COURSE OVERVIEW ME1184
Screw Air Compressors Troubleshooting

Course Title
Screw Air Compressors Troubleshooting

Course Date/Venue
Batch 1: October 12-16, 2025/Vertex Meeting Room, 72 Hotel Sharjah, Sharjah, UAE
Batch 2: October 19-23, 2025/Vertex Meeting Room, 72 Hotel Sharjah, Sharjah, UAE

Course Reference
ME1184

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 Screw Air Compressors Troubleshooting. It covers the fundamentals of screw air compressors, basic working principle and compressor design types; the key components of air end assemblies, bearings, seals, lubrication, oil systems and valves, dryers and cooling systems; the operating parameters, safety considerations, air end (rotors), bearings and seals and oil system; and the valves and control systems, cooling system, auxiliary equipment and air delivery issues.

Further, the course will also discuss the mechanical failures, oil system problems, cooling system problems, vibration and noise issues as well as electrical and control problems; the systematic troubleshooting approach, visual inspection techniques and data interpretation and monitoring; the pressure testing of air circuits, lubricant quality tests, ultrasonic leak detection and thermal imaging; and the portable vibration analyzers, flow meters and pressure gauges, endoscopes for internal inspection and online monitoring systems.

During this interactive course, participants will learn the daily, weekly and monthly checks, lubricant & filter replacement schedules, cooling system cleaning practices and electrical and control system checks; the vibration analysis, oil condition monitoring, thermographic surveys and online performance monitoring; and the corrective maintenance, record keeping and documentation as well as reliability and efficiency improvements.

Course Objectives

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

- Apply and gain an in-depth knowledge on screw air compressors troubleshooting
- Discuss the fundamentals of screw air compressors, basic working principle and compressor design types
- Identify the key components of air end assemblies, bearings, seals, lubrication, oil systems and valves, dryers and cooling systems
- Recognize operating parameters, safety considerations, air end (rotors), bearings and seals and oil system
- Discuss valves and control systems, cooling system, auxiliary equipment and air delivery issues
- Identify mechanical failures, oil system problems, cooling system problems, vibration and noise issues as well as electrical and control problems
- Carryout systematic troubleshooting approach, visual inspection techniques and data interpretation and monitoring
- Employ pressure testing of air circuits, lubricant quality tests, ultrasonic leak detection and thermal imaging
- Apply portable vibration analyzers, flow meters and pressure gauges, endoscopes for internal inspection and online monitoring systems
- Carryout daily, weekly and monthly checks, lubricant & filter replacement schedules, cooling system cleaning practices and electrical and control system checks
- Illustrate vibration analysis, oil condition monitoring, thermographic surveys and online performance monitoring
- Apply corrective maintenance, record keeping and documentation as well as reliability and efficiency improvements

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 screw air compressors troubleshooting for mechanical engineers, maintenance engineers and technicians, operation engineers, plant operators, utility and facility engineers, reliability engineers, technical supervisors and other technical staff.

