# COURSE OVERVIEW ME0760
# Pump & Valve Operation, Control, Maintenance & Troubleshooting

## Course Title
Pump & Valve Operation, Control, Maintenance & Troubleshooting


## Course Date/Venue
Session 1: May 25-29, 2025/Al Khobar Meeting Room, Hilton Garden Inn, Al Khobar, KSA
Session 2: November 16-20, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE



## Course Reference
ME0760

## 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 pump and valve simulators.***

This course is designed to provide delegates with a detailed and up-to-date overview on the operation, control, maintenance and troubleshooting of pumps and valves. It covers the various types of pumps and valves including their features and functions.

During the course participants will be able to review and improve the operating procedures and conditions of pumps, valves and control loops. Further, they will be able to apply safe start-up and shutdown operation of pumps and valves and interpret data analysis and calculations.

The course will also illustrate the different troubleshooting measures carried out in the operation of pumps and valves and employ all safety considerations and other safety measures.

## Course Objectives

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

- Operate, control, maintain and troubleshoot pumps and valves in a professional manner
- Identify the various types of pumps and valves and differentiate their features and functions
- Review and improve the operating procedures and conditions of pumps and valves as well as the control loops
- Apply safe start-up and shutdown operation of pumps and valves and interpret data analysis and calculations
- Illustrate the different troubleshooting measures carried out in the operation of pumps and valves
- Employ all safety considerations and other safety measures to be followed

## 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 a significant aspects and considerations of pump and valve for process, production, petroleum, maintenance, instrumentation and mechanical engineers, plant supervisors and other technical staff interested in pump and valve operation, control, maintenance and troubleshooting.

## 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® (Haward Smart Training Kit), 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.

## 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. Mohamed Refaat**, MSc, BSc, is a **Senior Mechanical & Maintenance Engineer** with almost **30 years** of extensive experience in **Pump & Valve** Operation, Control, Maintenance & Troubleshooting, **Rotating Equipment** and **Machinery** including **Pumps**, **Compressors**, **Turbines**, **Motors**, **Turbo-expanders**, **Gears**, etc. His wide experience also covers **Centrifugal Compressor & Steam Turbine**, **Centrifugal Pump**, **Pump** Technology, **Gas Turbine** Technology, **Heat Exchanger**, **Turbines & Motors**, **Variable Speed Drives**, **Seals**, **Control Valves**, Advanced **Valve** Technology, **Dry Seal**, **Fired Heaters**, **Air Coolers**, **Crude Desalter**, **Process Vessels & Valves**, **Industrial Equipment & Rotating Machinery**, **Mechanical** Engineering, **Mechanical Equipment & Turbomachinery**, **Piping**, **Pipelines**, **Valves**, **Lubrication Technology**, **Vibration Analysis**, **Power System Hydraulics**, **Security Detection** Systems & Operation, **Process Plant** Equipment, Troubleshooting **Process Operations**, **Maintenance Management** Best Practices, **Rotating Equipment** Reliability Optimization, Practical **Machinery Vibration**, **Vibration** Techniques, Effective **Reliability Maintenance**, Excellence in **Maintenance & Reliability** Management, **Preventive & Predictive Maintenance**, Machinery Failure Analysis (**RCFA**), **Reliability** Optimization & Continuous Improvement, **Maintenance** Planning, Scheduling & Work Control, **Maintenance Management** Strategy, **Mechanical & Rotating Equipment** Troubleshooting, Preventive Maintenance, Predictive Maintenance, Reliability Centered Maintenance (**RCM**), Condition Based Monitoring (**CBM**), **FMEA** and Troubleshooting of machinery and rotating equipment including turbines, bearings, compressors, pumps etc. He is currently the **Mechanical Maintenance Section Head** of the **Arab Petroleum Pipelines Company** where he is in charge of planning, scheduling & managing the execution of preventive & corrective mechanical maintenance activities for all equipment. He is responsible for executing the scheduled inspections & major overhauls for gas turbines, valves & pumps, carrying out off-line vibration monitoring plans, troubleshooting, fault diagnosing & investigating failures of machinery.

During his career life, Mr. Mohamed was able to modify the gas turbines self cleansing system to improve its maintainability and extend the air filters' lifetime. He was responsible for defining & updating the equipment codes and parameters for replacing the old **CMMS** with **MAXIMO**. He also worked as the Operations Supervisor wherein he was closely involved with the operation of the crude oil internal **pipeline** system between the tankers and tank farm, operation & control of the booster pumps for pumping crude oil for main pipelines and the development & implementation of the plans & procedures for draining the main terminal internal lines for maintenance purposes. He also held the position of Measurement Engineer where he was responsible for the crude oil custody transfer, performing loss control analysis and operating the crude oil automatic sampler & related equipment. Prior to that, he was the Design Engineer responsible for the design phase of the Truck Mixer Manufacturing Project of the Mechanical Design Department.

Mr. Refaat has **Master's** and **Bachelor's** degree in **Mechanical Engineering** and a General Certificate of Education (**GCE**) from the **University of London**, **UK**. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**) and a member of the Engineering Syndicate of Egypt. He has further delivered numerous training, courses, workshops, seminars and conferences worldwide.

