COURSE OVERVIEW FE0028

API 598: Valve Inspection & Testing

Course Title
API 598: Valve Inspection & Testing

Course Date/Venue
July 06-10, 2025/Abu Dhabi Meeting Room, The Tower Plaza Hotel, Dubai, UAE

Course Reference
FE0028

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 participants with a detailed and up-to-date overview of Valve Inspection and Testing in accordance with API 598 standards. It covers the isolation valve types according to actuator covering rotary valve and linear valve; the types of actuators, actuator forces, actuator considerations, positioners and fail safe systems; the selection guidelines, application comparisons and computer sizing programmes; the installation issues and type of valve end connections; the face to face criteria and materials selection for process; and the valve material selection and standards covering materials of construction, composite valves, valve component coating and standards and testing of FSV.

During this interactive course, participants will learn the valve sealing solutions and non- asbestos valve sealing system; the physical failures, velocity problems, erosion by cavitation and characteristics and trims; the erosion by abrasion, valve noise and valve vibration; selecting and examining the right valves; the proper storage and handling, inspection, commissioning, operation and routine maintenance; the gate valves, ball valves, butterfly valves, globe valves, relief valves and check valves; and the systematic inspection and testing including overhauling, pressure testing and value certification and retesting.

Course Objectives

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

- Apply and gain an in-depth knowledge on valve inspection and testing in accordance with API 598 standards
- Identify isolation valve types according to actuator covering rotary valve and linear valve
- Recognize the types of actuators, actuator forces, actuator considerations, positioners and fail safe systems
- Explain the selection guidelines, application comparisons and computer sizing programmes
- Discuss installation issues and type of valve end connections, face to face criteria and materials selection for process
- Identify valve material selection and standards covering materials of construction, composite valves, valve component coating and standards and testing of FSV
- Carryout valve sealing solutions and identify non- asbestos valve sealing system
- Recognize physical failures, velocity problems, erosion by cavitation and characteristics and trims
- Describe erosion by abrasion, valve noise and valve vibration
- Select and examine the right valves and apply storage and handling, inspection, commissioning, operation and routine maintenance
- Recognize gate valves, ball valves, butterfly valves, globe valves, relief valves and check valves
- Employ proper inspection and testing including overhauling, pressure testing and value certification and retesting

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 wide understanding and deeper appreciation for an overview of all significant aspects and considerations of valve inspection and testing in accordance with the international standard API 598 for process, piping, 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.

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

Haward's 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**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). 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. Andrew Ladwig is a **Senior 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 **Pipeline and Piping Operations** & **Design**, **Piping Systems** Specification, **Pipeline** Design & Construction, **Pipeline** Hydraulic Engineering, **Pipeline** Operation & Maintenance, **Pipeline** Integrity & Rehabilitation, **Pipeline** Systems, **Pipeline** Repair, **Pipeline Design** & Integrity Engineering, **Pipeline** & **Piping** Installation, Basic **Pipeline Engineering**, **Pipeline Inspection & Integrity Assessment**, **Pipe Stress** Analysis, **Piping Stress** Analysis, **Piping Dynamic**, **Piping Mechanical Design** & Specification, **Pipe Cuttings**, **Mechanical Pipe Fittings**, **Parker Compression Fittings**, **Pipes & Fittings**, **Process**, **Centrifugal Gas** Compressors, **Centrifugal Compressor** Operation, **Screw Compressor**, **Compressor** Control & Protection, **Pressure Safety Relief Valve** Repair & Recalibration, **Pressure Vessels** Fabrication, **PSV/PRV** Troubleshooting, **PRV** Testing & Repair, **PSV** Inspection, **Process Control Valves**, **Valve** Testing & Inspection, **Pump** Selection & Installation, **Pumps** Design, Selection & Operation, **Boiler** Inspection & Maintenance, **Boiler** Troubleshooting & Safety, **Gas & Steam Turbine** Operation & Maintenance, **Gas Turbine** Technology, **Tank** Design & Engineering, **Tanks & Tank Farms**, **CAESAR II**, Heat Recovery Steam Generating (**HRSG**), **Heat Exchangers**, **Root Cause Failure** Analysis & Reliability, Layout of **Piping Systems & Process** Equipment, **Process Heaters**, Glass Reinforced Epoxy (**GRE**), Glass Reinforced Pipes (**GRP**), Glass Reinforced Vent (**GRV**), **Machinery Vibration & Condition** Monitoring, Advanced **Machinery Dynamics** and **Machinery** Troubleshooting.

