COURSE OVERVIEW ME1018
API-618: Reciprocating Compressors for Petroleum, Petrochemical & Gas Industries

Course Title
API-618: Reciprocating Compressors for Petroleum, Petrochemical & Gas Industries

Course Date/Venue
April 27-May 01, 2025/TBA Meeting Room, Taksim Square Hotel, Istanbul, Turkey

Course Reference
ME1018

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 compressors for petroleum, petrochemical and gas industries in accordance with the API 618 standards. It covers the types of compressors including the fundamentals and basic design of reciprocating compressors; the bolting and flanges; calculating cold runout; the allowable speeds, discharge temperature, rod and gas loads and critical speeds; the compressor cylinders, valves and unloaders; and the pistons, piston rods and piston rings.

During this interactive course, participants will learn the crankcases, crankshafts, connecting rods, bearings and crossheads; the distance pieces, packing cases and pressure packing; the lubrication, materials, nameplates and rotation arrows; the compressor drivers, couplings and guards; the reduction gears, belt drives, mounting plates and controls and instrumentation; the piping and appurtenances, intercoolers, aftercoolers and separators; the pulsation, vibration control and air intake filters; and the special tools and inspection and testing of reciprocating compressor.

Course Objectives

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

- Apply and gain an in-depth knowledge on reciprocating compressors for petroleum, petrochemical and gas industries in accordance with API-618 standards
- Identify the types of compressors and discuss the fundamentals and basic design of reciprocating compressors
- Recognize bolting and flanges and calculate cold runout as well as discuss allowable speeds and discharge temperature
- Identify rod and gas loads, critical speeds, compressor cylinders, valves and unloaders
- Determine pistons, piston rods, and piston rings including crankcases, crankshafts, connecting rods, bearings and crossheads
- Discuss distance pieces, packing cases, pressure packing, lubrication, materials, nameplates and rotation arrows
- Identify compressor drivers, couplings and guards, reduction gears, belt drives, mounting plates and controls and instrumentation
- Recognize piping, appurtenances, intercoolers, aftercoolers, separators, pulsation, vibration control and air intake filters
- Identify special tools and apply proper inspection and testing of reciprocating compressor

Who Should Attend

This course provides an overview of all significant aspects and considerations of reciprocating compressors for petroleum, petrochemical and gas industries in accordance with API 618 standards for mechanical, process and chemical engineers, product engineers and technologists, operation, technical service and maintenance professionals, engineers, consultants and sales professionals and technical professionals responsible for rotating equipment inspection and technical professionals responsible for interdisciplinary energy projects.

Course Fee

US$ 6,000 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day. Bnc

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 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.

- 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:

