

COURSE OVERVIEW ME0523
Practical Class: Maintaining Pumps

Course Title

Practical Class: Maintaining Pumps

Course Reference

ME0523

Course Duration/Credits

Five days/3.0 CEUs/30 PDHs

Course Date/Venue

Session(s)	Date	Venue
1	April 21-25, 2024	The Kooh Al Noor Meeting Room, The H Dubai Hotel, Sheikh Zayed Rd - Trade Centre, Dubai, UAE
2	July 21-25, 2024	Oryx Meeting Room, Doubletree By Hilton Doha-Al Sadd, Doha, Qatar
3	December 08-12, 2024	Kizkulesi, Crown Plaza Istanbul Asia Hotels & Convention Center, Istanbul, Turkey



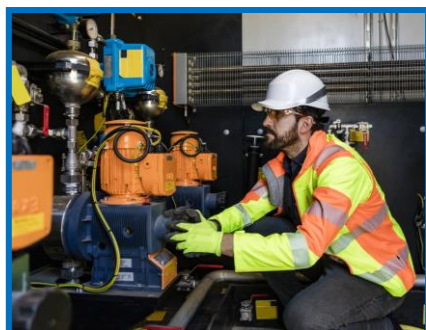
Course Description



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 Maintaining Pumps. It covers the different pump designs and their operational contexts; the safety measures, personal protective equipment and hazard recognition; the key components and technical terms for pump mechanics; the routine inspection procedures and pump failure identification and diagnostics; the principles and benefits of regular maintenance schedules; the necessary tools and equipment covering its proper use for pump maintenance; the step-by-step guidance on pump disassembly; and the detailed inspection of impellers, seals, bearings, etc.



Further, the course will also discuss the signs of wear and the techniques for gasket and seal replacement; the proper reassembly of pump components; the techniques for detecting and analyzing vibrations and issues through noise analysis; the pump performance evaluation, hydraulic issues and pump electrical systems; the development of maintenance schedule and management of spare parts inventory; and the maintenance of lubrication and sealing components.

During this interactive course, participants will learn the environmental considerations in pump maintenance and the environmental impacts; the importance of record keeping and documentation; the techniques to enhance pump performance and efficiency; and the procedures to maintain, diagnose and troubleshoot pumps effectively.

Course Objectives

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

- Apply and gain systematic knowledge and techniques on maintaining pumps
- Discuss the different pump designs and their operational contexts as well as emphasize safety measures, personal protective equipment and hazard recognition
- Identify the key components and technical terms for pump mechanics and carryout routine inspection procedures as well as pump failure identification and diagnostics
- Explain the principles and benefits of regular maintenance schedules
- Enumerate the necessary tools and equipment covering its proper use for pump maintenance
- Apply a step-by-step guidance on pump disassembly as well as a detailed inspection of impellers, seals, bearings, etc.
- Identify signs of wear as well as employ techniques for gasket and seal replacement and proper reassembly of pump components
- Demonstrate techniques for detecting and analyzing vibrations as well as identifying issues through noise analysis
- Evaluate pump performance, hydraulic issues and pump electrical systems
- Develop a maintenance schedule and manage spare parts inventory as well as describe the maintenance of lubrication and sealing components
- Recognize environmental considerations in pump maintenance and address environmental impacts
- Discuss the importance of record keeping and documentation as well as apply techniques to enhance pump performance and efficiency
- Carryout pump maintenance, diagnostic and troubleshooting procedures effectively

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 practical class: maintaining pumps for mechanical engineers, maintenance technicians/engineers, industrial plant operators and those in facilities management.

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.

Accommodation

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

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: -

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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.

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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.