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

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. Dimitry Rovas, CEng, MSc, PMI-PMP, SMRP-CMRP is a **Senior Mechanical & Maintenance Engineer** with extensive industrial experience in **Oil**, **Gas**, **Power** and **Utilities** industries. His expertise includes **Pump** Technology, Fundamentals of **Pumps**, **Pump** Selection & Installation, **Centrifugal Pumps & Troubleshooting**, **Reciprocating & Centrifugal Compressors**, **Screw Compressor**, **Compressor** Control & Protection, **Gas & Steam Turbines**, **Turbine** Operations, **Gas Turbine** Technology, **Valves**, **Process Control Valves**, **PV Elite & Fracture Mechanics**, **Static Equipment** Selection & Design, **Design Against Fracture Mechanics**, **Elastic-Plastic Fracture Mechanics**, **Boiler** Inspection & Maintenance, **Boiler** Systems, **Boiler** instrumentation & Controls, **Boiler** Start-up & Shutdown, **Boiler** Operation & Steam System Management, **Boiler** Inspection & Testing, **Boiler** Maintenance, **Boiler** Troubleshooting & Safety Control, **Combustion** Analysis & Tuning Procedures, **Water Treatment** Technology, Heat Recovery Steam Generating (**HRSG**), **Impulse Tube** Installation & Inspection, **Parker Compression Fittings**, **Pipes & Fittings**, **PSV Inspection**, **Root Cause Failure Analysis**, **Tank** Design & Engineering, **Tank Shell**, **Tanks & Tank Farms**, **Vacuum Tanks**, **Gas Turbine** Operating & Maintenance, **Diesel Engine**, **Engine Cycles**, **Governors & Maintenance**, **Crankshafts** & Maintenance, **Lubrication** System Troubleshooting & Maintenance, **Engines/Drivers**, **Motor** Failure Analysis & Testing, **Motor** Predictive Maintenance, **Engine** Construction & Maintenance, **HP Fuel Pumps & Maintenance**, **Fired Equipment** Maintenance, Combustion **Techniques**, **Process Heaters**, Glass Reinforced Epoxy (**GRE**), Glass Reinforced Pipes (**GRP**), Glass Reinforced Vent (**GRV**), **Mechanical Pipe Fittings**, **Flange Joint Assembly**, Adhesive Bond Lamination, **Butt Jointing**, **Joint & Spool Production**, **Isometric Drawings**, **Flange Assembly** Method, **Fabrication & Jointing**, Jointing & Spool Fabrication, **CAESAR**, **Pipe Stress Analysis**, **Pipe Cuttings**, **Flange Bolt Tightening** Sequence, **Hydro Testing**, **Bearings & Lubrication**, Advanced **Machinery Dynamics**, **Rubber Compounding**, **Elastomers**, **Thermoplastic**, **Industrial Rubber Products**, **Rubber** Manufacturing Systems, **Heat Transfer**, **Vulcanization Methods**, **Process Plant Shutdown & Turnaround**, **Professional Maintenance Planner**, Advanced **Maintenance Management**, **Maintenance Optimization & Best Practices**, **Maintenance Auditing & Benchmarking**, **Material Cataloguing**, **Reliability** Management, **Rotating Equipment**, **Energy Conservation**, **Energy Loss Management** in Electricity Distribution Systems, **Energy Saving**, **Thermal Power Plant** Management, **Thermal Power Plant** Operation & Maintenance, **Heat Transfer**, **Machine Design**, **Fluid Mechanics**, **Heating & Cooling Systems**, **Heat Insulation Systems**, **Heat Exchanger & Cooling Towers**, **Mechanical Erection**, **Heavy Rotating Equipment**, Material Unloading & Storage, Commissioning & Start-Up. He is currently the **Project Manager** wherein he is managing, directing and controlling all activities and functions associated with the domestic heating/cooling facilities projects.

During his life career, Mr. Rovas has gained his practical and field experience through his various significant positions and dedication as the **EPC Project Manager**, **Maintenance Manager**, **Mechanical Engineer**, **Field Engineer**, **Preventive Maintenance Engineer**, **Lead Rotating Equipment Commissioning Engineer**, **Construction Commissioning Engineer**, **Offshore Lead Maintenance Engineer**, **Researcher**, **Instructor/Trainer**, **Telecom Consultant** and **Consultant** from various companies such as the Mytilineos Aluminium Group, Podaras Engineering Studies, Metka and Diadikasia, S.A., **Hellenic Petroleum Oil Refinery** and COSMOTE.

Mr. Rovas has **Master's** degrees in **Energy Production & Management** and **Mechanical Engineering** from the **National Technical University of Athens** (**NTUA**), **Greece**. Further, he is a **Certified Instructor/Trainer**, a **Certified Maintenance and Reliability Professional** (**CMRP**) from the Society of Maintenance & Reliability Professionals (**SMRP**), **Certified Project Management Professional** (**PMI-PMP**), **Certified Six Sigma Black Belt**, **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**), **Certified Construction Projects Contractor**, **Certified Energy Auditor** and a **Chartered Engineer**. Moreover, he is an active member of **American Society for Quality**, Project Management Institute (**PMI**), **Body of Certified Energy Auditors** and **Technical Chamber of Greece**. He has further received various recognition and awards and delivered numerous trainings, seminars, courses, workshops and conferences internationally.

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 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.

