COURSE OVERVIEW ME0822
Oil & Gas Shutdown Valves

Course Title
Oil & Gas Shutdown Valves

Course Date/Venue
Session 1: August 17-21, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE
Session 2: December 08-12, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Course Reference
ME0822

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

Course Description

This hands-on, highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.

It is claimed that the majority of control valves throughout the world have not been correctly sized and that large numbers operate on manual mode. Whether this is true or not is difficult to establish but we do know that the method of sizing and selecting a control valve for a specific application is generally not well understood. Although there are many factors that need to be taken into account the subject is not difficult to understand if dealt with in a logical manner. We also find that many maintenance problems result from people treating the symptoms of a problem rather than tackling the true cause – a basic understanding of the principles is all that is usually needed to solve the problem for good.

This course is designed to provide participants with a detailed and an up-to-date overview of control valve and shutdown valve maintenance and troubleshooting. It covers the valve characteristics and trim selection; the process of control valve sizing; the control valve accessories such as auxiliary hand-wheels, pressure regulators, position transmitters, volume booster, limit switches and solenoid valves; and the process of control valve selection.

Further, the course will also discuss the control valve performance which includes process variability, actuator-positioner design, valve type, sizing, response and characterization; the common valve problems and its solutions; the use of system approach to prevent the occurrences of the problems; the different operational issues of control valves and actuators; the various control valve failures and their potential causes; the field communications and its importance; the practical application on control valves and actuators; the development, features and functions of smart valves and positioners; the diagnostic testing in valves; and the fire safe valves.

Course Objectives

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

- Apply systematic techniques in control valve and shutdown valve maintenance and troubleshooting
- Discuss the basic operation and identify the types of valves
- Select, commission, troubleshoot, test and maintain valves
- Explain the safety valve component, design and accident avoidance
- Describe control valve overview and identify the types of control valve and actuator including the types of shutdown valve and actuator
- Determine valve characteristics and valve positioned (conventional and smart) overview
- Employ valve calibration, maintenance and troubleshooting
- Discuss the valve characteristics and trim selection and illustrate the process of control valve sizing
- Recognize the process consideration in control valves and actuators particularly the materials selection, modes of failure, leakage rates and international standards
- Identify the control valve accessories such as auxiliary hand-wheels, pressure regulators, position transmitters, volume booster, limit switches and solenoid valves and describe the process of control valve selection
- Employ control valve performance which includes process variability, actuator-positioner design, valve type, sizing, response and characterization
- Analyze common valve problems and present various solutions and use system approach to prevent the occurrences of the problems
- Review and improve the different operational issues of control valves and actuators and determine the various control valve failures and their potential causes
- Recognize field communications and its importance and employ practical application on control valves and actuators
- Identify development, features and functions of smart valves and positioners and apply diagnostic testing in valves
- Explain fire safe valves by discussing its standards, examples, sealing and leakage

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 control valve and shutdown, valve maintenance and troubleshooting. This includes control valve and plant safety specialists, instrumentation and control engineers, electrical engineers, project engineers, process control engineers, consulting engineers, maintenance engineers, maintenance planners and systems 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 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.

Accommodation

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

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: -

- 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.

- The International Accreditors for Continuing Education and Training (IACET - USA)

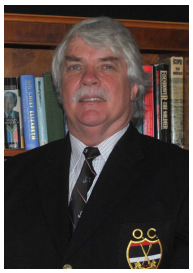
  Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** 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.

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. Den Bazley, PE, BSc, is a **Senior Mechanical Engineer** with over **25 years** of industrial experience in **Oil**, **Gas**, **Refinery**, **Petrochemical**, **Power** and **Utilities** industries. His wide expertise includes **Condition Based Monitoring**, **Piping System**, **Process Equipment**, **Mechanical Integrity**, **Maintenance Management**, **Reliability Management**, **Reliability Centred Maintenance** (**RCM**), Total Plant Maintenance (**TPM**) and Reliability-Availability-Maintainability (**RAM**), **Engineering Drawings, Codes & Standards**, **P&ID Reading, Interpretation & Developing**. His experience covers **Design**, **Construction** and **Maintenance** of **Storage Tank**, **Hydraulic Control Valves**, **rotating and static equipment** including **Safety Relief Valves**, **Boilers**, **Pressure Vessels**, **Tanks**, **Heat Exchangers**, **Bearings**, **Compressors**, **Pumps**, **Pipelines**, **Motors**, **Turbines**, **Gears**, **Lubrication Technology** and **Mechanical Seals**. Further, he has experience in Waste Water Treatment, **Water Treatment**, **Welding**, **NDT**, Vehicle Fleet and Budgeting & Cost Control. He is well-versed in **CMMS** and various International Standards including ISO 14001.

