COURSE OVERVIEW ME0120

Safety Relief Valve Sizing, Selection, Design, Installation, Operation, Inspection, Testing, Maintenance & Troubleshooting (PRV & POPRV/PORV)

(API 520/521/526, API RP 576, NB, ASME I/VIII & ASME PTC 25)

Course Title

Safety Relief Valve Sizing, Selection, Design, Installation, Operation, Inspection, Testing, Maintenance & Troubleshooting (PRV & POPRV/PORV): (*API 520/521/526, API RP 576, NB, ASME I/VIII & ASME PTC 25)*

Course Date/Venue

December 23-27, 2024/Ajman Meeting Room, Khalidia Palace Hotel Dubai by Mourouj Gloria, Dubai, UAE

Course Reference

ME0120

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 in the class will be applied using the following practical methods: -

(1) Industrial Facility Visit: Course participants will be taken to an industrial facility where they will practice valve dismantling, assembling, inspection and testing. In case that this course is organized inside client premises (In-House), then client shall provide access to its valve workshop for practical sessions.

(2) Valve Demo Kit: Various safety relief valves will be distributed in the class to the participants by the course instructor for hands-on demonstration. These demo kits will be returned to the instructor at the end of the training day.

(3) Valve Simulator: Participants will use in the class our state-of-the-art "Valve Sizing Simulator", "Valve Simulator 3.0", "Valvestar 7.2 Simulator" and "PRV2SIZE Simulator" to practice some of the skills learnt.

The course will cover the design, selection, sizing, installation and inspection of safety relief valves as per standards API 520, API 521, API 526 and API RP 576. Further, the course will discuss ASME I, ASME VIII and ASME PTC 25 in details. The course covers the conventional spring-loaded Pressure Relief Valves (PRV) and the Pilot Operated Pressure Relief Valves (POPRV).

Further, the course will also discuss the standards, NBI and VR-codes comprising of parties involved, code revision process, jurisdiction authorities and authorized inspection agencies; the objective, scope, definition and description of terms of ASME PTC 25; the PRV principles and development of pressure relief valve; the PRV installation; the installation requirements, factors, operational requirements and other installation considerations; and the PRV optional malfunctions in testing facilities.

During this interactive course, participants will learn the PRV certifications, training and personal qualifications and the procedure for determining valve capacities; the PRV repair and non-destructive examination; the PRV terminology and the various types of valves; the nameplate data and correct interpretation; the valve disassembly, valve critical inspections, lapping, grinding and assembly; the systematic valve testing and sealing; the inspection and testing of pressure-relieving devices; the causes of improper performance including replacement of rupture disk devices and inspection of pressure-relief valve on stream; troubleshooting and calibration; and the valve quality systems, and obtaining VR and administrative rules.

Course Objectives

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

- Size, select, design, install, operate, inspect, test, maintain and troubleshoot safety relief valves (PRV and POPRV/PORV) in accordance with the API 520/521/526, API RP 576, NB, ASME I/VIII & ASME PTC 25 standards
- Discuss standards, NBI and VR-codes covering parties involved, code revision process, jurisdiction authorities, authorized inspection agencies, etc
- Explain the objective and scope as well as the definition and description of terms of ASME PTC 25
- Describe PRV principles and development of pressure relief valve
- Carryout PRV installation and discuss the installation requirements, factors, operational requirements and other installation considerations
- Identify PRV operational malfunctions in testing facilities
- Recognize PRV certifications, training and personal qualifications and the procedure for determining valve capacities
- Perform PRV repair and non-destructive examination as well as define PRV terminology and identify the various types of valves
- Discuss nameplate data and correct interpretation
- Apply valve disassembly, valve critical inspections, lapping, grinding and assembly
- Employ systematic valve testing and sealing in accordance with API 527 and ASME

- Carryout inspection and testing of pressure-relieving devices and identify the causes of improper performance including replacement of rupture disk devices and inspection of pressure-relief valve visual on-stream
- Review inspection frequency, records and reports
- Troubleshoot and calibrate valve as well as recognize valve quality systems and obtain VR and administrative rules

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 safety relief valve in accordance with the international standards for those who are involved in the sizing, selection, design, installation, operation, inspection, testing, maintenance and troubleshooting of valves. This includes process engineers, mechanical engineers, piping engineers, pipelines and pressure vessels engineers and supervisors. Further, it is suitable for inspection and QA & QC engineers, boilers and process plant equipment owners, maintenance staff who inspect and install pressure relief devices and engineers involved in plant turnaround and upgrade projects.