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 workshop 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	***Introduction to Screw Compressors*** *History & Industrial Applications in Petroleum Sector • Positive Displacement Principle • Comparison: Screw versus Reciprocating versus Centrifugal Compressors • Oil-Injected versus Oil-Free Screw Compressors*
0930 – 0945	*Break*
0945 – 1030	***Basic Working Principle*** *Compression Cycle of Rotors • Role of Male & Female Rotors • Air Delivery Process • Efficiency Factors*
1030 – 1130	***Compressor Design Types*** *Twin-Screw Compressors • Single-Screw Compressors • Dry versus Wet Screw Designs • Performance Characteristics*
1130 – 1215	***Key Components Overview*** *Air End Assemblies • Bearings & Seals • Lubrication & Oil Systems • Valves, Dryers & Cooling Systems*
1215 – 1230	*Break*
1230 – 1330	***Operating Parameters*** *Pressure Ratio & Volumetric Efficiency • Flow Rate & Specific Power Consumption • Operating Temperature Ranges • Impact of Gas Composition in Petroleum Sites*

1330 – 1420	***Safety Considerations*** *Potential Hazards & Risks in Oil Facilities • Pressure Relief Systems • Noise & Vibration Hazards • Explosion-Proof Design in Petroleum Environments*
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 – 0830	***Air End (Rotors)*** *Rotor Profiles & Geometry • Wear Mechanisms of Rotors • Clearance Tolerances • Impact on Efficiency*
0830 – 0930	***Bearings & Seals*** *Types of Bearings in Screw Compressors • Common Bearing Failures • Mechanical Seal Types & Functions • Seal Leakage Issues*
0930 – 0945	*Break*
0945 – 1100	***Oil System*** *Oil Circulation & Separation • Oil Injection Cooling System • Types of Compressor Oils (Synthetic/Mineral) • Oil Degradation Issues*
1100 – 1215	***Valves & Control Systems*** *Inlet & Discharge Valves • Minimum Pressure Valve Operation • Blow-Off Valves • Load/Unload Control Systems*
1215 – 1230	*Break*
1230 – 1330	***Cooling System*** *Intercoolers & Aftercoolers • Water-Cooled versus Air-Cooled Systems • Heat Exchanger Fouling Issues • Temperature Monitoring Techniques*
1330 – 1420	***Auxiliary Equipment*** *Dryers (Refrigerated & Desiccant) • Filters & Separators • Instrumentation & Sensors • Electrical Motor & Coupling Systems*
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 – 0830	***Air Delivery Issues*** *Reduced Air Flow • Pressure Drops • Surging & Unstable Operation • Leaks in Piping System*
0830 – 0930	***Mechanical Failures*** *Rotor Misalignment • Bearing Damage Symptoms • Seal Wear & Oil Leakage • Coupling & Alignment Issues*
0930 – 0945	*Break*
0945 – 1100	***Oil System Problems*** *Oil Carryover into Air System • High Oil Consumption • Oil Foaming & Contamination • Separator Filter Blockages*
1100 – 1215	***Cooling System Problems*** *Overheating Causes & Effects • Cooler Fouling & Clogging • Insufficient Lubrication Cooling • High Ambient Temperature Impact*
1215 – 1230	*Break*

1230 – 1330	***Vibration & Noise Issues*** *Sources of Excessive Vibration • Resonance & Imbalance • Noise Diagnostics • Foundation & Alignment Problems*
1330 – 1420	***Electrical & Control Problems*** *Motor Overheating • Variable Frequency Drive (VFD) Issues • Control Panel Malfunctions • Sensor Calibration Errors*
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 – 0830	***Systematic Troubleshooting Approach*** *Step-by-Step Diagnostic Process • Fault Tree Analysis • Root Cause Analysis (RCA) Methods • Case Studies from Petroleum Sites*
0830 – 0930	***Visual Inspection Techniques*** *Identifying Oil Leaks & Stains • Rotor Wear Visual Signs • Bearing Housing Checks • Cooler & Filter Inspection*
0930 – 0945	*Break*
0945 – 1100	***Data Interpretation & Monitoring*** *Reading Pressure & Temperature Logs • Vibration Analysis Interpretation • Oil Analysis Results • Trend Monitoring & Predictive Tools*
1100 – 1215	***Testing Methods*** *Pressure Testing of Air Circuits • Lubricant Quality Tests • Ultrasonic Leak Detection • Thermal Imaging*
1215 – 1230	*Break*
1230 – 1330	***Diagnostic Tools & Instruments*** *Portable Vibration Analyzers • Flow Meters & Pressure Gauges • Endoscopes for Internal Inspection • Online Monitoring Systems*
1330 – 1420	***Troubleshooting Case Studies*** *Low Pressure & Poor Air Delivery • Frequent Overheating • Oil Carryover Incidents • Bearing Seizure in Petroleum Operations*
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*

