

COURSE OVERVIEW PE0281(QA1)
Reciprocating & Screw Compressors (Production Perspective)

Course Title

Reciprocating & Screw Compressors
 (Production Perspective)

Course Date/Venue

Session 1: January 19-23, 2025/Boardroom 1,
 Elite Byblos Hotel Al Barsha, Sheikh
 Zayed Road, Dubai, UAE
 Session 2: September 07-11, 2025/Al Khobar
 Meeting Room, Hilton Garden
 Inn, Al Khobar, KSA



**H-STK[©]
 INCLUDED**

Course Reference

PE0281(QA1)



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 reciprocating and screw compressors. It covers the various types of compressors and the principles of gas compression; the effect of staging, stage and interstage cooling; and the positive displacement compressors, reciprocating compressor cycle, compressor valves and compressor capacity control.



During this interactive course, participants will learn the proper techniques in starting-up, running, maintaining and shutting down the reciprocating and screw compressors; the latest applications and operating principles of the reciprocating and screw compressors; and determining their capacity control and performance.

Course Objectives

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

- Apply proper operating techniques of reciprocating and screw compressors
- Discuss the various types of compressors and employ the principles of gas compression
- Identify the effect of staging, stage and interstage cooling and recognize the positive displacement compressors, reciprocating compressor cycle, compressor valves and compressor capacity control
- Employ the proper techniques in starting-up, running, maintaining and shutting down the reciprocating and screw compressors
- Use the latest applications and operating principles of the reciprocating and screw compressors and determine their capacity control and performance

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 is designed for engineers, supervisors, technicians and operators who are responsible for the operation of reciprocating and screw compressors.

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.

Accommodation

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

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 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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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.

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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.

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. Robert Harvey, MSc (Cum Laude), BSc is a **Senior Process & Chemical Engineer** with over **45 years** of in-depth industrial experience within the **Oil & Gas, Refinery, Petrochemical, Mining and Power** industries. His expertise widely covers in the areas of **Operations Abnormalities & Plant Upset, Fertilizer Manufacturing Process Technology, Fertilizer Storage Management (Ammonia & Urea), Petrochemical & Fertilizer Plants, Nitrogen Fertilizer Production, Petroleum Industry Process Engineering, Process Equipment Design &**

Troubleshooting, Process Equipment & Piping Systems, Fertilizer Manufacturing Process Technology, Production Management, Process Plant Optimization & Continuous Improvement, Production Process Optimization, Process Analyzers, Process Equipment Design, Vinyl Chloride Monomer (VCM) Manufacturing & Process Troubleshooting, Cement Manufacturing Process Technology & Standards, Process Equipment & Piping System, Process Plant Optimization & Continuous Improvement, Process Plant Performance & Efficiency, Troubleshooting Process Operations, Modern Aluminium Production Processes, Cement Kiln Process, Process Engineer Calculations, Steel Making Process, Process Diagrams Review, Process Hazard Analysis (PHA), Process Mapping, Strategic Process Control in Process Industry, Revamping & Debottlenecking, Pressure Vessel Operation, Heat Mass Balance, Distillation-Column Operation, & Troubleshooting, Debottlenecking, Unit Performance Optimization, Real Time Online Optimization, Operations Planning Optimization, Engineering Problem Solving, Bag Filters Operation & Maintenance, Chemical Reaction Engineering Application, Phosphatic Industry, Diammonium Phosphate, Monoammonium Phosphate, NPK, Troubleshooting Improvement, Production Management, Distillation-Column Operation & Troubleshooting, Monomer Handling Safety, Complex Operational Troubleshooting, Incident Root Cause Analysis & Corrective Action, Fertilizer Manufacturing, Continuous Improvement & Benchmarking, Energy Efficiency for Process Plants, Pressure Vessel Operation, Reactors & Storage Tanks, Dehydrating Columns, Heat & Material Balance, P&ID Reading & Interpretation, Detailed Engineering Design, HAZOP Leadership, Project HSE Review (PHSER), Safe Handling of Propylene Oxide & Ethylene Oxide, Safety in Process & Industrial Plants, Environmental Impact Assessment (EIA) and Effective Risk Assessment & HAZOP Studies. Further, he is also well versed in Feasibility Studies Analysis & Evaluation, Project Gate System Procedures, Change Management Skills, Change Management Strategy, Developing Commercial Contracts, Project Management Skills, Project Scheduling & Cost Control, FIDIC & Other Model Contracts, EPC & EPCM Contracts, Knowledge Management, Job Evaluation, Creative Problems Solving & Innovation Skills, Problem Solving & Decision Making, Strategic Planning & Creative Thinking and Mind Mapping.

During his career life, Mr. Harvey has gained his practical and field experience through his various significant positions and dedication as the **Commercial Director, Manufacturing Director, Chief Operating Officer, Head Projects Division, Project Leader, Lead Technical Advisor/Consultant and Project Consultant** to various international companies such as the Trade and Industrial Policy Strategies (TIPS), PGBI Johannesburg, IDC Green Industries SBU/Arango 316 Pty Ltd, Ferrum Crescent Limited, CEF Limited, Rio Tinto Alcan, Industrial Development Corporation of SA (IDC) and AECI Limited.

