COURSE OVERVIEW ME0742
Maintain Engines/Drivers

Course Title
Maintain Engines/Drivers

Course Reference
ME0742

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

Course Date/Venue

Session(s)	Date	Venue
1	April 28-May 02, 2024	The Kooh Al Noor Meeting Room, The H Dubai Hotel, Sheikh Zayed Rd - Trade Centre, Dubai, UAE
2	September 01-05, 2024	Oryx Meeting Room, Doubletree By Hilton Doha-Al Sadd, Doha, Qatar
3	December 15-19, 2024	Kizkulesi, Crown Plaza Istanbul Asia Hotels & Convention Center, Istanbul, Turkey

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 maintenance engines/drivers fundamentals. It covers the various types of engines/drivers; the gas turbines, I.C. engines and motors; the gas turbine basics, construction and device summary; the function and maintenance of gas turbine instrumentation; the gas turbine operating and maintenance; the description, maintenance and troubleshooting of gas turbine support systems; the gas turbine and auxiliary system preventive maintenance scheduling; and the major gas turbine mechanical maintenance.

Further, the course will also discuss the internal combustion engines (I.C.E.) and the diesel engine types; the engine cycles, timing mechanism construction and engine indicator diagrams; the engine construction and maintenance; the HP fuel pumps and maintenance, governors and maintenance and crankshafts and maintenance; the cooling system (air, water, oil) troubleshooting and maintenance; the lubrication system troubleshooting and maintenance; the transmission systems; and the various electric motors types, operations and performance.

During this interactive course, participants will learn the 3-phase AC induction motors, motor speed control and motor failure analysis and testing; the basics of motor predictive maintenance techniques; the operating principles of the various types of engines/drivers at own location; how to use the appropriate tools and equipment to maintain engines/drivers and auxiliary systems; the operating parameters of each engine/driver at own location and the importance of maintaining performance within those parameters; the function of individual engines/drivers components and auxiliary systems; how to evaluate and interpret performance and integrity data of engines/drivers; and how to recognize and respond to abnormal conditions and take appropriate corrective action.

Course Objectives

At the end of this course, the trainee will be able to:-

- Apply and gain fundamental knowledge on maintain engines/drivers
- Explain the various types of engines/drivers used at own location
- Describe the operating principles of the various types of engines/drivers at own location
- Use the appropriate tools and equipment to maintain engines/drivers and auxiliary systems
- Describe the operating parameters of each engine/driver at own location and the importance of maintaining performance within those parameters
- Describe the function of individual engines/drivers components and auxiliary systems
- Evaluate and interpret performance and integrity data of engines/drivers
- Recognize and respond to abnormal conditions and take appropriate corrective action
- Identify the various types of engines/drivers as well as the I.C. engines and motors, and the basics, construction and device summary of gas turbine
- Discuss the function and maintenance of gas turbine instrumentation and the operating and maintenance of gas turbine
- Recognize gas turbine support systems covering description, maintenance and troubleshooting
- Illustrate gas turbine and auxiliary system preventive maintenance scheduling and major gas turbine mechanical maintenance
- Identify internal combustion engines (I.C.E.), diesel engine types, engine cycles, timing mechanism construction and engine indicator diagrams
- Carryout engine construction and maintenance, HP fuel pumps and maintenance, governors and maintenance, crankshafts and maintenance and cooling system (air, water, oil) troubleshooting and maintenance
- Employ lubrication system troubleshooting and maintenance and recognize transmission systems and the various electric motors types, operations and performance
- Illustrate 3-phase AC induction motors, motor speed control, motor failure analysis and testing and the basics of motor predictive maintenance techniques

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, sample video clips of the instructor's actual lectures & practical sessions during the course conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides an overview of all significant aspects and considerations of maintain engines/drivers fundamentals for mechanical maintenance engineers, mechanical maintenance technicians, mechanical and rotating equipment engineers, plant maintenance engineers, production operations engineers, process engineers, supervisors, foremen and other technical staff.

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 Fee

Dubai	**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.
Doha	**US$ 6,000** per Delegate. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Istanbul	**US$ 6,000** per Delegate + **VAT**. This rate includes Participants Pack (Folder, Manual, Hand-outs, etc.), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

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.

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 **Boiler** Inspection & Maintenance, **Boiler** Systems, **Boiler** instrumentation & Controls, **Boiler** Start-up & Shutdown, **Boiler** Operation & Steam System Management, **Boiler** Water Chemistry & Treatment, **Boiler** Efficiency & Waste Heat Recovery, **Boiler** Inspection & Testing, **Boiler** Maintenance, **Boiler** Troubleshooting & Safety, **Boiler** Emissions & Pollution 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**, **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**, **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** 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.

