*** *Classification ● Reciprocating Compressors vs. Rotary Screw Compressors ● Application Ranges and Limitations ● Compression Processes ● Construction Features and Components ● Capacity Control ● Operation ● Troubleshooting*
1400 – 1420	***Fans and Blowers*** *Types and Configurations ● Performance and System Effects ● Performance Correction ● Capacity Control Options ● Operation ● Troubleshooting*
1420 - 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Three*

Day 4

0730 – 0900	***Valves*** *Valve Theory ● Valve Types ● Applications ● Functions ● Operation ● Maintenance ● Troubleshooting*
0900 – 1000	***Process Control*** *Control History ● Basic Measurement Concepts ● Performance Terms ● Basic Control Theory*
1000 – 1015	*Break*
1015 – 1100	***Pressure Measurement*** *Basic Principles ● Pressure Transducers–Mechanical ● Pressure Transducers–Electrical ● Installation Considerations*
1100 – 1215	***Level Measurement*** *Main Types ● Simple Sight Glass ● Gauging Rods ● Buoyancy Tape Systems ● Hydrostatic Pressure ● Ultrasonic Measurement ● Radar Measurement ● Vibration Switches ● Radiation Measurement ● Electrical Measurement ● Installation Considerations*
1215 – 1230	*Break*
1230 – 1330	***Temperature Measurement*** *Principles ● Thermocouples ● Resistance Temperature Detectors (RTD's) ● Thermistors ● Non-Contact Types*

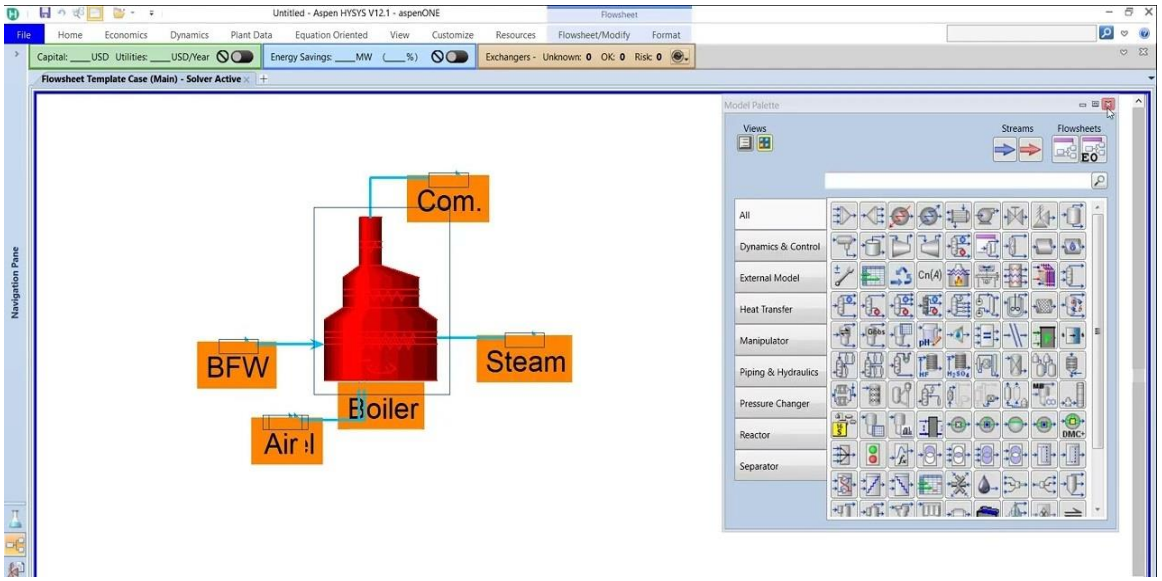
1330 – 1420	***Flow Measurement*** *Basic Flow Theory ● Differential Pressure Flow Measurement ● Oscillatory Flow Measurement ● Magnetic Flowmeters ● Ultrasonic Flow Measurement ● Mass Flow Meters ● Installation Considerations ● Impact on Overall Loop*
1420 - 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Four*

Day 5

0730 – 0900	***Control Valves–Body Types*** *Principles of Control Valves ● What Happens Inside a Control Valve? ● Choked Flow ● Cavitation ● Flashing ● Valve Coefficient (Cv) ● Control Valve Types ● Valve Characteristics ● Trim Characteristics ● Control Valve Selection ● Leakage Rates*
0900 – 1000	***Control Valves–Actuators & Accessories*** *Main Types of Actuators ● Linear Actuators ● Rotary Actuators ● Actuator Forces ● Positioners ● Fail Safe Actuators*
1000 – 1015	*Break*
1015 – 1100	***Pressure Relief Valves and Rupture Discs*** *Theory ● Types ● Applications ● Functions*
1100 – 1215	***Pressure Relief Valves and Rupture Discs (cont'd)*** *Operation ● Maintenance ● Troubleshooting*
1215 – 1230	*Break*
1230 – 1245	***Storage Tanks*** *Theory ● Types ● Auxiliaries and Internals ● Applications & Constrains ● Functions*
1245 – 1300	***Storage Tanks (cont'd)*** *Operation ● Control ● Maintenance ● Troubleshooting*
1300 - 1315	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1315 – 1415	***COMPETENCY EXAM***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Simulator (Hands-on Practical Sessions)

Practical session will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using the simulator "ASPEN HYSYS".



ASPEN HYSYS V12.1 Simulator

Course Coordinator

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