

COURSE OVERVIEW ME0878(KJ1)
Valve Maintenance

Course Title
 Valve Maintenance

Course Reference
 ME0878(KJ1)

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

Course Date/Venue



Session(s)	Date	Venue
1	April 28-May 02, 2024	Kizkulesi, Crown Plaza Istanbul Asia Hotels & Convention Center, Istanbul, Turkey
2	August 04-08, 2024	The Kooh Al Noor Meeting Room, The H Dubai Hotel, Sheikh Zayed Rd - Trade Centre, Dubai, UAE
3	November 03-07, 2024	Oryx Meeting Room, Doubletree By Hilton Doha-Al Sadd, Doha, Qatar
4	February 17-21, 2025	Hampstead Meeting Room, London Marriott Hotel Regents Park, London, United Kingdom

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.



Valves usually appear to be simple in form and operation, such as those of a manual off/on valve, check valve, or the fixed valve type such as an orifice, blind, etc. You will discover that even these components are frequently installed improperly throughout the industry. You will learn how components such as safety and relief valves can become highly complicated and dangerous.



The consequences of not understanding their basic design will be shown. Many control valves and regulators are so complex that they are complete systems within themselves. Resolving problems associated with them can challenge the best engineer, scientist or technician.

During this interactive course, participants will learn the maintenance preparations and valve removal; the maintenance preparations and valve packing; the adjustment, removal, selection and cutting of valve packing; the installation of valves; the valve overhaul, valve disassembly and valve inspection; and the lapping disc, seat and valve reassembly.

Course Objectives

Upon the successful completion of this course, participants will be able to know:-

- Apply and gain an in-depth knowledge on valve maintenance
- Carryout the techniques for maintenance preparations and valve removal
- Apply the strategies for valve packing including its adjustment, removal, selection and cutting
- Demonstrate packing installation, valve overhaul, valve disassembly and valve inspection
- Identify lapping disc and seat as well as carryout procedures for valve reassembly

Who Should Attend

This course covers systematic techniques and methodologies on valve maintenance for highly skilled mechanical technicians and maintenance foremen.

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

Istanbul	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.
Dubai	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.
Doha	US\$ 6,000 per Delegate. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
London	US\$ 8,800 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:-


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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. Andrew Ladwig is a **Senior Process & 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 **Ammonia Manufacturing & Process Troubleshooting, Distillation Towers, Crude Oil Distillation, Fundamentals of Distillation** for Engineers, **Distillation** Operation and Troubleshooting, **Advanced Distillation** Troubleshooting, **Distillation** Technology, **Vacuum Distillation, Ammonia Storage & Loading** Systems, **Ammonia Plant** Operation, Troubleshooting & Optimization, **Ammonia Recovery, Ammonia Plant Safety, Hazard of Ammonia Handling, Storage & Shipping, Operational Excellence in Ammonia Plants, Fertilizer Storage** Management

(Ammonia & Urea), **Fertilizer Manufacturing** Process Technology, **Sulphur Recovery, Phenol Recovery & Extraction, Wax Sweating & Blending, Petrochemical & Fertilizer Plants, Nitrogen Fertilizer Production, Petroleum Industry Process Engineering, Refining Process & Petroleum Products, Refinery Planning & Economics, Safe Refinery Operations, Hydrotreating & Hydro-processing, Separators** in Oil & Gas Industry, **Gas Testing & Energy Isolations, Gas Liquor Separation, Industrial Liquid Mixing, Wax Bleachers, Extractors, Fractionation, Operation & Control of Distillation, Process of Crude ATM & Vacuum Distillation Unit, Water Purification, Water Transport & Distribution, Steam & Electricity, Flame Arrestors, Coal Processing, Environmental Emission Control, R&D of Wax Blending, Wax Molding/Slabbing, Industrial Drying, Principles, Selection & Design, Certified Process Plant Operations, Control & Troubleshooting, Operator Responsibilities, Storage Tanks Operations & Measurements, Process Plant Troubleshooting & Engineering Problem Solving, Process Plant Performance, Efficiency & Optimization, Continuous Improvement & Benchmarking, Process Troubleshooting Techniques, Oil & Gas Operation/Introduction to Surface Facilities, Pressure Vessel Operation, Process Equipment Performance & Troubleshooting, Plant Startup & Shutdown, Startup & Shutdown the Plant While Handling Abnormal Conditions, Flare & Relief System, Process Gas Plant Start-up, Commissioning & Problem Solving, Process Liquid and Process Handling & Measuring Equipment. Further, he is also well-versed in **Compressors & Turbines** Operation, Maintenance & Troubleshooting, **Heat Exchanger** Overhaul & Testing Techniques, Balancing of **Rotating Machinery (BRM), Pipe Stress Analysis, Valves & Actuators** Technology, Inspect & Maintain **Safeguarding Vent & Relief System, Certified Inspectors for Vehicle & Equipment, Optimizing Equipment Maintenance & Replacement Decisions, Certified Maintenance Planner (CMP), Certified Planning and Scheduling Professional (AACE-PSP), Tank Design, Construction, Inspection & Maintenance, Material Cataloguing, Specifications, Handling & Storage, Steam Trap Design, Operation, Maintenance & Troubleshooting, Steam Trapping & Control, Column, Pump & Exchangers, Troubleshooting & Design, Rotating Equipment Operation & Troubleshooting, Control & ESD System, Detailed Engineering Drawings, Codes & Standards, Budget Preparation, Allocation & Cost Control, Root Cause Analysis (RCA), Production Optimization, Permit to Work (PTW), Project Engineering, Data Analysis, Process Hazard Analysis (PHA), HAZOP Study, Sampling & Analysis, Training Analysis, Job Analysis Techniques, Storage & Handling of Toxic Chemicals & Hazardous Materials, Hazardous Material Classification & Storage/Disposal, Dangerous Goods, Supply Chain, Purchasing, Procurement, Logistics Management & Transport & Warehousing & Inventory, Risk Monitoring Authorized Gas Tester (AGT), Confined Space Entry (CSE), Personal Protective Equipment (PPE), Fire & Gas, First Aid and Occupational Health & Safety.****

