

COURSE OVERVIEW ME0689
Instrument and Utility Air Compressor
Operation and Maintenance

Course Title

Instrument and Utility Air Compressor Operation and Maintenance

Course Date/Venue

Session 1: January 06-10, 2025/Fujairah
 Meeting Room, Grand Millennium Al
 Wahda Hotel, Abu Dhabi, UAE
 Session 2: August 03-07, 2025/Boardroom 1,
 Elite Byblos Hotel Al Barsha, Sheikh
 Zayed Road, Dubai, UAE



Course Reference

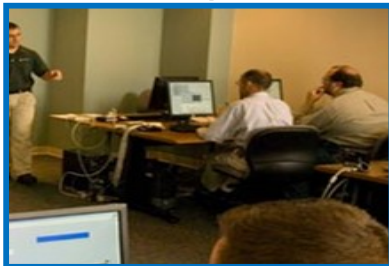
ME0689



Course Duration/Credits

Five days/3.0 CEUs/30 PDHs

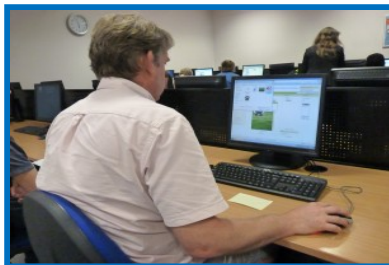
Course Description



This practical and highly-interactive includes various practical sessions and exercises. Theory learnt will be applied using the compressor simulators.



The course is designed to provide participants with an up-to-date overview on the maintenance of instrument and plant air compressors. It covers the air compressors for industrial purposes; the air compression theory and relevant thermodynamics; the general operation of air compressors; and the parts and assembly of air compressors, impellers, screw, housing, bearings and seals.



The course will also discuss the troubleshooting, failures, corrosion and wear surge of air compressor; the maintenance of air compression equipment through proper cleaning and lubrication; plant instrumentation, pressure measuring devices, flow measuring devices, temperature measuring devices and level measuring devices; and the basic operation, troubleshooting and maintenance of plant instrumentation.

Further, the course will cover the various types of valves, actuators, control valve, dampers and miscellaneous, other FCEs and actuators auxiliary; special instrumentation, vibration, turbosurvey instruments and gas analyzers; steam and water analysis system; sample conditioning system; blow down and dosing control; and the analyzers for air pollution monitoring and control (NOX control).

Course Objectives

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

- Apply systematic techniques on the maintenance of instrument and plant air compressors
- Identify the air compressors for industrial purposes and discuss air compression theory and relevant thermodynamics
- Explain the general operation of air compressors
- Recognize the parts and assembly of air compressors, impellers, screw, housing, bearings and seals
- Troubleshoot and discuss the failures, corrosion and wear surge of air compressor
- Maintain air compression equipment through proper cleaning and lubrication
- Explain plant instrumentation, pressure measuring devices, flow measuring devices, temperature measuring devices and level measuring devices
- Operate, troubleshoot and maintain air compressors in a professional manner
- Enumerate the various types of valves, actuators, control valve, dampers and miscellaneous, other FCEs and actuators auxiliary
- Determine special instrumentation, vibration, turbosurvey instruments and gas analyzers
- Carryout steam and water analysis system, sample conditioning system and blow down and dosing control
- Recognize the analyzers for air pollution monitoring and control (NOX control)

Exclusive Smart Training Kit - H-STK®



Participants of this course will receive the exclusive “Howard 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 air compressors for plant operators and other technical staff responsible for the maintenance of instrument and plant air compressors.