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. Andrew Ladwig is a **Senior Process & Mechanical Engineer** with over **25 years** of extensive experience within the **Oil & Gas, Refinery, Petrochemical & Power** industries. His expertise widely covers in the areas of **Ammonia Manufacturing & Process Troubleshooting, Distillation Towers, Crude Oil Distillation, Fundamentals of Distillation** for Engineers, **Distillation** Operation and Troubleshooting, **Advanced Distillation** Troubleshooting, **Distillation** Technology, **Vacuum Distillation, Ammonia Storage & Loading** Systems, **Ammonia Plant** Operation, Troubleshooting & Optimization, **Ammonia Recovery, Ammonia Plant Safety, Hazard of Ammonia Handling, Storage & Shipping, Operational Excellence in Ammonia Plants, Fertilizer Storage** Management (Ammonia & Urea), **Fertilizer Manufacturing** Process Technology, **Sulphur Recovery, Phenol Recovery & Extraction, Wax Sweating & Blending, Petrochemical & Fertilizer Plants, Nitrogen Fertilizer Production, Petroleum Industry Process Engineering, Refining Process & Petroleum Products, Refinery Planning & Economics, Safe Refinery Operations, Hydrotreating & Hydro-processing, Separators in Oil & Gas Industry, Gas Testing & Energy Isolations, Gas Liquor Separation, Industrial Liquid Mixing, Wax Bleachers, Extractors, Fractionation, Operation & Control of Distillation, Process of Crude ATM & Vacuum Distillation Unit, Water Purification, Water Transport & Distribution, Steam & Electricity, Flame Arrestors, Coal Processing, Environmental Emission Control, R&D of Wax Blending, Wax Molding/Slabbing, Industrial Drying, Principles, Selection & Design, Certified Process Plant Operations, Control & Troubleshooting, Operator Responsibilities, Storage Tanks Operations & Measurements, Process Plant Troubleshooting & Engineering Problem Solving, Process Plant Performance, Efficiency & Optimization, Continuous Improvement & Benchmarking, Process Troubleshooting Techniques, Oil & Gas Operation/Introduction to Surface Facilities, Pressure Vessel Operation, Process Equipment Performance & Troubleshooting, Plant Startup & Shutdown, Startup & Shutdown the Plant While Handling Abnormal Conditions, Flare & Relief System, Process Gas Plant Start-up, Commissioning & Problem Solving, Process Liquid and Process Handling & Measuring Equipment. Further, he is also well-versed in **Compressors & Turbines** Operation, Maintenance & Troubleshooting, **Heat Exchanger** Overhaul & Testing Techniques, Balancing of **Rotating Machinery (BRM), Pipe Stress Analysis, Valves & Actuators** Technology, Inspect & Maintain **Safeguarding Vent & Relief System**, Certified Inspectors for **Vehicle & Equipment**, Optimizing **Equipment Maintenance & Replacement** Decisions, Certified Maintenance Planner (**CMP**), Certified Planning and Scheduling Professional (**AACE-PSP**), **Tank Design, Construction, Inspection & Maintenance, Material Cataloguing, Specifications, Handling & Storage, Steam Trap Design, Operation, Maintenance & Troubleshooting, Steam Trapping & Control, Column, Pump & Exchangers, Troubleshooting & Design, Rotating Equipment Operation & Troubleshooting, Control & ESD System, Detailed Engineering Drawings, Codes & Standards, Budget Preparation, Allocation & Cost Control, Root Cause Analysis (RCA), Production Optimization, Permit to Work (PTW), Project Engineering, Data Analysis, Process Hazard Analysis (PHA), HAZOP Study, Sampling & Analysis, Training Analysis, Job Analysis** Techniques, Storage & Handling of **Toxic Chemicals & Hazardous Materials, Hazardous Material Classification & Storage/Disposal, Dangerous Goods, Supply Chain, Purchasing, Procurement, Logistics Management & Transport & Warehousing & Inventory, Risk Monitoring Authorized Gas Tester (AGT), Confined Space Entry (CSE), Personal Protective Equipment (PPE), Fire & Gas, First Aid and Occupational Health & Safety.****

During his career life, Mr. Ladwig has gained his practical experience through his various significant positions and dedication as the **Mechanical Engineer, Project Engineer, Reliability & Maintenance Engineer, Maintenance Support Engineer, Process Engineer, HSE Supervisor, Warehouse Manager, Quality Manager, Business Analyst, Senior Process Controller, Process Controller, Safety Officer, Mechanical Technician, Senior Lecturer and Senior Consultant/Trainer** for various companies such as the Sasol Ltd., Sasol Wax, Sasol Synfuels, just to name a few.

Mr. Ladwig has a **Bachelor's** degree in **Chemical Engineering** and a **Diploma in Mechanical Engineering**. Further, he is a **Certified Instructor/Trainer, a Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management (ILM)** and has delivered various trainings, workshops, seminars, courses 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 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	Overview of Pump Types & Applications: Understanding Different Pump Designs & their Operational Contexts
0930 – 0945	Break
0945 – 1030	Safety Protocols in Pump Maintenance: Emphasizing Safety Measures, Personal Protective Equipment & Hazard Recognition
1030 – 1130	Basic Pump Mechanics & Terminology: Familiarization with Key Components & Technical Terms
1130 – 1215	Routine Inspection Procedures: Hands-On Training in Conducting Regular Pump Inspections
1215 – 1230	Break
1230 – 1330	Common Pump Failures & Diagnostics: Identifying & Diagnosing Frequent Issues
1330 – 1420	Introduction To Preventive Maintenance: Principles & Benefits of Regular Maintenance Schedules
1420 – 1430	Recap
1430	Lunch & End of Day One

Day 2

0730 – 0830	Tools & Equipment for Pump Maintenance: Overview of Necessary Tools & their Proper Use
0830 – 0930	Disassembling Techniques: Step-By-Step Guidance on Pump Disassembly
0930 – 0945	Break
0945 – 1100	Inspection of Components: Detailed Inspection of Impellers, Seals, Bearings, etc.
1100 – 1215	Wear & Tear Analysis: Understanding & Identifying Signs of Wear
1215 – 1230	Break
1230 – 1330	Gasket & Seal Replacement: Techniques for Replacing Seals & Gaskets
1330 – 1420	Reassembly Procedures: Guidance on Proper Reassembly of Pump Components
1420 – 1430	Recap
1430	Lunch & End of Day Two

