

## COURSE OVERVIEW ME0002 Fans and Blowers

### Course Title

Fans and Blowers

### Course Date/Venue

Session 1: April 20-24, 2025/Boardroom 1, Elite  
Byblos Hotel Al Barsha, Sheikh Zayed  
Road, Dubai, UAE

Session 2: September 22-26, 2025/Fujairah  
Meeting Room, Grand Millennium Al  
Wahda Hotel, Abu Dhabi, UAE

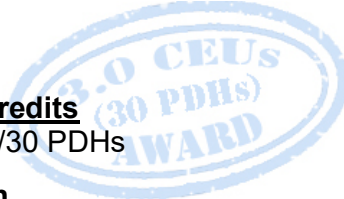
### Course Reference

ME0002

### Course Duration/Credits

Five days/3.0 CEUs/30 PDHs

### Course Description



***This practical and highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.***

Proper maintenance of industrial fans and blowers is crucial for their efficient operation and longevity. Maintenance tasks may include regular cleaning of fan blades, checking for signs of wear or damage, lubricating moving parts, and replacing worn or damaged components. It is important to follow the manufacturer's recommendations for maintenance intervals and procedures, and to keep detailed records of maintenance activities for future reference. Regular maintenance can help prevent breakdowns and costly repairs, and ensure that fans and blowers continue to operate safely and effectively.

This course is designed to provide participants with a detailed and up-to-date overview of Fans and Blowers. It covers the blower and fan terms and characteristics; the different types of fans and their applications; the different functions of fan and blowers; the fan capacity control; the systematic approach and methodology assessment of fans and blowers; the energy efficiency opportunities and the difficulties in assessing the performance of fans and blowers; the checklist and worksheets used in blower and fan technology; and the performance problems for fans and blowers.

### Course Objectives

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

- Apply and gain an in-depth knowledge on fans and blowers
- Define the blower and fan terms and characteristics and identify the different types of fans and their applications
- Review and carryout fan performance and explain the different functions of fan and blowers
- Employ fan capacity control and apply the systematic approach and methodology assessment of fans and blowers
- Emphasize the energy efficiency opportunities and determine the difficulties in assessing the performance of fans and blowers
- Discuss the checklist and worksheets used in blower and fan technology
- Employ fan and blower operation and maintenance methodology
- Troubleshoot performance problems for fans and blowers

### 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 fans and blowers for mechanical maintenance technicians and engineers.

### 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:-

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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. Manuel Dalas, MSc, BSc, is a Senior Mechanical & Maintenance Engineer with over 25 years of industrial experience in Oil, Gas, Refinery, Petrochemical, Power and Nuclear industries. His wide expertise includes Root Cause Failure Analysis, Rotating Equipment Maintenance & Failure Analysis, Failure Analysis Methodologies for Mechanical Engineers, Reliability Centered Maintenance & Root Cause Failure Analysis, Machinery Failure Analysis, Prevention & Troubleshooting, Machinery Failure Analysis, Machinery Root Cause Failure Analysis (RCFA), Machinery Diagnostics & Root Cause Failure Analysis, Water Well, Transfer & Network Systems Operation, Water Network Systems &**