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 has a **Bachelor's** degree in **Chemical Engineering** and a **Diploma in Mechanical Engineering**. Further, he is a **Certified Instructor/Trainer, a Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management (ILM)** and has delivered various trainings, workshops, seminars, courses 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

0730 - 0800	Registration & Coffee
0800 - 0815	Welcome & Introduction
0815 - 0830	PRE-TEST
0830 - 0930	Maintenance Preparations
0930 - 0945	Break
0945 - 1100	Maintenance Preparations (cont'd)
1100 - 1215	Valve Removal
1215 - 1230	Break
1230 - 1420	Valve Removal (cont'd)
1420 - 1430	Recap
1430	Lunch & End of Day One

Day 2

0730 - 0930	Valve Packing
0930 - 0945	Break
0945 - 1100	Valve Packing (cont'd)
1100 - 1215	Packing Adjusting, Removing, Selecting & Cutting
1215 - 1230	Break
1230 - 1420	Packing Adjusting, Removing, Selecting & Cutting (cont'd)
1420 - 1430	Recap
1430	Lunch & End of Day Two

Day 3

0730 - 0930	Packing Installing
0930 - 0945	Break
0945 - 1100	Packing Installing (cont'd)
1100 - 1215	Valve Overhaul
1215 - 1230	Break
1230 - 1420	Valve Overhaul (cont'd)
1420 - 1430	Recap
1430	Lunch & End of Day Three

Day 4

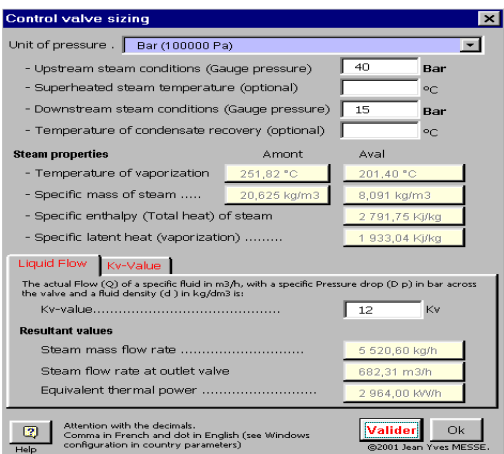
0730 - 0930	Valve Disassembly
0930 - 0945	Break
0945 - 1100	Valve Disassembly (cont'd)
1100 - 1215	Valve Inspection
1215 - 1230	Break
1230 - 1420	Valve Inspection (cont'd)
1420 - 1430	Recap
1430	Lunch & End of Day Four

Day 5

0730 – 0930	Lapping Disc & Seat
0930 – 0945	<i>Break</i>
0945 – 1100	Lapping Disc & Seat (cont'd)
1100 – 1215	Valve Reassembly
1215 – 1230	<i>Break</i>
1230 – 1345	Valve Reassembly (cont'd)
1345 – 1400	Course Conclusion
1400 – 1415	POST-TEST
1415 – 1430	<i>Presentation of Certificates</i>
1430	<i>Lunch & End of Course</i>

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 “Valve Sizing Software”, “Valve Software 3.0”, “Valvestar 7.2 Software” and “PRV²SIZE Software”.



