

COURSE OVERVIEW ME0098
Pump Technology

Course Title

Pump Technology

Course Date/Venue

November 24-28, 2024/ Club B Meeting Room,
 Ramada Plaza by Wyndham Istanbul City
 Center, Istanbul, Turkey

Course Reference

ME0098



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 delegates with a detailed and up-to-date overview on the proper selection, installation, performance and control of pumps. It covers pump construction covering centrifugal pump, pump curves, characteristics, most common end-suction and in-line pump types, impeller and casing types, single-stage and multistage pumps, long coupled and close-coupled pumps as well as various types of pumps and mechanical shaft seals including its components, functions and factors affecting the seal performance.



The course will enable the participants to describe motors, liquids and materials and employ proper installation of pumps as well as analyze pump performance, system characteristics and pumps connected in series and parallel. Participants will be able to adjust pump performance and describe speed-controlled pump solutions for constant pressure and temperature control, constant differential pressure in a circulating system and flow compensated differential pressure control.

Course Objectives

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

- Apply and gain an in-depth knowledge on the selection, installation, performance and control of various types of industrial pumps
- Recognize pump construction covering centrifugal pump, pump curves, characteristics, most common end-suction and in-line pump types, impeller and casing types, single-stage and multistage pumps as well as long coupled and close-coupled pumps
- Identify the various types of pumps and mechanical shaft seals including its components, functions and factors affecting the seal performance
- Describe motors, liquids and materials as well as employ proper installation of pumps
- Analyze pump performance, system characteristics and pumps connected in series and parallel

Who Should Attend

This course covers systematic techniques and methodologies in the selection, installation, performance and control of pumps for plant and maintenance engineers, process engineers, maintenance personnel, supervisors and reliability specialists working in refineries and petrol filling stations. The course is also highly valuable to senior maintenance technical staff who are involved with pumps, their operation and their maintenance.

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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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. Attalla Ersan, PEng, MSc, BSc, is a Senior Process Engineer with over 35 years of extensive experience within the Oil & Gas, Hydrocarbon and Petrochemical industries. His expertise widely covers the areas of Process Plant Operations, Process Plant Startup & Operating Procedure, Ethylene & Vinyl Chloride, Ethane Cracking Furnaces Operations, Ethylene & Polyethylene Operation, Acid Gas Treatment, Sulphur Recovery, EDC & VCM, Caustic Soda Storage, Debottle-necking, Process Operation, Safety Audits, Process Engineering, Root Cause Investigations, Pyrolysis Cracking, Gas Plant Commissioning, Loss Prevention Techniques, Occupational Hazards, Hot Tapping & Tie-Ins, Pre-Start-Up Safety Review (PSSR), Standard Operating Procedure (SOP), Emergency Operating Procedure (EOP), Permit to Work Systems (PTW), Steam Cracking, Steam Generation, Binary Fractionators Operations, Tanks Farm & Metering Station Techniques, Gas Treatment, Sulphur Recovery Process Unit Operation, Permit to Work System, Emergency Response Planning, Boiler & Steam System Management, Waste Heat Recovery, Boiler Plant Safety, Boiler Controls, Steam Distribution Systems, Steam Traps, Pollution Control, Cracked Gas Compressor, Reboilers, Sulphur Unit Air Blower, Steam Turbine, Distillation Columns, Gas Treatment, Waste & Water Treatment Units, Pumps, Compressors, Turbines, Motors, Turbo-expanders, Gears, Heat Exchanger, Hazard and Operability (HAZOP) Study, Process Hazards Analysis (PHA), HAZOP Facilitation, Loss Prevention, Consequence Analysis Application, Gas Detectors Operation, Accident/Incident Investigation (Why Tree Method), Occupational Exposure Assessment, Fire Fighting & First Aid, Environmental Management and Basic Safety Awareness. Further, he is also well-versed in Project Management, Human Resources Consultancy, Manpower Planning, Job Design & Evaluation, Recruitment, Training & Development and Leadership, Creative Problem Solving Skills, Work Ethic, Job Analysis Evaluation, Training & Development Needs, Bidding & Tendering, Technical Report Writing, Supervisory Leadership, Effective Communication Skills and Total Quality Management (TQM). He is currently the CEO of Ersan Petrokimya Teknoloji Company Limited wherein he is responsible for the design and operation of Biogas Process Plants.

During his career life, Mr. Ersan has gained his practical and field experience through his various significant positions and dedication as the **Policy, Organization & Manpower Development Head, Training & Development, Head, Ethylene Plant – Pyrolysis Furnace Engineer, Production Engineer, Process Training Coordinator, Ethylene Plant Shift Supervisor, Ethylene Plant Panel & Fit Operator, Process Training & Development Coordinator, Technical Consultant, and Instructor/Trainer** for Qatar Vinyl Company Limited and Qatar Petroleum Company (QAPCO).

Mr. Ersan is a **Registered Professional Engineer** and has a **Master's degree of Education in Educational Training & Leadership** and a **Bachelor's degree of Petrochemical Engineering**. Further, he is a **Certified Instructor/Trainer** and has delivered numerous trainings, courses, workshops, conferences and seminars internationally.

Course Fee

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.