Mr. Den Bazley, PE, BSc, is a **Senior Mechanical Engineer** with over **30 years** of industrial experience in **Oil**, **Gas**, **Refinery**, **Petrochemical**, **Power** and **Utilities** industries. His wide expertise includes **Pumps & Compressors** Maintenance & Troubleshooting, **Centrifugal Pump** Design, **Hydraulic Turbines**, Axial Flow **Compressor**, **Centrifugal Pump** Installation & Operation, **Centrifugal Pump** Maintenance & Troubleshooting, **Centrifugal & Positive Displacement Pump** Technology, **Pumps & Valves** Operation, **Bearings**, **Seals & Couplings**, **Compressors & Turbines** Maintenance & Troubleshooting, **Gas Turbine** Design & Maintenance, **Gas Turbine** Troubleshooting, **Pressure Vessel** Design, Fabrication & Testing, **Tank & Tank Farms**, **Heat Exchangers** Operation & Maintenance, **Boilers & Steam System** Management, Re-tubing & Tube Expanding Technology, Propylene **Compressor & Turbine**, **Valve** Installation & Repair, **Safety Relief Valve** Sizing & Troubleshooting, **Dry Gas Seal** Operation, **Mechanical Seal** Installation & Maintenance, Industrial Equipment & **Turbomachinery**, **Pumps**, **Compressors**, **Turbines & Motors**, **Boiler & Steam** System Management, Tune-Up, Heat Recovery & Optimization, **Bearing & Lubrication**, Installation & Failure Analysis, **Boiler** Operation & Maintenance, Process **Control Valves**, **Steam Turbine** Operation, **Bearing** Mounting/Dismounting, **Valve** Types, Troubleshooting & Repair Procedure, **Pressure Vessels & Heat Exchangers**, **Corrosion** Inspection, **PSV** Maintenance & Testing, **Pump** Maintenance, Machinery Troubleshooting, **Valves**, **Safety Relief Valves**, Strainers & Steam Traps, **Pipeline Rules of Thumb**, Analytical Prevention of Mechanical Failure, **Gear Boxes** Troubleshooting & Repair, **Piping & Pipeline** Design & Inspection, **Pigging** & Integrity Assessment, Process Piping Design, **Pipeline** Operation & Maintenance, **Welding & Fabrication**, **Brazing**, Fitness-for-Service (**FFS**), **Process Plant** Equipment, **Pressure Vessels**, Piping & Storage Facilities, Layout of **Piping Systems & Process Equipment**, **Pipe Work** Design & Fabrication, Mechanical Integrity & Reliability, Mechanical **Rotating Equipment & Turbomachinery**, **Motors & Variable Speed Drives**, Mechanical Engineering Design, **Process Plant Shutdown**, Turnaround & Troubleshooting, **Mechanical Alignment**, **Laser & Dial-Indicator** Techniques, **Material Cataloguing**, **Condition Based** Monitoring, **Maintenance** Management, **Reliability** Management, Reliability Centred Maintenance (**RCM**), Total Plant Maintenance (**TPM**) and Reliability-Availability-Maintainability (**RAM**), **Engineering Drawings, Codes & Standards**, **P&ID Reading, Interpretation & Developing**, **Maintenance & Reliability** Best Practices, **Maintenance** Auditing, **Benchmarking & Performance** Improvement, Excellence in **Maintenance & Reliability** Management, **Preventive & Predictive** Maintenance & Machinery Failure Analysis (**RCFA**), Total Plant Reliability Centered Maintenance (**RCM**), Rotating Equipment Reliability Optimization, Machinery Failure Analysis, Prevention & Troubleshooting, **Maintenance** Planning, Scheduling & Work Control and **Maintenance Planning & Cost** Estimation.

During his career life, Mr. Bazley has gained his practical and field experience through his various significant positions and dedication as the **General Manager**, **Branch Manager**, **Refinery Chairman**, **Engineering Manager**, **Maintenance Engineer**, **Construction Engineer**, **Project Engineer**, **Mechanical Engineer**, **Associate Engineer**, **Oil Process Engineer**, **Mechanical Services Superintendent**, **Quality Coordinator**, **Planning Coordinator**, **Consultant/Instructor**, **Lecturer/Trainer** and **Public Relations Officer** for numerous international companies like **ESSO**, **FFS Refinery**, Dorbyl Heavy Engineering (**VECOR**), Vandenbergh Foods (**Unilever**), **Engen Petroleum**, Royle Trust and **Pepsi-Cola**.

Mr. Bazley is a **Registered Professional Engineer** and has a **Bachelor** degree in **Mechanical Engineering**. Further, he is a **Certified Engineer** (Government Certificate of Competency GCC Mechanical Pretoria), a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership and Management** (**ILM**), an active member of the **Institute of Mechanical Engineers** (**IMechE**) and has delivered numerous trainings, courses, seminars and workshops internationally.

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: ***Sunday, 27th of April 2025***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0900	***Introduction to API-618***
0900 – 0930	***Types of Compressors***
0930 – 0945	*Break*
0945 – 1100	***Fundamentals of Reciprocating Compressors***
1100 – 1215	***Basic Design of Reciprocating Compressors***
1215 – 1230	*Break*
1230 – 1330	***Bolting & Flanges***
1330 – 1420	***Calculating Cold Runout***
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2: ***Monday, 28th of April 2025***

0730 – 0830	***Allowable Speeds***
0830 – 0930	***Allowable Discharge Temperature***
0930 – 0945	*Break*
0945 – 1100	***Rod & Gas Loads***
1100 – 1215	***Critical Speeds***
1215 – 1230	*Break*
1230 – 1330	***Compressor Cylinders***
1330 – 1420	***Valves & Unloaders***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3: ***Tuesday, 29th of April 2025***