Control valve sizing

Unit of pressure: Bar (100000 Pa)

Upstream steam conditions (Gauge pressure): 40 Bar

Superheated steam temperature (optional): °C

Downstream steam conditions (Gauge pressure): 15 Bar

Temperature of condensate recovery (optional): °C

Steam properties

Temperature of vaporization: 251.82 °C (Arnot) / 201.40 °C (Aval)

Specific mass of steam: 20.625 kg/m³ / 8.091 kg/m³

Specific enthalpy (Total heat) of steam: 2791.75 kJ/kg

Specific latent heat (vaporization): 1933.04 kJ/kg

Liquid Flow: Kv-Value

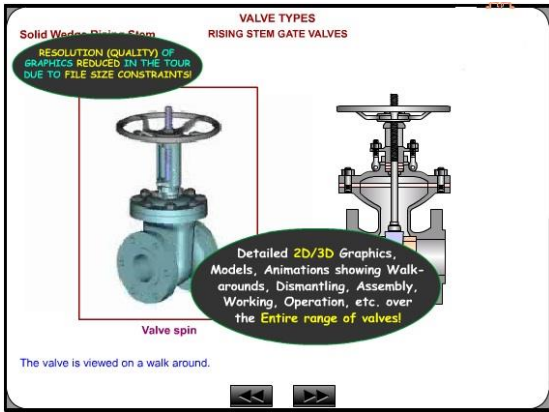
Kv-value: 12

Resultant values

Steam mass flow rate: 5520.60 kg/h

Steam flow rate at outlet valve: 682.31 m³/h

Equivalent thermal power: 2964.00 kW/h



VALVE TYPES

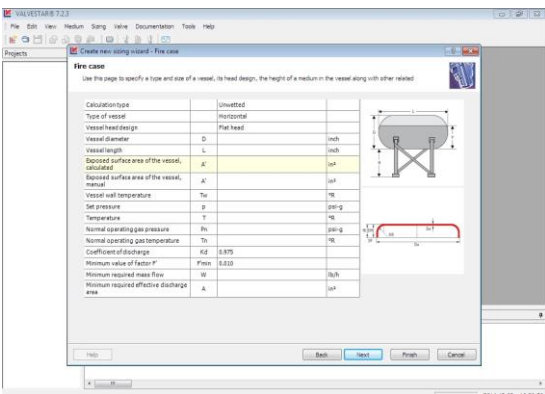
RISING STEM GATE VALVES

RESOLUTION (QUALITY) OF GRAPHICS REDUCED IN THE TOUR DUE TO FILE SIZE CONSTRAINTS

Detailed 2D/3D Graphics, Models, Animations showing Walk-arounds, Dismantling, Assembly, Working, Operation, etc. over the Entire range of valves!

Valve spin

The valve is viewed on a walk around.



VALVESTAR 7.2.3

Fire case

Calculation type: Unwetted

Type of vessel: Horizontal

Vessel head design: Flat head

Vessel diameter: D

Vessel length: L

Support surface area of the vessel, calculated: A_c

Roofed surface area of the vessel, calculated: A_r

Vessel wall temperature: T_w

Set pressure: P

Temperature: T

Normal operating gas pressure: P_o

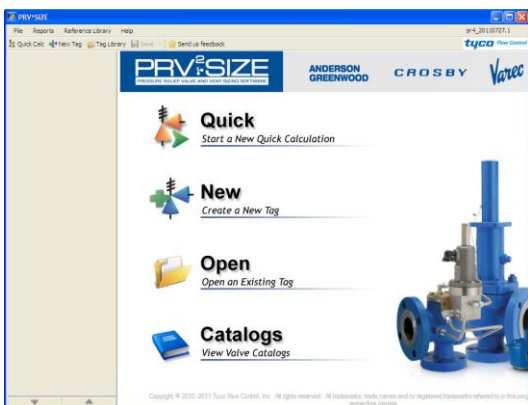
Normal operating gas temperature: T_o

Coefficient of discharge: K_d

Minimum value of factor F: F_{min}

Minimum required mass flow: W

Minimum required effective discharge area: A



PRV²SIZE

Anderson Greenwood Crosby Valtec

Quick: Start a New Quick Calculation

New: Create a New Tag

Open: Open an Existing Tag

Catalogs: View Valve Catalogs

Valve Sizing Software

Valve Software 3.0

Valvestar 7.2 Software

PRV²SIZE Software

Course Coordinator

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