During his career life, Mr. Bazley has gained his practical and field experience through his various significant positions and dedication as the **General Manager**, **Branch Manager**, **Refinery Chairman**, **Engineering Manager**, **Maintenance Engineer**, **Construction Engineer**, **Project Engineer**, **Mechanical Engineer**, **Associate Engineer**, **Oil Process Engineer**, **Mechanical Services Superintendent**, **Quality Coordinator**, **Planning Coordinator**, **Consultant/Instructor**, **Lecturer/Trainer** and **Public Relations Officer** for numerous international companies like **ESSO**, **FFS Refinery**, Dorbyl Heavy Engineering (**VECOR**), Vandenbergh Foods (**Unilever**), **Engen Petroleum**, Royle Trust and **Pepsi-Cola**.

Mr. Bazley is a **Registered Professional Engineer** and has a **Bachelor** degree in **Mechanical Engineering**. Further, he is a **Certified Engineer** (Government Certificate of Competency GCC Mechanical Pretoria), a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership and Management** (**ILM**), an active member of the **Institute of Mechanical Engineers** (**IMechE**) and has delivered numerous trainings, courses, seminars and workshops 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 and Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0900	***Valves Fundamentals*** *Introduction ● Fundamentals ● Basic Valve Nomencluture ● Fluid Tightness of Valves ● Sealing Mechanism ● Valve Seatings ● Gaskets ● Valve Stem Seals ● Flow Through Valves ● Manual Valves ● Functions of Manual Valves ● Grouping of Valves by Method of Flow Regulation ● Selection of Valves ● Valve Selection Chart*
0900 – 0930	***Types of Valves*** *Globe Valves ● Piston Valves ● Parallel Gate Valves ● Wedge Gate Valves ● Plug Valves ● Ball Valves ● Butterfly Valves ● Pinch Valves ● Diaphragm Valves ● Stainless Steel Valves ● Check Valves ● Function of Check Valves ● Design of Check Valves ● Selection of Check Valves*
0930 – 0945	*Break*
0945 – 1100	***Control Valve Theory – Basic Principles*** *Introduction ● Definition of a Control Valve ● Types of Energy ● What is Happening Inside a Control Valve ● Choked Flow ● Cavitation ● Flashing*
1100 – 1200	***Control Valve Types*** *Rotary ● Linear*
1200 – 1215	*Break*
1215 – 1330	***Characteristics & Trims*** *Valve Characteristics ● Application Examples ● Cavitation Control ● Anti-Cavitation Trim ● High Pressure Drop-Applications ● Low Noise Trim ● Diffusers*
1330 – 1420	***Video Presentation***
1420 – 1430	***Recap*** *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 – 0830	***Control Valve Sizing*** *General ● Valve Coefficient (Cv) ● Simplified Sizing Equation ● Comparison of Valve Types ● Turndown vs Rangeability*
0830 – 0930	***Process Considerations*** *End Connections ● Face to Face Criteria ● Materials Selection ● Modes of Failure ● Leakage Rates ● International Standards*
0930 – 0945	*Break*
0945 – 1100	***Actuators & Positioners*** *Types of Actuators ● Linear Actuators ● Rotary Actuators ● Actuator Forces ● Positioners ● Fail Safe Actuators*

1100 – 1200	***Accessories*** *Auxilairy Hand-wheels ● Pressure Regulators ● Lock-up Valves ● ON-OFF Valve ● Position Transmitters ● Volume Boosters ● Limit Switches ● Solenoid Valves*
1200 – 1215	*Break*
1215 – 1330	***Control Valve Selection*** *Introduction ● Decision Criteria ● Materials of Construction ● Valve Characteristics ● Actuator Considerations ● Price Comparison ● Selection Guidelines ● Application Comparisons ● Computer Sizing Programmes ● Summary*
1330 – 1420	***Video Presentation***
1420 – 1430	***Recap*** *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 – 0830	***Operational Issues*** *General Review ● Installation ● Maintenance ● Troubleshooting ● Corrosion ● Galling*
0830 – 0930	***Control Valve Performance*** *Process Variability ● Dead Band ● Actuator/Positioner Design ● Valve Response Time ● Valve Type & Characterisation ● Valve Sizing*
0930 – 0945	*Break*
0945 – 1100	***Common Valve Problems*** *Water Hammer Effects ● High Noise Levels ● Noise Attenuation ● Fugitive Emissions*
1100 – 1200	***Control Valve Failures***
1200 – 1215	*Break*
1215 – 1330	***Potential Causes*** *Introduction ● Physical Failures ● Velocity Problems ● Erosion by Cavitation ● Erosion by Abrasion ● Noise ● Vibration*
1330 – 1420	***Video Presentation***
1420 – 1430	***Recap*** *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 – 0830	***Safety Valve Component & Design*** *Pressure Relief Valves ● Principal Types of Pressure Relief Valves ● Terminology ● Direct-Loaded Pressure Relief Valves ● Pilot-Operated Pressure Relief Valves ● Rupture Discs ● Metal Rupture Discs ● Sizing Pressure Relief Devices*
0830 – 0930	***Safety Valve Component & Design (cont'd)*** *Sizing of Pressure Relief Valves Gas, Vapor, Steam ● Sizing Equations for Liquids Flow ● Sizing of Inlet Piping to Pressure Relief Valves ● Sizing of Discharge Piping of Pressure Relief Valves ● Valves Calibration ● Control & Automation*
0930 – 0945	*Break*