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 Certificate(s)

(1) Internationally recognized Competency Certificates and Plastic Wallet Cards will be issued to participants who completed a minimum of 80% of the total tuition hours and successfully passed the exam at the end of the course. Certificates are valid for 5 years.

Recertification is FOC for a Lifetime.

Sample of Certificates

The following are samples of certificates that will be awarded to course participants:-

(2) Official Transcript of Records will be provided to the successful delegates with the equivalent number of ANSI/IACET accredited Continuing Education Units (CEUs) earned during the course.

Haward Technology Middle East

Continuing Professional Development (HTME-CPD)

CEU Official Transcript of Records

TOR Issuance Date: 15-Nov-23

HTME No. 74851

Participant Name: Waleed Al Habeeb

Program Ref.	Program Title	Program Date	No. of Contact Hours	CEU's
ME0120	Safety Relief Valve Sizing, Selection, Design, Installation, Operation, Inspection, Testing, Maintenance & Troubleshooting (PRV & POPRV/PORV) *(API 520/521/526, API RP 576, NB, ASME I/VIII & ASME PTC 25)*	November 11-15, 2023	30	3.0

Total No. of CEU's Earned as of TOR Issuance Date **3.0**

TRUE COPY

Jaryl Castillo
Academic Director

Haward Technology has been approved as an Accredited Provider by the International Association for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this approval, Haward Technology has demonstrated that it complies with the ANSI/IACET 1-2018 Standard which is widely recognized as the standard of good practice internationally. As a result of their Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for programs that qualify under the ANSI/IACET 1-2018 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 Association 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 is accredited by

P.O. Box 26070, Abu Dhabi, United Arab Emirates | Tel.: +971 2 3091 714 | E-mail: info@haward.org | Website: www.haward.org

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 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 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 **Pipeline** System Design, Construction, Maintenance and Repair, Facilities & **Pipeline** Integrity Assessment, **Pipeline** Welding Practices, Internal **Corrosion of Pipelines, Pipeline Integrity Management & Risk Assessment**, **Thermal Insulation**, **Insulation** Standards & Regulations, **Insulation** Materials & Selection, **Piping System Insulation**, **Insulation Installation** Techniques, **Insulation** Inspection & Quality Control, **Insulation** Thickness Calculation, **Insulation** & Corrosion Protection, **Heat Exchanger & Boiler Insulation**, **Tanks & Vessels Insulation**, **Pipeline & Piping Insulation**, **Insulation** Testing & Quality Assurance, **Insulation** Maintenance & Repair, **Insulation** Retrofitting, **Impulse Tube** Installation & Inspection, **Parker Compression Fittings**, **Pipes & Fittings**, **PSV Inspection**, **Boiler** Operation, Maintenance & 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. Further, he is also well-versed in MS project & AutoCAD, EPC Power Plant, Power Generation, Combined Cycle Powerplant, Leadership & Mentoring, Project Management, Strategic Planning/Analysis, Construction Management, Team Formation, Relationship Building, Communication, Reporting and Six Sigma. 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**, **Field Engineer**, **Thermal Insulation Engineer**, **Mechanical Engineer**, **Preventive Maintenance Engineer**, **Senior Thermal Insulation Technician**, **Researcher**, **Instructor/Trainer**, **Telecom Consultant** and **Consultant** from various companies such as the Podaras Engineering Studies, Metka and Diadikasia, S.A., **Hellenic Petroleum Oil Refinery** and COSMOTE.