## 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***

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|---|---|
| *0730 – 0800* | *Registration & Coffee* |
| *0800 – 0815* | *Welcome & Introduction* |
| *0815 – 0830* | ***PRE-TEST*** |
| *0830 – 0930* | ***Introduction*** |
| *0930 – 0945* | *Break* |
| *0945 – 1100* | ***Types of Pumps*** |
| *1100 – 1230* | ***Types of Valves*** |
| *1230 – 1245* | *Break* |
| *1245 – 1420* | ***Types of Valves (cont'd)*** |
| *1420 – 1430* | ***Recap*** |
| *1430* | *Lunch & End of Day One* |

***Day 2***

| | |
|---|---|
| *0730 – 0930* | ***Control Loops*** |
| *0930 – 0945* | *Break* |
| *0945 – 1100* | ***Control Loops (cont'd)*** |
| *1100 – 1230* | ***Operating Procedures & Conditions*** |
| *1230 – 1245* | *Break* |
| *1245 – 1420* | ***Operating Procedures & Conditions (cont'd)*** |
| *1420 – 1430* | ***Recap*** |
| *1430* | *Lunch & End of Day Two* |

***Day 3***

| | |
|---|---|
| *0730 – 0930* | ***Safe Start-up & Shutdown*** |
| *0930 – 0945* | *Break* |
| *0945 – 1100* | ***Safe Start-up & Shutdown (cont'd)*** |
| *1100 – 1230* | ***Safe Start-up & Shutdown (cont'd)*** |
| *1230 – 1245* | *Break* |
| *1245 – 1420* | ***Safe Start-up & Shutdown (cont'd)*** |
| *1420 – 1430* | ***Recap*** |
| *1430* | *Lunch & End of Day Three* |

***Day 4***

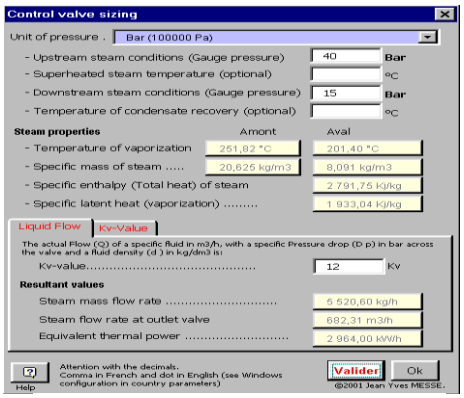
| | |
|---|---|
| *0730 – 0930* | ***Data Analysis & Calculations*** |
| *0930 – 0945* | *Break* |
| *0945 – 1100* | ***Data Analysis & Calculations (cont'd)*** |
| *1100 – 1230* | ***Troubleshooting*** |
| *1230 – 1245* | *Break* |
| *1245 – 1420* | ***Troubleshooting (cont'd)*** |
| *1420 – 1430* | ***Recap*** |
| *1430* | *Lunch & End of Day Four* |

***Day 5***

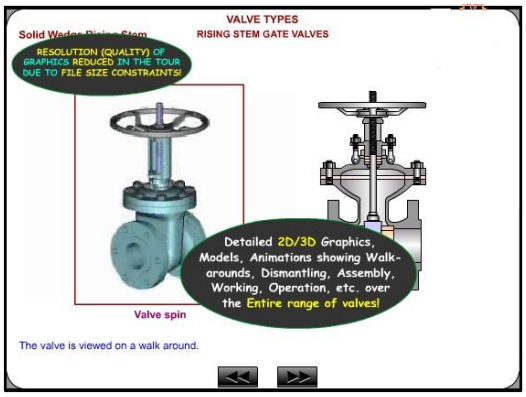
| | |
|---|---|
| *0730 – 0930* | ***Maintenance*** |
| *0930 – 0945* | *Break* |
| *0945 – 1100* | ***Maintenance (cont'd)*** |
| *1100 – 1230* | ***Safety Considerations & Other Safety Measures*** |
| *1230 – 1245* | *Break* |
| *1245 – 1345* | ***Safety Considerations & Other Safety Measures (cont'd)*** |
| *1345 – 1400* | ***Course Conclusion*** |
| *1400 – 1415* | ***POST-TEST*** |
| *1415 – 1430* | *Presentation of Course Certificates* |
| *1430* | *Lunch & End of Course* |

## Simulators (Hands-on Practical Sessions)

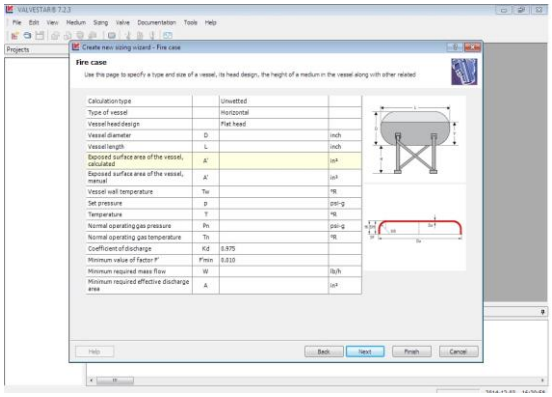
Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using our state-of-the-art simulators "Valve Sizing Software", "Valve Software 3.0", "Valvestar 7.2 Software", "PRV2SIZE Software" and "Centrifugal Pumps and Troubleshooting Guide 3.0".




**Valve Sizing Software**

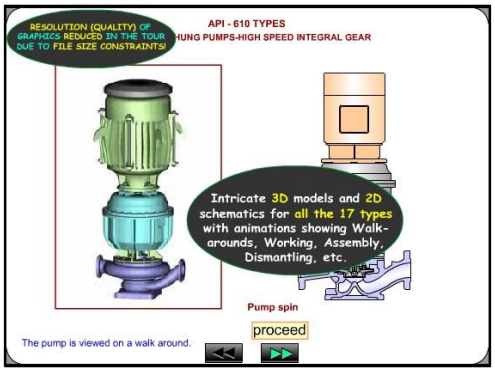



**Valve Software 3.0**



**Valvestar 7.2 Software**


**PRV²SIZE Software**




**Centrifugal Pumps and Troubleshooting Guide 3.0**

## Course Coordinator

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