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 is a **Registered SAQA Qualification** (**NQF Level 4**) in **Chemical Operations**, a **Certified Multi-Skilled** in **Instrumentation** and **Mechanical Engineering**, a **Certified Instructor/Trainer** and has further delivered various trainings, workshops, seminars, courses and conferences internationally.

Accommodation

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

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 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, 06th of July 2025***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 - 0945	***Valve & Its Types*** *Definition of an Isolation Valve • Isolation Valve Types According to Actuator • Rotary Valve • Linear Valve*
0945 - 1000	*Break*
1000 - 1115	***Valve Components Actuators & Regulators*** *Types of Actuators • Actuator Forces • Actuator Considerations • Positioners • Fail Safe Systems*
1115 - 1200	***Decision for Valve Selection*** *Economic Based Upon Valve Selection • Selection Guidelines • Application Comparisons • Computer Sizing Programmes*
1200 - 1215	*Break*
1215 – 1420	***Valve Acceptance & Verifications*** *Installation Issues • Type of Valve End Connections • Face to Face Criteria • Materials Selection for Process • Valve In-House Acceptance*
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: **Monday, 07th of July 2025**

0730 - 0845	***Valve Material Selection & Standards*** *Materials of Construction • Composite Valves • Valve Component Coating • Standards & Testing of FSV*
0845 - 0900	*Break*
0900 – 1000	***Valve Packing, Seals & Seats*** *Valve Sealing Solutions • Non- Asbestos Valve Sealing System • Electric Power Research Institute (EPRI) • Valve Leakage & Packing*
1000 - 1100	***Valve Failures & Causes*** *Physical Failures • Velocity Problems • Erosion by Cavitation • Characteristics & Trims*
1200 - 1215	*Break*
1100 -1420	***Valve Failures & Causes (Cont'd)*** *Erosion by Abrasion • Valve Noise • Valve Vibration • Practical Examples*
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: **Tuesday, 08th of July 2025**

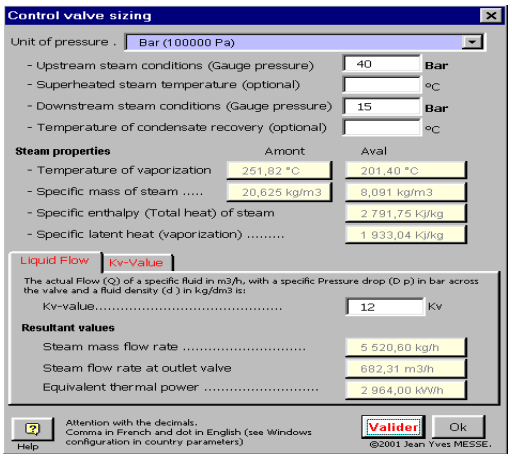
0730 - 1030	***Valves Integrity Assurance*** *Selecting the Right Valves • Examination & Acceptance • ANSI B16.104 • Storage & Handling • Inspecting & Commissioning • Flange Tightening Sequence • Proper Valves Operation • Routine Maintenance*
1030 – 1045	*Break*
1045 - 1245	***Gate Valves*** *Gate Valve • Stem Design • Disk Design • Seat Design • Parallel Gate Valve • Wedge Gate Valve • Types of Valves • Expanding Type Gate Valve • Emergency Seat Seal • Pressure Relief*
1245 – 1345	***Ball Valves*** *Floating Ball Design • Trunnion Ball Design • Trunnion Vs. Floating Ball Design • Seat Material & Seat Face Sealing Design • Automatic Body Cavity Relief • Anti-fire Safe Design • Typical Stem Sealing Arrangement • Double Block and Bleed (DBB)*
1345 – 1400	*Break*
1400 - 1420	***Ball Valves (Cont'd)*** *Double Sealing (Double Piston) • Emergency Seat Sealant (Option) • Emergency Stem Sealant (Option) • Body Vent & Drain Feature (Option) • Safety Relief Device • Special Structure of Automatic Pressure Relief Towards Upper Stream • Body Vent & Drain Feature • Standards and Codes for Ball Valves • Control Valve Types*
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:	Wednesday, 09th of July 2025
0730 – 1030	***Butterfly Valves*** *Butterfly Valves Operation • Butterfly Valves Components • Valve Body, Disc, Seat • Butterfly Valves Types • Fire Safe Design • Butterfly Valves Standards • Butterfly Valves Storage • Installation Recommendations • Butterfly Valves Maintenance • Seat Ring Replacement*
1030 – 1045	*Break*
1045 -1245	***Globe Valves*** *Globe Valve Body Designs • Valve Seatings • Valve Characteristics • Control Valve Characteristics & System Requirements • Cavitation Control • Applications • Direction of Flow Through Globe Valves*
1245 – 1345	***Relief Valves*** *Relief Valves • How does a Safety Valve Work? • Pressure Relief Valves*
1345 – 1400	*Break*
1400 – 1420	***Relief Valves (Cont'd)*** *Rupture Discs • P&ID • Relief Valve Testing & Calibration*
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*