Mr. Rovas has a **Master's** degree 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: Monday, 23rd of December 2024

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Standards, NBI & VR-Codes*** *Organizations Affecting Standards & Enforcement ● Parties Involved ● Historical Events ● ASME Boiler & Pressure Vessel Code ● ASME Boiler & Pressure Vessel Committees ● Code Revision Process ● ASME Accreditation Process ● Jurisdictional Authorities ● Authorized Inspection Agencies ● The National Board ● National Board Activities ● National Board Certification of Pressure Relief Devices ● VR Accreditation Program ● National Board Inspection Code*
0930 – 0945	*Break*
0945 – 1100	***ASME PTC 25*** *ANSI/ASME PTC-25 – Pressure Relief Devices ● Object & Scope ● Definitions & Description of Terms ● Dimensional Characteristics - PRV ● Dimensional of Non-Reclosing PRD ● ASME Code Section I & VIII ● ASME Code Requirements Sections I and VIII ● Three Valve Average Method ● Four Valve Slope Method ● Nine Valve Coefficient Method*
1100 – 1215	***PRV Principles & Development*** *Pressure Relief Valve Principles of Operation ● Internal Parts of Safety Valve ● Where is the Action of Force? ● Area, Force, Pressure Relationship ● Static Force Balance ● Forces Applied to Disc ● Spring Force ● Dynamic Force Balances ● Reaction Force = FR ● Huddling Chamber- Nozzle Ring Adjustment*
1215 – 1230	*Break*
1230 – 1330	***PRV Principles & Development (cont'd)*** *Effect of Blowdown Ring ● Safety Valves - Field Example ● Safety Valves – Superheater ● Pilot Operated Pressure Relief Valves ● Development, Application of PRVs & Pilot Operated PRVs ● Development of Valve Designs ● Development ● Valve Spring Design & Theory ● Materials for Pressure Relief Valves ● Valve Spring Design & Fabrication ● Types of Safety Valve Designs*
1330 – 1420	***PRV Installation*** *Installation Requirements ● Lesson ● Installation Factors ● Installation ● Operational Requirements ● ASME Section I Power Boilers ● Other Installation Considerations ● Installation of ASME Section VIII PRV ● Requirements from ASME Sect. VIII ● Other Recommendations for Pressure Relief Valve Installation Provided ● Typical Installations*
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: Tuesday, 24th of December 2024

0730 – 0930	***PRV Operational Malfunctions & Testing Facilities*** *Operational Malfunctions ● System Malfunctions ● Valve - Mechanical Caused ● Other System Malfunctions & Causes ● Erratic Set Pressure ● Blowdown ● Closing Pressure ● Blowdown or Closing Pressure are not met ● Valve - Mechanically Caused ● Installation & System Caused ● Back Pressure ● Other Typical Causes of Valve Malfunctions ● Testing Facilities for PRV*
0930 – 0945	*Break*
0945 – 1100	***PRV Certifications, Training & Personal Qualifications*** *Pressure Relief Device Certifications ● Pressure Relief Device Certifications ● Procedure for Determining Valve Capacities ● Valve Calculations ● Training & Qualification of Personnel*
1100 – 1215	***PRV Repair & Non-Destructive Examination*** *Pressure Relief Valve Repair ● PRV Terminology – PTC 25 ● Low Pressure Safety Valves (LPSV) ● Pressure Relief Valve Repair ● Static Force Balance ● Dynamic Force Balance ● Flanged Safety Valve ● Threaded Safety Valve ● Threaded Safety-Relief Valve*
1215 – 1230	*Break*
1230 – 1330	***PRV Repair & Non-Destructive Examination (cont'd)*** *Flanged Safety-Relief Valve ● Safety-Relief Valve (Cage Type) ● Pilot Operated Pressure Relief Valves ● Cap & Lever Styles ● ASME Code Application ● Non-Code Applications ● Safety Valve Adjustments & Repairs ● Nondestructive Examination*
1330 – 1420	***Nameplate Data & Interpretation*** *Objectives ● Safety Valves Name Plate ● Original PRV Nameplate Data ● Manufacturer Manual ● Sample Traveler ● Cold Differential Test Pressure ● Capacity Ratings ● ASME Code Symbol ● Correct Interpretation ● Previous Repair Nameplate Recorded on the "VR" Traveler ● Repair Nameplate ● Nameplate Press ● PRV Nameplates*
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: Wednesday, 25th of December 2024

