

COURSE OVERVIEW ME0878(KJ1)
Valve Maintenance

Course Title

Valve Maintenance

Course Date/Venue

February 04-08, 2024/The Mouna Meeting Room, The H Dubai Hotel, Sheikh Zayed Rd - Trade Centre, Dubai, UAE

Course Reference

ME0878(KJ1)

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.

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

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, sample video clips of the instructor’s actual lectures & practical sessions during the course conveniently saved in a **Tablet PC**.

Who Should Attend

This course is intended 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

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:-


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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. Mohamed Refaat, MSc, BSc, is a Senior Mechanical & Maintenance Engineer with almost **30 years** of extensive experience in **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 and Bachelor degrees 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: Sunday, 04th of February 2024

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: Monday, 05th of February 2024

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: Tuesday, 06th of February 2024

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: Wednesday, 07th of February 2024

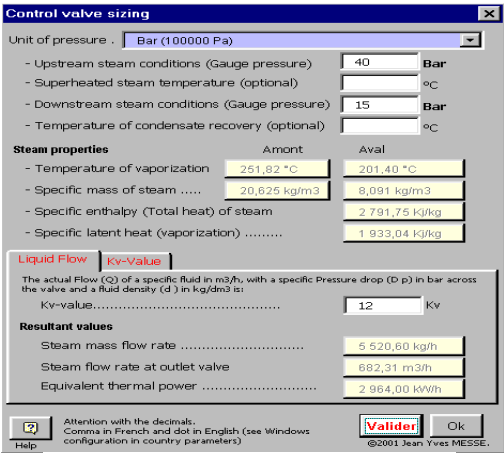
0730 – 0930	Valve Disassembly
0930 – 0945	Break
0945 – 1100	Valve Disassembly (cont'd)
1100 – 1215	Valve Inspection
1215 – 1230	Break
1230 – 1420	Valve Inspection (cont'd)
1420 – 1430	Recap
1430	Lunch & End of Day Four

Day 5: Thursday, 08th of January 2024

0730 – 0930	Lapping Disc & Seat
0930 – 0945	Break
0945 – 1100	Lapping Disc & Seat (cont'd)
1100 – 1215	Valve Reassembly
1215 – 1230	Break
1230 – 1345	Valve Reassembly (cont'd)
1345 – 1400	Course Conclusion
1400 – 1415	POST-TEST
1415 – 1430	Presentation of 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 “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	201,40 °C
Specific mass of steam	20,625 kg/m ³	8,091 kg/m ³
Specific enthalpy (Total heat) of steam	2 791,75 kJ/kg	
Specific latent heat (vaporization)	1 933,04 kJ/kg	

Liquid Flow | Kv-Value

The actual Flow (Q) of a specific fluid in m³/h, with a specific Pressure drop (D p) in bar across the valve and a fluid density (d) in kg/dm³ is:

Kv-value: 12 Kv

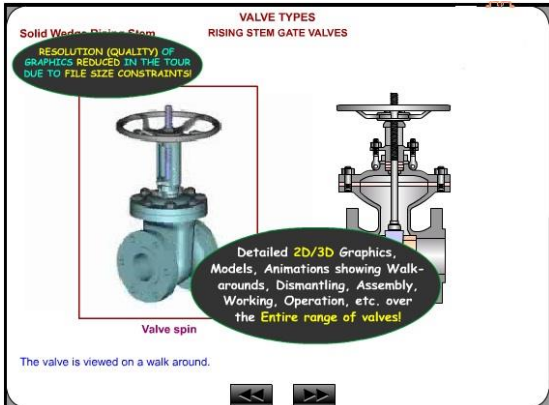
Resultant values

Steam mass flow rate	5 520,60 kg/h
Steam flow rate at outlet valve	682,31 m ³ /h
Equivalent thermal power	2 964,00 kW/h

Attention with the decimals. Comments in French and dot in English (see Windows configuration in country parameters)

Validater | Ok

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VALVE TYPES

RISING STEM GATE VALVES

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

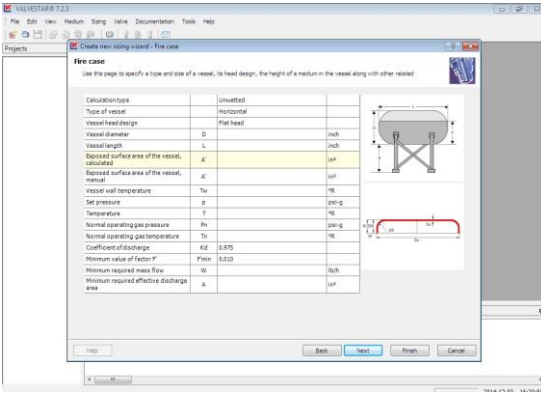
Detailed 2D/3D Graphics, Models, Animations showing Walk-arounds, Dismantling, Assembly, Working, Operation, etc. over the Entire range of valves!

Valve spin

The valve is viewed on a walk around.

Valve Sizing Software

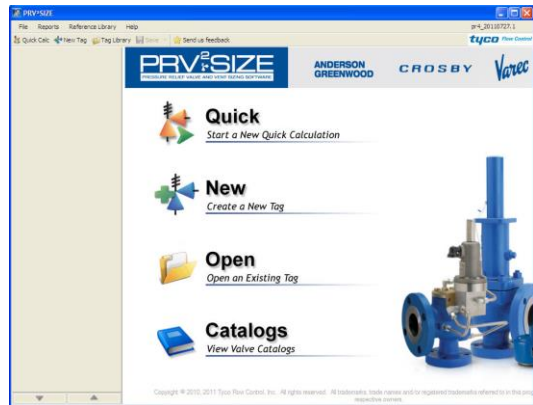
Valve Software 3.0



VALVESTAR 7.2

Fire case

Calculation type	Unsettled	
Type of vessel	Horizontal	
Vessel head type	Flat head	
Vessel diameter	D	inch
Vessel length	L	inch
Exposed surface area of the vessel, calculated	A _c	sq
Exposed surface area of the vessel, manual	A _c	sq
Vessel wall temperature	T _w	°F
Set pressure	P	psig
Temperature	T	°F
Normal operating gas pressure	P _n	psig
Normal operating gas temperature	T _n	°F
Coefficient of discharge	K _d	0,875
Minimum value of Factor P	P _{min}	0,03
Minimum required mass flow	W	lb/h
Minimum required effective discharge area	A	sq



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

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Valvestar 7.2 Software

PRV²SIZE Software

Course Coordinator

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