Day 3

0730 – 0830	Vibration Analysis & Monitoring: Techniques for Detecting & Analyzing Vibrations
0830 – 0930	Noise Diagnostics: Identifying Issues Through Noise Analysis
0930 – 0945	Break
0945 – 1100	Hydraulic Performance Assessment: Evaluating Pump Performance & Hydraulic Issues
1100 – 1215	Electrical System Checks: Basics of Inspecting Pump Electrical Systems
1215 – 1230	Break
1230 – 1330	Troubleshooting Common Issues: Practical Exercises in Problem-Solving
1330 – 1420	Case Studies: Review of Real-World Maintenance Scenarios
1420 – 1430	Recap
1430	Lunch & End of Day Three



Day 4

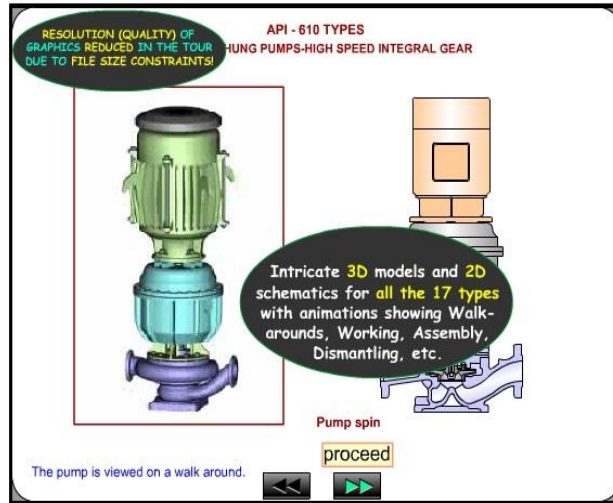
0730 – 0830	Developing a Maintenance Schedule: Crafting Effective Maintenance Plans
0830 – 0930	Spare Parts Management: Understanding & Managing Spare Parts Inventory
0930 – 0945	Break
0945 – 1100	Lubrication & Sealing Systems: Maintenance of Lubrication & Sealing Components
1100 – 1215	Environmental Considerations in Pump Maintenance: Addressing Environmental Impacts
1215 – 1230	Break
1230 – 1420	Record Keeping & Documentation: Importance of Accurate & Detailed Records
1420 – 1430	Recap
1430	Lunch & End of Day Four

Day 5

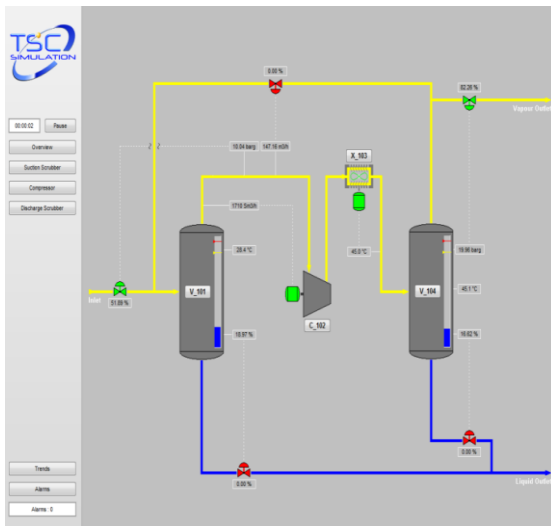
0730 – 0930	Pump Efficiency Optimization: Techniques to Enhance Pump Performance & Efficiency
0930 – 0945	Break
0945 – 1100	Practical Maintenance Session: Hands-On Experience with Pump Maintenance Tasks
1100 – 1230	Advanced Disassembly & Reassembly Exercise: Deep Dive into Complex Maintenance Procedures
1230 – 1245	Break
1245 – 1345	Diagnostic Challenge: Interactive Troubleshooting Exercises
1345 – 1400	Course Conclusion
1400 – 1415	POST-TEST
1415 – 1430	Presentation of Course Certificates
1430	Lunch & End of Course

Simulator (Hands-on Practical Sessions)

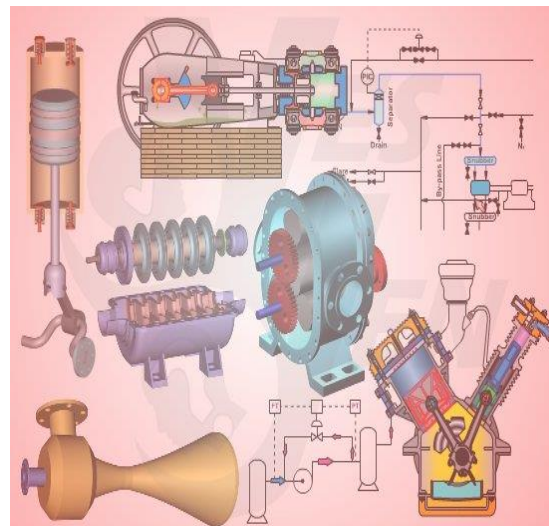
Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using our state-of-the-art simulators “Centrifugal Pumps and Troubleshooting Guide 3.0”, “SIM 3300 Centrifugal Compressor” and “CBT on Compressors”.



Centrifugal Pumps and Troubleshooting Guide 3.0



SIM 3300 Centrifugal Compressor Simulator



CBT on Compressors

Course Coordinator

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