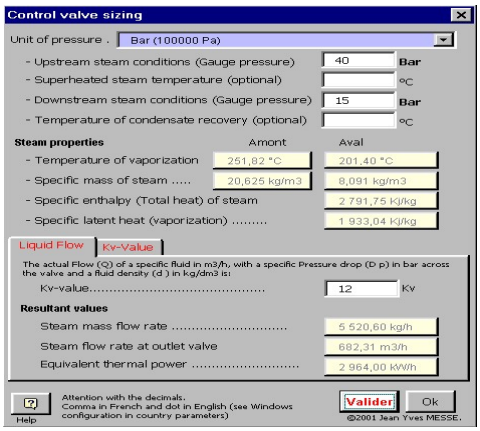
0945 – 1100	***Field Communications*** *Analogue Signals ● Digital Communications ● Fieldbus Technologies*
1100 – 1200	***SMART Valves & Positioners*** *Introduction ● Development ● Digital Valve Controllers ● Case Study ● Future Development*
1200 – 1215	*Break*
1215 – 1330	***Proof Testing & Diagnostic*** *Safety Instrumented Systems – An Overview ● Proof Testing ● Partial Valve Stoking ● Diagnostics*
1330 – 1420	***Video Presentation***
1420 – 1430	***Recap*** *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

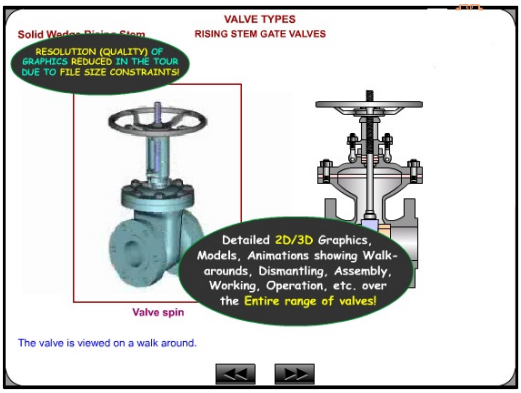
0730 – 0830	***Fire Safe Valves*** *Introduction ● Requirements ● Sealing & Leakage ● Design Standards & Testing ● Examples*
0830 – 0930	***Addendum*** *Typical Example ● Choke Valve ● Other Subjects*
0930 – 0945	*Break*
0945 – 1100	***Practical Exercises***
1100 – 1200	***Computer Sizing Programme*** *Simple Water ● Simple Air ● High Pressure Drop Water ● H2SO4*
1200 – 1215	*Break*
1215 – 1345	***Video Presentation***
1345 – 1400	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Simulators (Hands-on Practical Sessions)

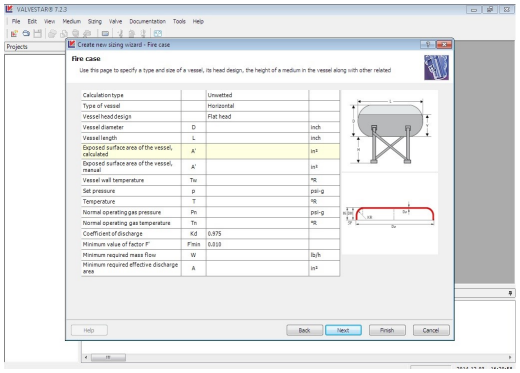
Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using our state-of-the-art simulators "Valve Sizing Software", "Valve Software 3.0", "Valvestar 7.2 Software" and "PRV2SIZE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



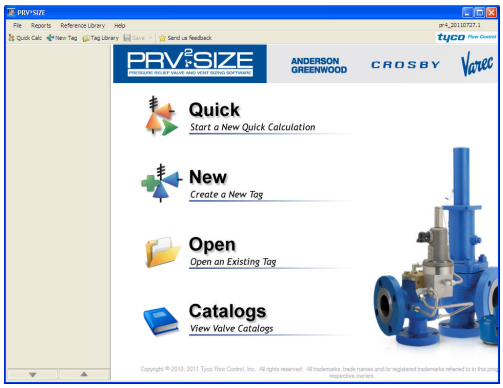
Valve Sizing Software



Valve Software 3.0



Valvestar 7.2 Software



PRV²SIZE Software

Course Coordinator

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