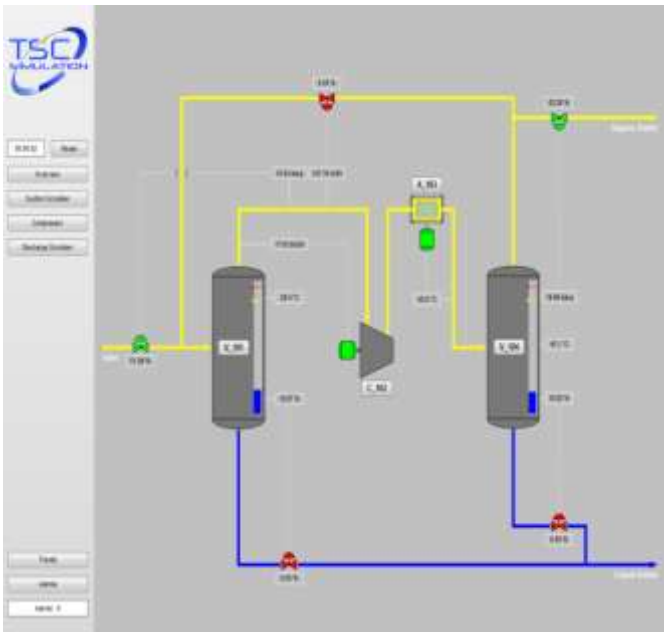
0730 – 0830	***Pistons, Piston Rods, & Piston Rings***
0830 – 0930	***Crankcases, Crankshafts, Connecting Rods, Bearings & Crossheads***
0930 – 0945	*Break*
0945 – 1100	***Distance Pieces***
1100 – 1215	***Packing Cases & Pressure Packing***
1215 – 1230	*Break*
1230 – 1330	***Lubrication***
1330 – 1420	***Materials, Nameplates & Rotation Arrows***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4:	***Wednesday, 30th 27th of April 2025***
0730 – 0830	***Compressor Drivers***
0830 – 0930	***Couplings & Guards***
0930 – 0945	*Break*
0945 – 1100	***Reduction Gears***
1100 – 1215	***Belt Drives***
1215 – 1230	*Break*
1230 – 1330	***Mounting Plates***
1330 – 1420	***Controls & Instrumentation***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

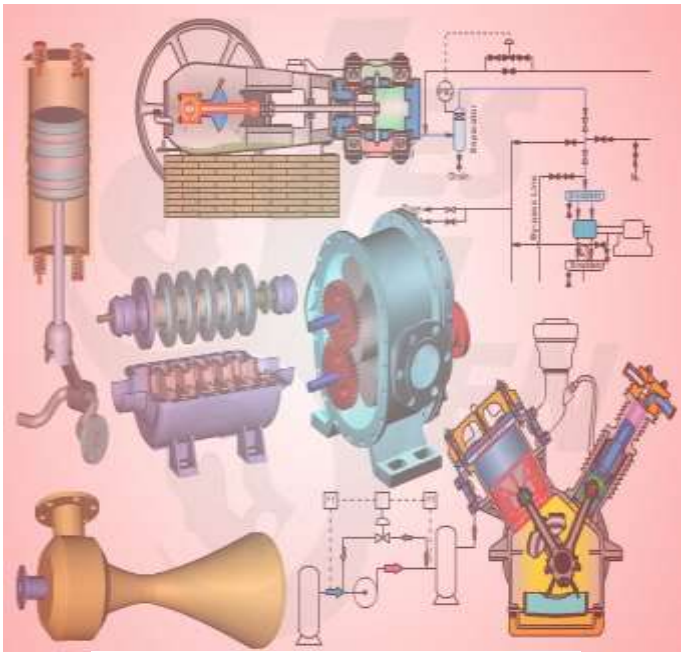
Day 5:	***Thursday, 01st of May 2025***
0730 – 0830	***Piping & Appurtenances***
0830 – 0930	***Intercoolers, Aftercoolers & Separators***
0930 – 0945	*Break*
0945 – 1100	***Pulsation & Vibration Control***
1100 – 1215	***Air Intake Filters***
1215 – 1230	*Break*
1230 – 1330	***Special Tools***
1330 – 1345	***Inspection & Testing of Reciprocating Compressor***
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 our state-of-the-art simulators "SIM 3300 Centrifugal Compressor" and "CBT on Compressors".



SIM 3300 Centrifugal Compressor Simulator



CBT on Compressors

Course Coordinator

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