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 course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1: Sunday, 24th of November 2024

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|-------------|---|
| 0730 – 0800 | Registration & Coffee |
| 0800 – 0815 | Welcome & Introduction |
| 0815 – 0830 | PRE-TEST |
| 0830 – 0930 | Pump Construction The Centrifugal Pump • Pump Curves • Characteristics of the Centrifugal Pump • Most Common End-Suction and In-Line Pump Types • Impeller Types (Axial Forces) |
| 0930 – 0945 | Break |
| 0945 – 1030 | Pump Construction (cont'd) Casing Types (Radial Forces) • Single-Stage Pumps • Multistage Pumps • Long-Coupled and Close-Coupled Pumps |
| 1030 – 1130 | Types of Pumps Standard Pumps • Split-Case Pumps • Hermetically Sealed Pumps • Sanitary Pumps |
| 1130 – 1245 | Break |
| 1245 – 1420 | Types of Pumps (cont'd) Wastewater Pumps • Immersible Pumps • Borehole Pumps • Positive Displacement Pumps |
| 1420 – 1430 | Recap |
| 1430 | Lunch & End of Day One |

Day 2: Monday, 25th of November 2024

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|-------------|--|
| 0730 – 0930 | Mechanical Shaft Seals The Mechanical Shaft Seal's Components and Function • Balanced and Unbalanced Shaft Seals |
| 0930 – 0945 | Break |
| 0945 – 1100 | Mechanical Shaft Seals (cont'd) Types of Mechanical Shaft Seals |
| 1100 – 1230 | Mechanical Shaft Seals (cont'd) Seal Face Material Combinations |
| 1230 – 1245 | Break |
| 1245 – 1420 | Mechanical Shaft Seals (cont'd) Factors Affecting the Seal Performance |
| 1420 – 1430 | Recap |
| 1430 | Lunch & End of Day Two |



Day 3: Tuesday, 26th of November 2024

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| 0730 – 0930 | Motors Standards • Motor Start-Up • Voltage Supply |
| 0930 – 0945 | Break |
| 0945 – 1100 | Motors (cont'd) Frequency Converter • Motor Protection |
| 1100 – 1230 | Materials What is Corrosion? • Types of Corrosion • Material and Metal Alloys • Ceramics |
| 1230 – 1245 | Break |
| 1245 – 1420 | Materials (cont'd) Plastics • Rubber • Coatings |
| 1420 – 1430 | Recap |
| 1430 | Lunch & End of Day Three |

Day 4: Wednesday, 27th of November 2024

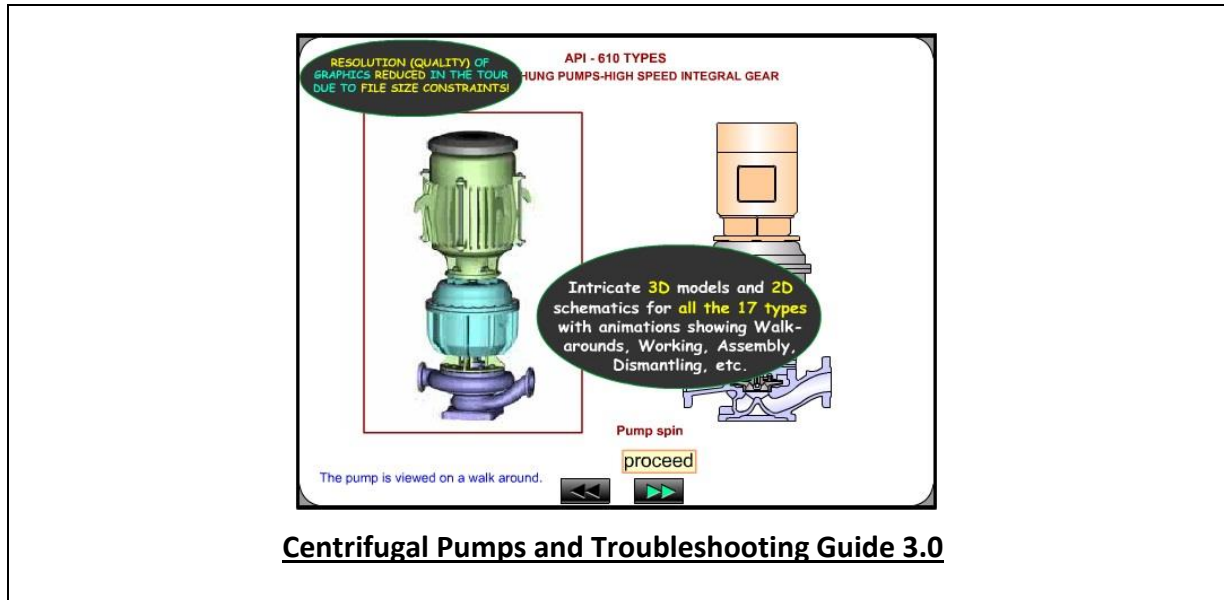
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|-------------|---|
| 0730 – 0930 | Pump Installation New Installation |
| 0930 – 0945 | Break |
| 0945 – 1100 | Pump Installation (cont'd) Existing Installation-Replacement |
| 1100 – 1230 | Pump Installation (cont'd) Pipe Flow for Single-Pump Installation |
| 1230 – 1245 | Break |
| 1245 – 1420 | Pump Installation (cont'd) Limitation of Noise and Vibrations • Sound Level (L) |
| 1420 – 1430 | Recap |
| 1430 | Lunch & End of Day Four |

Day 5: Thursday, 28th of November 2024

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| 0730 – 0830 | Pump Performance Hydraulic Terms |
| 0830 – 0930 | Pump Performance (cont'd) Electrical Terms • Liquid Properties |
| 0930 – 0945 | Break |
| 0945 – 1230 | System Characteristics Single Resistances |
| 1230 – 1245 | Break |
| 1245 – 1345 | System Characteristics (cont'd) Closed and Open Systems |
| 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 simulator “Centrifugal Pumps and Troubleshooting Guide 3.0”.



Course Coordinator

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