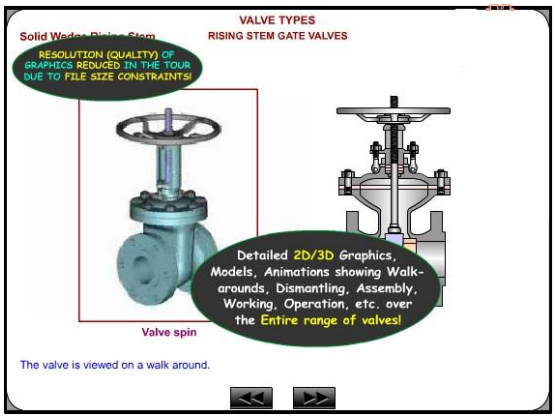
Day 5:	Thursday, 10th of July 2025
0730 – 0930	***Check Valves*** *Check Valves Types • Lift Check Valves • Check Valves Split Disk Type • Split Disc Check Valves • Check Valves – Ball Type • Silent Check Valves • Water Hammer*
0930 – 0945	*Break*
0945 – 1130	***Inspection & Testing*** *Reasons for Inspection • Shop Inspection/Overhaul • Safety*
1130 – 1230	***Valve Certification & Retesting*** *API 598 Standard • Inspection • Pressure Tests*
1230 – 1245	*Break*
1245 - 1345	***Inspection & Testing (Cont'd)*** *Pressure Test Procedures • Valve Certification & Retesting*
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/Equipments (Hands-on Practical Sessions)

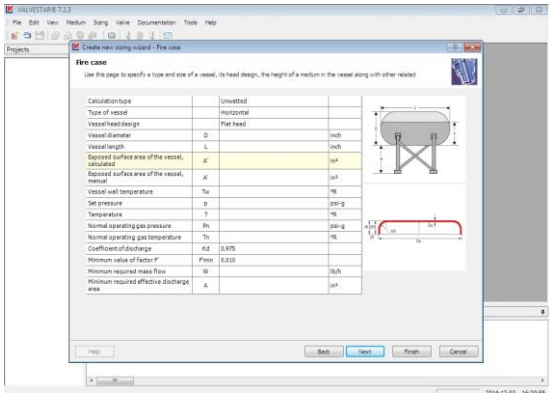
Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using our state-of-the-art simulators "Valve Sizing Software", "Valve Software 3.0", "Valvestar 7.2 Software" and "PRV2SIZE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



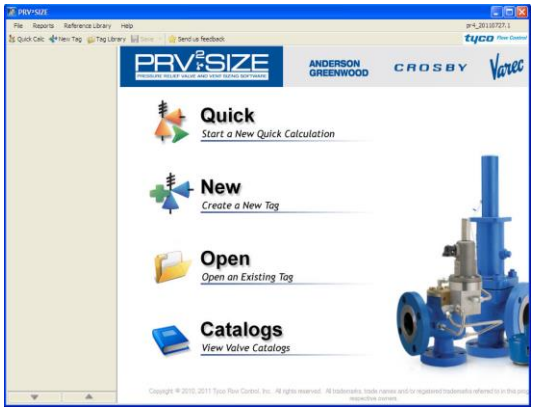
Valve Sizing Software



Valve Software 3.0



Valvestar 7.2 Software



PRV²SIZE Software

Course Coordinator

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