0730 – 0930	***Valve Disassembly*** *Disassembly of Pressure Relief Valves ● Shop Repair Advice ● "As Found" Conditions may Aid in Troubleshooting ● Cleaning Procedure ● PRV Cleaning in Progress ● PRV Cleaning Process Completed ● Pilot Operated Pressure Relief Valves ● Recommended Procedures for Repairing Pilot Operated Pressure Relief Valves ● Disassembly ● Cleaning ● Inspection ● Testing ● Sealing ● Nameplate*
0930 – 0945	*Break*
0945 – 1100	***Valve Critical Inspections*** *Objectives of an Inspection Job ● PRV Repair Flow Chart ● Inspector's Role ● Measurement & Test Equipment ● Inspection Methods ● PRV Spindle Inspection Points ● Disk & Nozzle Inspection ● PRV Guide & Disc Holder ● PRV Spring Inspection Points ● Spring Rate ● 900 Series Disc Criteria Data Sheet ● 6000 Series Stem Concentricity Disc & Guide Clearance ● 6000 Series Disc Criteria ● 6000 Nozzle Criteria ● Critical Inspection*
1100 – 1215	***Lapping, Grinding & Assembly*** *Lapping Objectives ● Two Critical Elements of PRV Operation ● Purpose of Lapping ● Balance of Lapping ● Ring Laps ● Lapping Materials ● Cleanliness ● Lap Selection ● Nozzle Seat Width ● PRV Lapping Procedure ● PRV Bearing Points ● Assembly Objectives ● Assemblers Responsibility ● Assembly Operation*
1215 – 1230	*Break*

1230 – 1330	***Valve Testing & Sealing (API 527 & ASME)*** *Testing Objectives ● ASME Requirements ● RV & PSV Testing & Adjustments ● Testing & Sealing ● Definition of Set Pressure ● Liquid Test – Definition of Open ● PRV Set Pressure on Liquid ● Prior to Opening Pressure on Liquid ● Definition of Set Pressure on Liquid ● Above Opening Pressure ● Maximum Overpressure 110% of Set Pressure ● Air Test PRV ● Reaction Force ● Start to Discharge For PRV*
1330 – 1420	***Valve Testing & Sealing (API 527 & ASME) (cont'd)*** *ASME Requirement for PRV Seat Tightness Testing ● API 527 ● ASME Code Requirement for Secondary Pressure Zone Testing of PRVs ● PRV Adjustments ● Two Ring Design Ring Setting Chart ● One Ring Design Ring Setting Chart ● Sealing Adjustments ● Sample Traveler ● Protect your Hearing during PRV Testing ● Field Testing Advice ● On Site Safety Valves Testing Schedule ● Safety Valves Test Schedule for Boilers ● On Site Safety Valves Test*
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: Thursday, 26th of December 2024

0730 – 0800	***Introduction to API 576: Inspection of Pressure-relieving Devices*** *Scope ● Normative References ● Terms & Definitions*
0800 – 0830	***API 576: Pressure-relieving Devices*** *General ● Pressure Relief Valve ● Direct-acting Pressure-relief Valve ● Pilot-operated Pressure-relief Valves ● Rupture Disk Device ● Pin-actuated Devices*
0830 – 0930	***API 576: Causes of Improper Performance*** *Corrosion ● Damaged Seating Surfaces ● Failed Springs ● Improper Setting & Adjustment ● Plugging & Fouling ● Galling ● Misapplication of Materials ● Improper Location, History or Identification ● Improper Handling ● Improper Differential Between Operating & Set Pressures ● Improper Inlet/Outlet Piping Test Procedures*
0930 – 0945	*Break*
0945 – 1100	***API 576: Inspection & Testing*** *Reasons for Inspection & Testing ● Shop Inspection/Overhaul ● Inspection, Testing, Maintenance & Setting of Direct-acting Spring-loaded Valves on Equipment ● Inspection, Testing, Maintenance & Setting of Direct Spring-operated Safety Valves Used on Fired Pressure Vessels ● Inspection, Testing, Maintenance & Setting of Pilot-operated Pressure-relief Valves ● Inspection, Testing, Maintenance & Setting of Weight-loaded Pressure and/or Vacuum Vents on Tanks*
1100 – 1130	***API 576: Inspection & Replacement of Rupture Disk Devices*** *Rupture Disk Removal & Replacement ● Examples of Rupture Disk Failure Modes ● Rupture Disk Holder ● Inspection & Replacement of Rupture Disks*
1130 – 1215	***API 576: Pressure-relief Valve Visual On-stream Inspection*** *General ● Post-relief Event*
1215 – 1230	*Break*
1230 – 1330	***API 576: Inspection Frequency*** *General ● Frequency of Shop Inspection/Overhaul ● Time of Inspection ● Inspection & Servicing Deferral*
1330 – 1420	***API 576: Records & Reports*** *General ● The Need to Keep Records ● Responsibilities ● Sample Record & Report System*
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*