Mr. Harvey has **Master (Cum Laude)** and **Bachelor** degrees in **Chemical Engineering**. Further, he is a **Certified Instructor/Trainer, a Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management (ILM)** and has delivered various trainings, seminars, conferences, workshops and courses globally.



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 – 0930	Compressor Types Positive Displacement-Reciprocating, Rotary • Dynamic-Centrifugal, Axial
0930 – 0945	Break
0945 – 1030	Principles of Gas Compression
1030 – 1230	Effect of Staging, Stage and Interstage Cooling
1230 – 1245	Break
1245 – 1420	Positive Displacement Compressors
1420 – 1430	Recap
1430	Lunch & End of Day One

Day 2

0730 – 0930	Reciprocating Compressor Cycle
0930 – 0945	Break
0945 – 1100	Effect of Staging
1100 – 1230	Oil Free Cylinders-Floating Pistons
1230 – 1245	Break
1245 – 1420	Condensation
1420 – 1430	Recap
1430	Lunch & End of Day Two

Day 3

0730 – 0930	Liquid Slugs
0930 – 0945	Break
0945 – 1100	Reciprocating Compressor Valves-Valve Response
1100 – 1230	Reciprocating Compressor Capacity Control
1230 – 1245	Break
1245 – 1420	Performance Considerations
1420 – 1430	Recap
1430	Lunch & End of Day Three

Day 4

0730 – 0930	Gas Pulsations-Reduction of Pulsations
0930 – 0945	Break
0945 – 1100	Starting up, Running, Shutting Down
1100 – 1230	Screw Compressors
1230 – 1245	Break
1245 – 1420	Areas of Application
1420 – 1430	Recap
1430	Lunch & End of Day Four

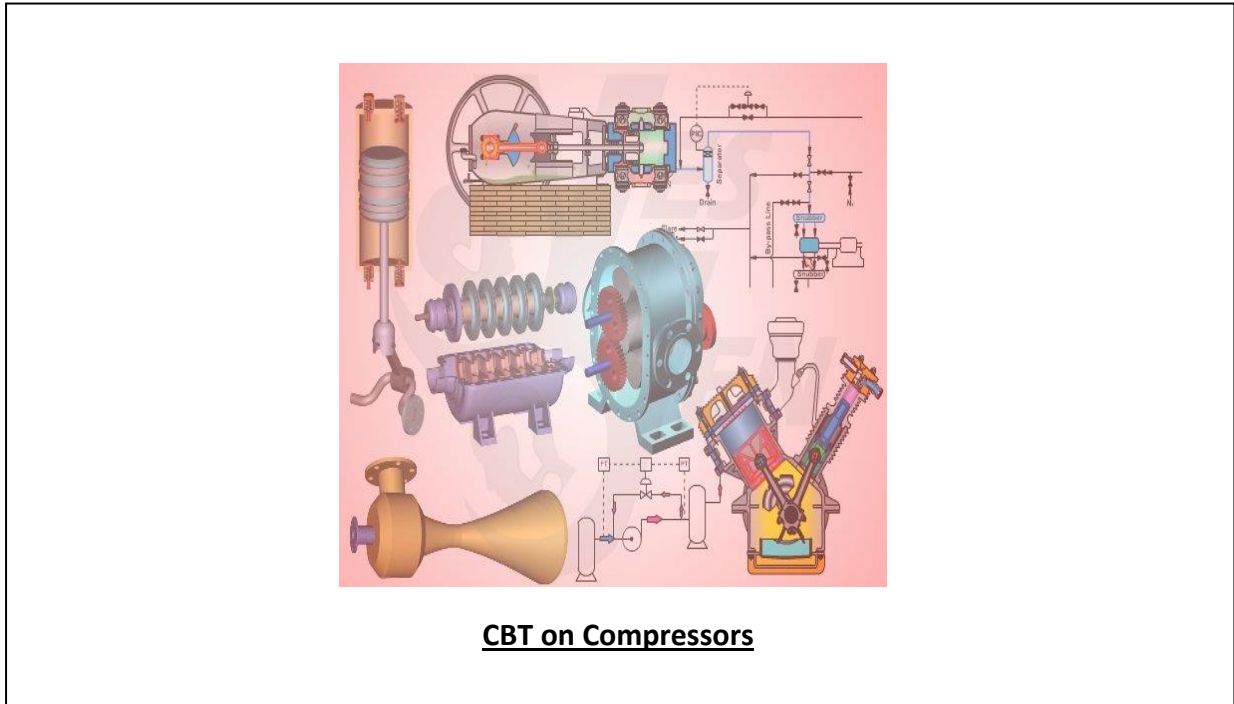


Day 5

0730 – 0830	Operating Principles
0830 – 0930	Capacity Control
0930 – 0945	Break
0945 – 1230	Performance
1230 – 1245	Break
1245 – 1345	Performance (cont'd)
1345 – 1400	Course Conclusion
1400 – 1415	POST-TEST
1415 – 1430	Presentation of Course Certificates
1430	Lunch & End of Course

Simulator (Hands-on Practical Sessions)

Practical sessions 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 simulators “CBT on Compressors”.



Course Coordinator

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