**Pumping Stations, Instrument, Control & Protection Systems, Plumbing Network Systems & Building, Water Distribution & Pump Station, Boiler Operation & Water Treatment, Pipeline Simulations, Pipe Stress Analysis using CAESAR II, CAESAR II Application, Piping Dynamic, Static & Other Special Analysis using CAESAR II, Expansion Joints Design & Analysis, Impact Load Analysis, Piping Systems, Piping Codes Used in CAESAR II, RFP Pipe Maintenance & Repair, Relief Valve Analysis, Safety Relief Valve, Tanks & Tank Farms, Atmospheric Tanks, Seismic Loads, Tank Shell, Tank Failure, Vacuum Tanks, Tank Design & Engineering, Tank Contractions, Material Cataloguing, Maintenance Planning & Scheduling, Reliability Centered Maintenance (RCM), Reliability Maintenance, Condition Based Maintenance & Condition Monitoring, Asset & Risk Management, Vibration Condition Monitoring & Diagnostics of Machines, Vibration & Predictive Maintenance, Reliability Improvement & Vibration Analysis for Rotating Machinery, Effective Maintenance Shutdown & Turnaround Management, Engineering Codes & Standards, Rotating Equipment Maintenance, Mechanical Troubleshooting, Static Mechanical Equipment Maintenance, Plant Reliability & Maintenance Strategies, Centrifugal Pumps Maintenance & Troubleshooting, Fans, Blowers & Compressors, Process Control Valves, Piping Systems & Process Equipment, Gas Turbines & Compressors Troubleshooting, Advanced Valve Technology, Pressure Vessel Design & Analysis, Steam & Gas Turbine, High Pressure Boiler Operation, FRP Pipe Maintenance & Repair, Centrifugal & Positive Displacement Pump Technology Troubleshooting & Maintenance, Rotating Machinery Best Practices, Diesel Engine Operations, Maintenance & Troubleshooting, PD Compressor & Gas Engine Operation & Troubleshooting, Hydraulic Tools & Fitting, Mass & Material Balance Tank Farm & Tank Terminal Safety & Integrity Management, Process Piping Design, Construction & Mechanical Integrity, Stack & Noise Monitoring, HVAC & Refrigeration Systems, BPV Code, Section VIII, Division 2, Facility Planning & Energy Management, Hoist - Remote & Basic Rigging & Slings, Mobile Equipment Operation & Inspection, Heat Exchanger, Safety Relief Valve, PRV & POPRV/PORV, Bearing & Lubrication, Voith Coupling Overhaul, Pump & Valve Technology, Lubrication Inspection, Process Plant Optimization, Rehabilitation, Revamping & Debottlenecking, Engineering Problem Solving and Process Plant Performance & Efficiency. Currently, he is the Technical Consultant of the Association of Local Authorities of Greater Thessaloniki where he is in charge of the mechanical engineering services for piping, pressure vessels fabrications and ironwork.**

During his career life, Mr. Dalas has gained his practical and field experience through his various significant positions and dedication as the **Technical Manager, Project Engineer, Safety Engineer, Deputy Officer, Instructor, Construction Manager, Construction Engineer, Consultant Engineer, Water Network Systems Engineer, Maintenance Engineer and Mechanical Engineer and CAESAR II Application Consultant** for numerous multi-billion companies including the **Biological Recycling Unit** and the **Department of Supplies of Greece, Alpha Bank Group, EMKE S.A, ASTE LLC and Polytechnic College of Evosmos.**

Mr. Dalas has a **Master's degree in Energy System** from the **International Hellenic University, School of Science & Technology** and a **Bachelor's degree in Mechanical Engineering** from the **Mechanical Engineering Technical University of Greece** along with a **Diploma in Management & Production Engineering** from the **Technical University of Crete**. Further, he is a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership and Management (ILM)**, a **Certified Project Manager Professional (PMI-PMP)**, a **Certified Instructor/Trainer**, a **Certified Energy Auditor for Buildings, Heating & Climate Systems**, a **Member of the Hellenic Valuation Institute** and the **Association of Greek Valuers** and a **Licensed Expert Valuer Consultant of the Ministry of Development and Competitiveness**. He has further delivered numerous trainings, courses, seminars, conferences and workshops internationally.