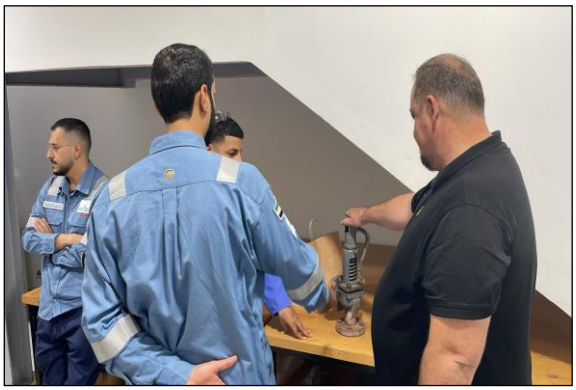
Day 5: **Friday, 27th of December 2024**

0730 – 0830	***Troubleshooting*** *Objectives In Troubleshooting ● PRV Applications ● PRV Installation ● PRV Installation ASME Sec. I ● SRV Internal Damage ● Steam Service Safety Valves ● Body & Nozzle Overhead View*
0830 – 0930	***Troubleshooting cont'd)*** *Piping Stress – Gravity or Expansion Horizontal Mounting ● Undersize Bolting on PRV Inlet Connection ● Plugged Drain, Flooded PRV ● Isolation Valve on PRV Inlet ● Double Trouble ● Reduced Outlet Piping ● Gagged PRV ● Troubleshooting Chart*
0830 – 0845	*Break*
0845 – 1000	***Valve Calibration*** *Calibration ● Types of Instruments Requiring Calibration ● Pressure Gauges ● Linear Measuring Equipment ● Welding Equipment ● Temperature Measuring Equipment ● In-House Measuring Standards ● Calibration of Pressure Gauges ● Definition of Pressure ● Standards for Pressure Gauges ● Use of the Dead Weight Tester*
1000 – 1145	***Valve Quality Systems*** *Quality Systems Definition ● Quality Systems for Certificate Holders ● Title Page ● Revision Log ● Contents Page ● Statement of Authority & Responsibility ● Organization Chart ● Scope of Work ● Drawings & Specification Control ● Material & Part Control ● Repair & Inspection Program ● Welding, NDE, & Heat Treatment (when applicable) ● Valve Testing, Setting, & Sealing ● Valve Repair Nameplates ● Calibration ● Manual Control ● Non-conformities ● Exhibits ● Testing Equipment ● Field Repairs*
1145 – 1200	*Break*
1200 – 1230	***Obtaining VR & Administrative Rules*** *Administrative Rules & Procedures for Accreditation of ("VR") Repair Organizations ● "VR" Administrative Rules & Procedures ● SCOPE ● Definitions Relating to Pressure Relief Devices ● Accreditation Process ● Scope Issuance & Revision to a Quality System ● Accreditation of "VR" Repair Organizations ● Jurisdictional Participation ● General Rules ● Issuance & Renewal of the "VR" Certificate of Authorization ● General ● Issuance of Certificate ● Renewal of Certificate ● Review of Applicant's Facility*
1230 – 1300	***Obtaining VR & Administrative Rules (cont'd)*** *Verification Testing ● Verification Testing Alternatives ● Use of the "VR" Authorization ● Technical Requirements ● Stamp Use ● Return of Stamp ● Multiple Locations ● Certificate of Authorization Contents ● Changes to Certificates of Authorization ● Issuance of More Than One "VR" Symbol Stamp to a Certificate of Authorization Holder ● Steps for Obtaining VR Certificate ● Steps for Obtaining "VR" Stamp ● "VR" Administrative Rules & Procedures*
1300 – 1315	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1315 – 1415	***COMPETENCY EXAM***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Practical Sessions/Industrial Facility Visit