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)

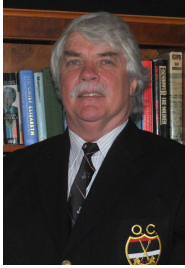
Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** 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. 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), Vandenberg 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 Fee

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

Accommodation

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

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 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	<i>Air Compressors for Industrial Purposes</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>Introduction, Air Compression Theory & Relevant Thermodynamics</i>
1100 – 1230	<i>General Operation of Air Compressors</i>
1230 – 1245	<i>Break</i>
1245 – 1420	<i>General Operation of Air Compressors (cont'd)</i>
1420 – 1430	Recap
1430	<i>Lunch & End of Day One</i>

Day 2

0730 – 0900	<i>Parts & Assembly of Air Compressors, Impellers, Screw, Housing, Bearings, Seals etc.</i>
0900 – 0915	<i>Break</i>
0915 – 1100	<i>General Air-Compressor Failures, Troubleshooting, Corrosion, Wear Surge etc.</i>
1100 – 1230	<i>Case Study - Cause Analysis for Failures</i>
1230 – 1245	<i>Break</i>

1245 – 1420	Maintenance of Air Compression Equipment, Cleaning & Lubrication
1420 – 1430	Recap
1430	<i>Lunch & End of Day Two</i>

Day 3

0730 – 0930	Introduction to Plant Instrumentation
0930 - 0945	<i>Break</i>
0945 – 1100	Pressure Measuring Devices, Flow Measuring Devices, Temperature Measuring Devices
1100 – 1215	Level Measuring Devices
1215 – 1230	<i>Break</i>
1230 - 1420	Basic Operation, Troubleshooting & Maintenance
1420 – 1430	Recap
1430	<i>Lunch & End of Day Three</i>

Day 4

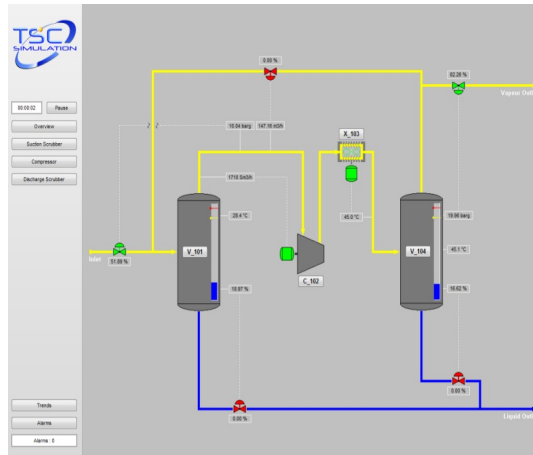
0730 – 0930	Valves & Actuators
0930 - 0945	<i>Break</i>
0945 – 1100	Control Valve Types
1100 – 1215	Dampers, Miscellaneous & Other FCEs
1215 – 1230	<i>Break</i>
1230 – 1320	Actuators Auxiliary
1320 - 1420	Basic Operation, Troubleshooting & Maintenance
1420 – 1430	Recap
1430	<i>Lunch & End of Day Four</i>

Day 5

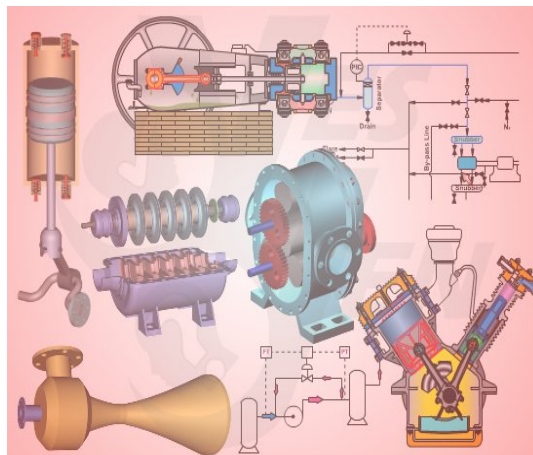
0730 – 0800	Special Instrumentation
0800 – 0830	Vibration & Turbovisory Instruments
0830 - 0900	Gas Analyzers
0900 - 0930	Steam & Water Analysis System
0930 - 0945	<i>Break</i>
0945 – 1100	Sample Conditioning System
1100 – 1215	Blow Down & Dosing Control
1215 – 1230	<i>Break</i>
1230 - 1350	Analyzers for Air Pollution Monitoring & Control (NOX Control)
1350 – 1400	Course Conclusion
1400 - 1415	POST-TEST
1415 - 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch & End of Course</i>

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 “SIM 3300 Centrifugal Compressor”, and “CBT on Compressors” simulators.



SIM 3300 Centrifugal Compressor Simulator



CBT on Compressors

Course Coordinator

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