**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 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	<b>PRE-TEST</b>
0830 - 0930	<b>Introduction to Fans &amp; Blowers</b> What Are Fans and Blowers • Difference Between Fans, Blowers and Compressors • Typical Fan System Components • Atmospheric Pressure • Static Pressure
0930 - 0945	Break
0945 - 1100	<b>Introduction to Fans &amp; Blowers (cont'd)</b> Airflow Through a Round Duct of Constant Diameter, Velocity Pressure • Airflow Through a Converging • Cone • Airflow Through a Diverging Cone • Venturi Inlet
1100 - 1215	<b>Fan Performance</b> Fan Performance Test • Determining Air Flow • Example • Fan Performance Curve • Fan Speed • Input Power • Fan Surge • Fan Surge Line • Percent of Wide-Open Air Flow
1215 - 1230	Break
1230 - 1420	<b>Fan Performance (cont'd)</b> Tabular Performance Data • System Resistance Curve • System Resistance • Fan System Interaction • Higher System Resistance • Lower System Resistance • Static Efficiency • Constant-Volume System • Variable-Pitch Vaneaxial
1420 - 1430	<b>Recap</b> 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 - 0930	<b>Fan &amp; Blowers Types</b> Centrifugal Fans • Axial Fans • Forward Curved Fan • Backward Inclined Fan • Backward Curved Fan • Positive – Displacement Blowers
0930 - 0945	Break
0945 - 1100	<b>Fan &amp; Blowers Types (cont'd)</b> Foil Fan • Plug (Or Plenum) Fan • Vaneaxial Fan • Variable-Pitch Vaneaxial Fan
1100 - 1215	<b>Fan Capacity Control</b> Variable-Air-Volume System • Riding The Fan Curve • Forward Curved Centrifugal Fan • Fan Control Loop
1215 - 1230	Break





1230 - 1420	<b>Fan Capacity Control (cont'd)</b> Methods of Fan Capacity Control • Fan Speed Control • Variable –Pitch Blade Control
1420 - 1430	<b>Recap</b> 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 - 0930	<b>Assessment of Fans &amp; Blowers</b> What Is Fan Efficiency and Performance
0930 - 0945	Break
0945 - 1100	<b>Assessment of Fans &amp; Blowers (cont'd)</b> Methodology of Fan Performance Assessment
1100 - 1215	<b>Fan &amp; Blower Operation</b> Safety
1215 - 1230	Break
1230 - 1420	<b>Fan &amp; Blower Operation (cont'd)</b> Operation Check List
1420 - 1430	<b>Recap</b> 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 - 0930	<b>Maintenance &amp; Troubleshooting of Fans &amp; Blowers</b> General Motor Maintenance
0930 - 0945	Break
0945 - 1100	<b>Maintenance &amp; Troubleshooting of Fans &amp; Blowers (cont'd)</b> Drive Maintenance • Bearing Maintenance
1100 - 1215	<b>Maintenance &amp; Troubleshooting of Fans &amp; Blowers (cont'd)</b> Lubrication • Wheel and Shaft Maintenance
1215 - 1230	Break
1230 - 1420	<b>Maintenance &amp; Troubleshooting of Fans &amp; Blowers (cont'd)</b> Structural Maintenance • Air Capacity Problems
1420 - 1430	<b>Recap</b> 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 - 0930	<b>Maintenance &amp; Troubleshooting of Fans &amp; Blowers (cont'd)</b> Noise Problems • Vibration Problems
0930 - 0945	Break
0945 - 1100	<b>Maintenance &amp; Troubleshooting of Fans &amp; Blowers (cont'd)</b> Vibration Problems
1100 - 1215	<b>Maintenance &amp; Troubleshooting of Fans &amp; Blowers (cont'd)</b> Motor Problems



1215 - 1230	Break
1230 - 1345	<b>Maintenance &amp; Troubleshooting of Fans &amp; Blowers (cont'd)</b> Motor Problems • Drive Problems
1345 - 1400	<b>Course Conclusion</b> Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course
1400 - 1415	<b>POST-TEST</b>
1415 - 1430	Presentation of Course Certificates
1430	Lunch & End of Course

**Practical Sessions**

This practical and highly-interactive course includes real-life case studies and exercises:-



**Course Coordinator**

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