Site visit will be organized during the course for delegates to practice the theory learnt:-



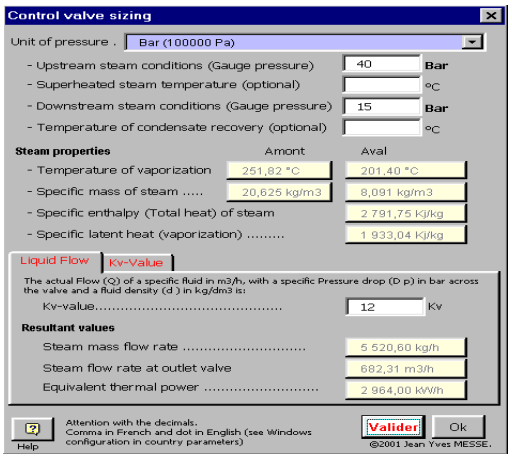



Valve Demo Kit

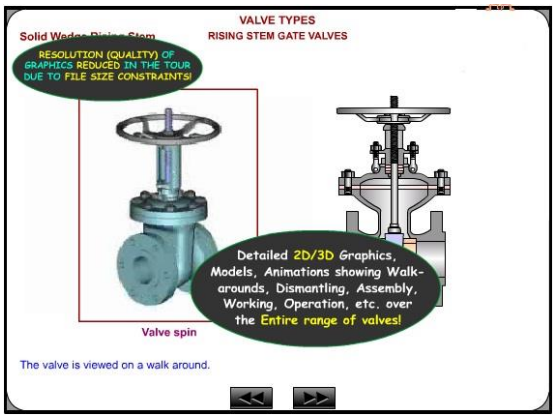
Hands-on demonstration will be held during the course. Proto-type safety relief valves will be temporary given to course participants for demonstration purposes as part of this course.

Simulator (Hands-on Practical Sessions)

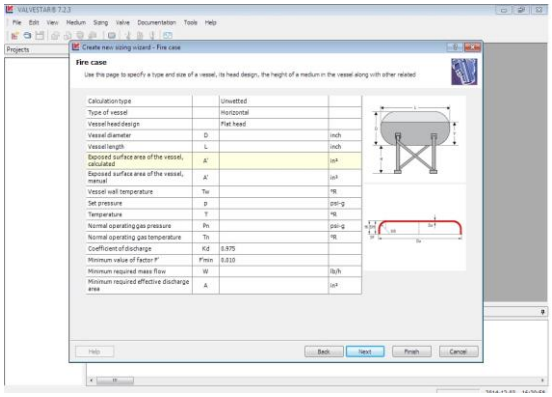
Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using the state-of-the-art "Valve Sizing Software", "Valve Software 3.0", "Valvestar 7.2 Software" and "PRV2SIZE Software".



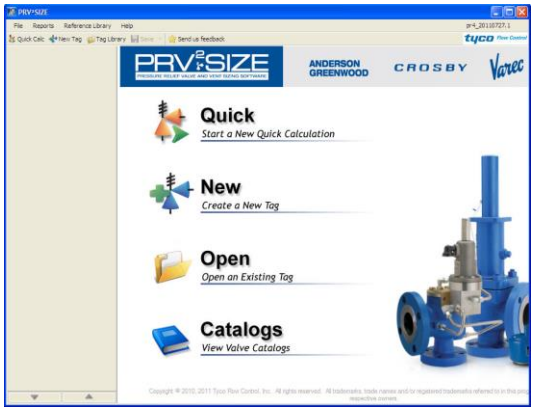
Valve Sizing Software



Valve Software 3.0



Valvestar 7.2 Software



PRV²SIZE Software

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