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	***PRE-TEST***
0830 – 0900	***Introduction to Engines/Drivers***
0900 - 0930	***Types of Engines/Drivers***
0930 – 0945	*Break*
0945 – 1030	***Gas Turbines, I.C. Engines & Motors***
1030 – 1230	***Gas Turbine Basics***
1230 – 1245	*Break*
1245 – 1300	***Gas Turbine Construction***
1300 – 1330	***Gas Turbine Device Summary***
1330 - 1420	***Gas Turbine Instrumentation (Function & Maintenance)***
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0830	***Gas Turbine Operating & Maintenance***
0830 - 0930	***Gas Turbine Support Systems: Description, Maintenance & Troubleshooting***
0930 – 0945	*Break*
0945 – 1100	***Gas Turbine & Auxiliary System Preventive Maintenance Scheduling***
1100 – 1230	***Major Gas Turbine Mechanical Maintenance***
1230 – 1245	*Break*
1245 – 1330	***Internal Combustion Engines (I.C.E.)***
1330 – 1400	***Diesel Engine Types***
1400 - 1420	***Engine Cycles***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0830	***Timing Mechanism Construction***
0830 - 0930	***Engine Indicator Diagrams***
0930 – 0945	*Break*
0945 – 1100	***Engine Construction & Maintenance***
1100 – 1230	***HP Fuel Pumps & Maintenance***
1230 – 1245	*Break*
1245 – 1330	***Governors & Maintenance***
1330 – 1400	***Crankshafts & Maintenance***
1400 - 1420	***Cooling System (Air, Water, Oil) Troubleshooting & Maintenance***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

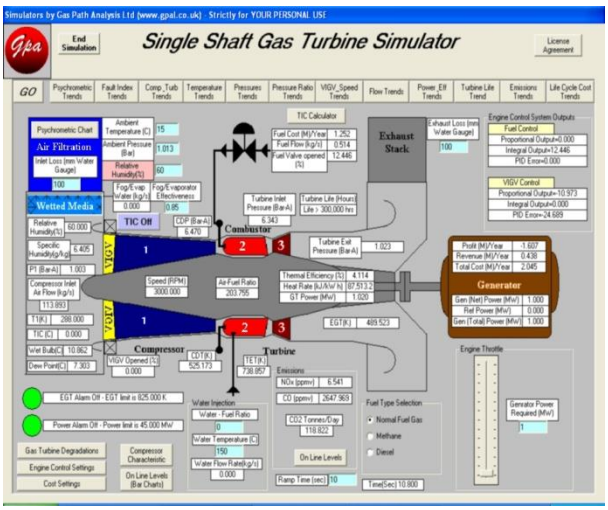
0730 – 0830	***Lubrication System Troubleshooting & Maintenance***
0830 - 0930	***Transmission Systems***
0930 – 0945	*Break*
0945 – 1100	***Electric Motors Types, Operations & Performance***
1100 – 1230	***3-Phase AC Induction Motors***
1230 – 1245	*Break*
1245 – 1330	***Motor Speed Control***
1330 – 1400	***Motor Failure Analysis & Testing***
1400 - 1420	***Motor Predictive Maintenance Techniques: Basics***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

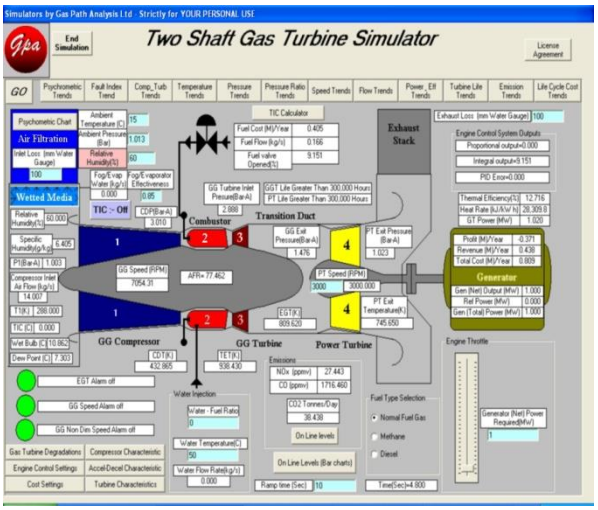
0730 – 0830	***Operating Principles of the Various Types of Engines/Drivers at Own Location***
0830 - 0930	***How to Use the Appropriate Tools & Equipment to Maintain Engines/Drivers & Auxiliary Systems***
0930 – 0945	*Break*
0945 – 1100	***Operating Parameters of Each Engine/Driver at Own Location & The Importance of Maintaining Performance within those Parameters***
1100 – 1230	***Function of Individual Engines/Drivers Components & Auxiliary Systems***
1230 – 1245	*Break*
1245 – 1300	***How to Evaluate & Interpret Performance & Integrity Data of Engines/Drivers***
1300 - 1345	***How to Recognize & Respond to Abnormal Conditions & Take Appropriate Corrective Action***
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 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 “Single Shaft Gas Turbine Simulator” and “Two Shaft Gas Turbine Simulator”.



Single Shaft Gas Turbine Simulator



Two Shaft Gas Turbine Simulator

Course Coordinator

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