



COURSE OVERVIEW ME0978

Howden Screw Compressor MK/WRV Operation, Maintenance & Troubleshooting

Course Title

Howden Screw Compressor MK/WRV
Operation, Maintenance & Troubleshooting

Course Date/Venue

February 09-13, 2025/TBA Meeting Room,
The H Hotel Dubai, Sheikh Zayed Road,
Dubai, UAE

Course Reference

ME0978

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 Howden Screw Compressor MK/WRV Operation, Maintenance & Troubleshooting. It covers the compression cycle and the fundamental of operation of twin screw; the normal operation and shutdown procedures; the construction characteristics including API 619 compliance; the variable volume control MVI and AVI; the performance characteristics and superfeed; the compressor auxiliary equipment and functions; and the installation checks on alignment of couplings and unit troubleshooting and diagnostics.



During this interactive course participants will learn the major overhaul and dismantling procedures on a screw compressor; the detailed inspection and checking on the clearances of components and bearings; the assembly procedures, detailed measurements and setting of clearances; the pressure testing of the screw compressor, loading and unloading pressures; the efficient measurements and plotting of the operating curves; the preventive maintenance procedures on a daily, weekly and annual basis; and the efficiency and performance monitoring of screw compressors in a professional manner.



Course Objectives

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

- Apply and gain a comprehensive knowledge on howden screw compressor MK/WRV operation, maintenance and troubleshooting
- Discuss screw compressor covering compression cycle and the fundamental of operation of twin screw
- Employ normal operation and shutdown procedures
- Deal with emergencies during operation and describe the construction characteristics including API 619 compliance
- Recognize the variable volume control MVI and AVI
- Identify the performance characteristics and the superfeed as well as compressor auxiliary equipment and functions
- Carryout installation checks on alignment of couplings and unit troubleshooting and diagnostics
- Prepare for major overhaul, identify spare part tools and perform dismantling procedures on a screw compressor
- Employ detailed inspection and checking on the clearances of components and bearings
- Demonstrate assembly procedures, detailed measurements and setting of clearances
- Perform pressure testing of the screw compressor and setting of the loading and unloading pressures
- Carryout efficient measurements and plotting of the operating curves
- Employ preventive maintenance procedures on a daily, weekly and annual basis
- Monitor the efficiency and performance of screw compressors in a professional manner

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 howden screw compressor MK/WRV operation, maintenance and troubleshooting for plant and maintenance engineers, maintenance managers and supervisors and compressor specialists. It should be valuable to senior maintenance mechanics and those who are involved with compressors’ operation, maintenance, troubleshooting and overhaul.

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.

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. Karl Thanasis, PEng, MSc, MBA, BSc, is **Senior Mechanical & Maintenance Engineer** with over **45 years** of extensive industrial experience. His wide expertise includes **Compressors Maintenance & Troubleshooting**, **Screw Compressor MK/WRV Operation Maintenance & Troubleshooting**, **Piping & Pipeline, Maintenance, Repair, Shutdown, Turnaround & Outages, Maintenance & Reliability Management, Mechanical Maintenance Planning, Scheduling & Work Control, Advanced Techniques in Maintenance Management, Predictive & Preventive Maintenance, Maintenance & Operation Cost Reduction Techniques, Reliability Centered Maintenance (RCM), Machinery Failure Analysis, Rotating Equipment Reliability Optimization & Continuous Improvement, Material Cataloguing, Mechanical & Rotating Equipment Troubleshooting & Maintenance, Root Cause Analysis & Reliability Improvement, Condition Monitoring, Root Cause Failure Analysis (RCFA), Steam Generation, Steam Turbines, Power Generator Plants, Gas Turbines, Combined Cycle Plants, Boilers, Process Fired Heaters, Air Preheaters, Induced Draft Fans, All Heaters Piping Work, Refractory Casting, Heater Fabrication, Thermal & Fired Heater Design, Heat Exchangers, Heat Transfer, Coolers, Power Plant Performance, Efficiency & Optimization, Storage Tank Design & Fabrication, Thermal Power Plant Management, Boiler & Steam System Management, Pump Operation & Maintenance, Chiller & Chiller Plant Design & Installation, Pressure Vessel, Safety Relief Valve Sizing & Selection, Valve Disassembling & Repair, Pressure Relief Devices (PSV), Hydraulic & Pneumatic Maintenance, Advanced Valve Technology, Pressure Vessel Design & Fabrication, Pumps, Turbo-Generator, Turbine Shaft Alignment, Lubrication, Mechanical Seals, Packing, Blowers, Bearing Installation, Couplings, Clutches and Gears. Further, he is also versed in Wastewater Treatment Technology, Networking System, Water Network Design, Industrial Water Treatment in Refineries & Petrochemical Plants, Piping System, Water Movement, Water Filtering, Mud Pumping, Sludge Treatment and Drying, Aerobic Process of Water Treatment that includes Aeration, Sedimentation and Chlorination Tanks. His strong background also includes Design and Sizing of all Waste Water Treatment Plant Associated Equipment such as Sludge Pumps, Filters, Metering Pumps, Aerators and Sludge Decanters.**

Mr. Thanasis has acquired his thorough and practical experience as the **Project Manager, Plant Manager, Area Manager - Equipment Construction, Construction Superintendent, Project Engineer and Design Engineer**. His duties covered **Plant Preliminary Design, Plant Operation, Write-up of Capital Proposal, Investment Approval, Bid Evaluation, Technical Contract Write-up, Construction and Sub-contractor Follow up, Lab Analysis, Sludge Drying and Management of Sludge Odor and Removal**. He has worked in various companies worldwide in the **USA, Germany, England and Greece**.