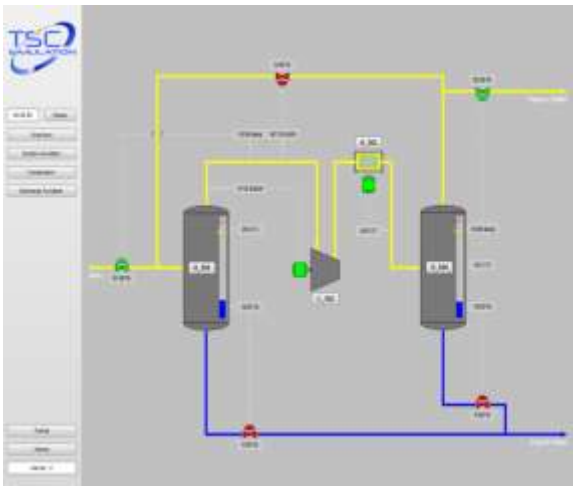
Day 5

0730 – 0830	***Preventive Maintenance*** *Daily, Weekly & Monthly Checks • Lubricant & Filter Replacement Schedules • Cooling System Cleaning Practices • Electrical & Control System Checks*
0830 – 0930	***Predictive Maintenance*** *Vibration Analysis Programs • Oil Condition Monitoring • Thermographic Surveys • Online Performance Monitoring*
0930 – 0945	*Break*
0945 – 1030	***Corrective Maintenance*** *Repair versus Replacement Criteria • Rotor Reconditioning • Bearing Replacement Procedures • Seal Refurbishment*
1030 – 1130	***Record Keeping & Documentation*** *Maintenance Logs & Checklists • Failure History Records • Spare Parts Inventory Control • Linking Maintenance to Reliability Data*

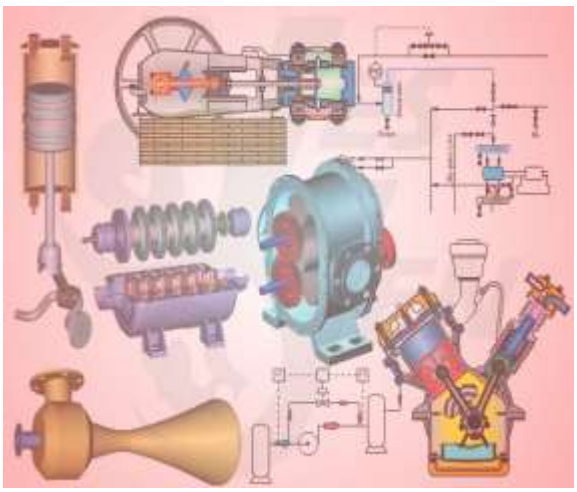
1130 – 1215	***Reliability & Efficiency Improvements*** *Energy-Saving Strategies • Minimizing Downtime in Petroleum Facilities • Upgrading Lubrication & Cooling Systems • Compressor Optimization Projects*
1215 – 1230	*Break*
1230 – 1345	***Hands-On Practical Session*** *Guided Troubleshooting Workshop • Oil & Filter Change Demonstration • Pressure & Leak Testing Exercise • Vibration Analysis Practice*
1345 – 1400	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Simulator (Hands-on Practical Sessions)

Hands-on practical sessions will be arranged for all participants throughout the course duration using "SIM 3300 Centrifugal Compressor Simulator", "CBT on Compressors" and "iLearnVibration" simulators.



SIM 3300 Centrifugal Compressor Simulator



CBT on Compressors

iLearnVibration

Course Coordinator

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