Mr. Thanasis is a **Registered Professional Engineer** in the **USA and Greece** and has a **Master's and Bachelor's** degree in **Mechanical Engineering with Honours** from the **Purdue University and SIU in USA** respectively as well as an **MBA** from the **University of Phoenix in USA**. Further, he is a **Certified Internal Verifier/Trainer/Assessor** by the **Institute of Leadership & Management (ILM)** a **Certified Instructor/Trainer** and has delivered numerous trainings, courses, seminars, workshops and conferences worldwide.





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® (Howard Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

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, 09th of February 2025

0730 – 0800	<i>Registration & Coffee</i>
0800 – 0815	<i>Welcome & Introduction</i>
0815 – 0830	PRE-TEST
0830 – 0930	<i>Introduction to Screw Compressor</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>Screw Compressor Theory - The Compression Cycle Fundamental of Operation of Twin Screw-First Start up</i>
1100 – 1215	<i>Normal Operation & Shutdown Procedures</i>
1215 – 1230	<i>Break</i>
1230 – 1420	<i>Dealing with Emergencies during Operation</i>
1420 – 1430	<i>Recap</i>
1430	<i>Lunch & End of Day One</i>

Day 2: Monday, 10th of February 2025

0730 – 0930	<i>The MK/WRV Family of Screw Compressors</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>Construction Characteristics & API 619 Compliance</i>
1100 – 1215	<i>Variable Volume Control-MVI & AVI</i>
1215 – 1230	<i>Break</i>
1230 – 1420	<i>Performance Characteristics & the Superfeed</i>
1420 – 1430	<i>Recap</i>
1430	<i>Lunch & End of Day Two</i>

Day 3: Tuesday, 11th of February 2025

0730 – 0930	<i>Compressor Auxiliary Equipment & Functions</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>Installation Checks-Alignment of Couplings</i>
1100 – 1215	<i>Unit Troubleshooting & Diagnostics</i>



1215 – 1230	<i>Break</i>
1230 – 1420	<i>Troubleshooting, Low Discharge Temperature & High Discharge Temperature</i>
1420 – 1430	<i>Recap</i>
1430	<i>Lunch & End of Day Three</i>

Day 4: Wednesday, 12th of February 2025

0730 – 0930	<i>Preparing for Major Overhaul-Spare Parts-Tools</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>The Dismantling Procedures on a Screw Compressor</i>
1100 – 1215	<i>Detailed Inspection & Checking the Clearances of Components & Bearings -What to Replace & Criteria for Replacement</i>
1215 – 1230	<i>Break</i>
1230 – 1420	<i>Assembly Procedures & Detailed Measurements & Setting of Clearances</i>
1420 – 1430	<i>Recap</i>
1430	<i>Lunch & End of Day Four</i>

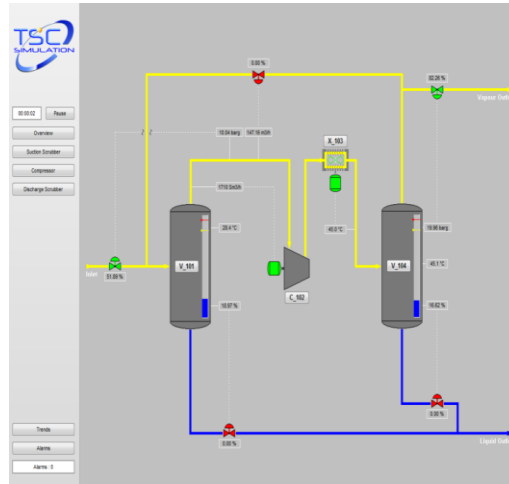
Day 5: Thursday, 13th of February 2025

0730 – 0930	<i>Perform Pressure Testing of the Screw Compressor & Setting of the Loading & Unloading Pressures</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>Efficiency Measurements & Plotting the Operating Curves</i>
1100 – 1215	<i>Preventive Maintenance Procedures Daily, Weekly Annually</i>
1215 – 1230	<i>Break</i>
1230 – 1345	<i>Monitoring Efficiency & Performance</i>
1345 – 1400	<i>Course Conclusion</i>
1400 – 1415	<i>POST-TEST</i>
1415 – 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch & End of Course</i>

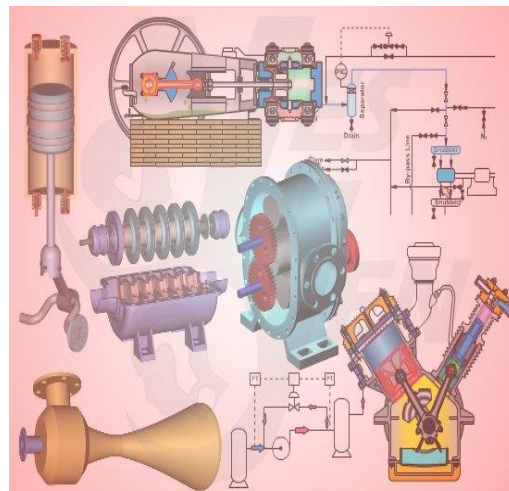


Simulator (Hands-on Practical Sessions)

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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