COURSE OVERVIEW ME1167
Pumps, Valves & Piping Systems

Course Title
Pumps, Valves & Piping Systems

Course Date/Venue
October 05-09, 2025/Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE

Course Reference
ME1167

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 Pumps, Valves & Piping Systems. It covers the various types of pumps, basic terminology and common applications; the centrifugal pump principles and operation, positive displacement pumps basics and valve types and functions; the piping system components and safety precautions in pump, valve and piping work; the pump installation procedures, pump troubleshooting techniques and routine and preventive maintenance for pumps; the pump performance monitoring, pump alignment techniques and valve construction and operation; the valve maintenance procedures, valve faults, troubleshooting and control and relief valves; and the actuators and valve automation basics.

During this interactive course, participants will learn the piping material selection, piping layout and support and piping installation techniques; the common piping faults and troubleshooting covering leaks and cracks, vibration issues, joint failures, visual and instrumental inspection; the hydrostatic testing, pneumatic testing basics, test documentation and safety precautions during tests; the pre-commissioning inspections, flushing procedures, alignment verification and initial run checks; the energy efficiency in pumping systems and troubleshooting integrated pump-valve-piping systems; and the daily checklists, maintenance logs, fault reporting formats and compliance requirements.

Course Objectives

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

- Apply and gain an in-depth knowledge on pumps, valves and piping systems
- Identify the various types of pumps, basic terminology and common applications
- Discuss centrifugal pump principles and operation, positive displacement pumps basics and valve types and functions
- Recognize piping system components and safety precautions in pump, valve and piping work
- Carryout pump installation procedures, pump troubleshooting techniques and routine and preventive maintenance for pumps
- Apply pump performance monitoring, pump alignment techniques and valve construction and operation
- Employ valve maintenance procedures and valve faults and troubleshooting as well as discuss control and relief valves and actuators and valve automation basics
- Illustrate piping material selection, piping layout and support and piping installation techniques
- Recognize common piping faults and troubleshooting covering leaks and cracks, vibration issues, joint failures, visual and instrumental inspection
- Apply hydrostatic testing, pneumatic testing basics, test documentation and safety precautions during tests
- Carryout pre-commissioning inspections, flushing procedures, alignment verification and initial run checks
- Explain energy efficiency in pumping systems and troubleshooting integrated pump-valve-piping systems
- Document daily checklists, maintenance logs, fault reporting formats and compliance requirements

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 pumps, valves and piping systems for technicians.

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.

Accommodation

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

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:

Dr. Tony Dimitry, PhD, MSc, BSc, is a **Senior Mechanical & Maintenance Engineer** with over **35 years** of industrial experience within the **Petroleum**, **Oil & Gas**, **Petrochemical**, **Nuclear & Power** industries. His expertise covers Revising **Engineering Drawings**, **Engineering Drawings & Diagrams**, **AutoCAD & GIS Support**, Retailed **Engineering Drawings**, Codes & Standards, **Mechanical Diagrams** Interpretation, Reading **Engineering Drawings**, **Process & Project Drawings**, **Engineering Drawings** Interpretation, **Piping Layouts & Isometrics**, **P&ID** Reading & Interpretation, 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, **Pipe Cuttings**, **Flange Bolt Tightening** Sequence, **Hydro Testing**, **Failure Analysis Methodologies**, Machinery Root Cause Failure Analysis (**RCFA**), **Preventive Maintenance** & **Condition Monitoring**, Reliability Centred Maintenance (**RCM**), Risk Based Inspection (**RBI**), Root Cause Analysis (**RCA**), **Planning & Managing Plant Turnaround**, **Scheduling Maintenance**, **Data Archive Maintenance**, **Master Milestone Schedule** (**MMS**), Piping & Mechanical **Vibration Analysis**, Preventive & Predictive Maintenance (**PPM**) **Maintenance**, Condition Based Monitoring (**CBM**), Risk Based Assessment (**RBA**), Planning & Preventive Maintenance, **Maintenance** Management (**Preventive**, **Predictive**, **Breakdown**), **Reliability** Management, Rotating Equipment, Scheduling & Cost Control, **Maximo** Foundation, **Maximo** Managing Work, **Asset Management Best Practices**, **Resource Management**, **Inventory Set-up & Management**, **Work Management**, Automatic & Work Flows & Escalations, **Vibration Analysis**, **Heat Exchanger**, **Siemens**, **Gas & Steam Turbine Maintenance**, **Pumps & Compressors**, **Turbo-Expanders**, **Fractional Columns**, **Boilers**, **Cryogenic Pumps** for **LNG**, **Electromechanical Maintenance**, **Machinery Alignment**, **Lubrication Technology**, **Bearing & Rotary Machine**, **Blower & Fan**, **Shaft Repair**, **Safety Relief Valves**, **Pipelines**, **Piping**, **Pressure Vessels**, **Process Equipment**, **Diesel Engine & Crane Maintenance**, **Tanks & Tank Farms**, **Pneumatic System**, **Static Equipment**, **FMEA**, **Corrosion**, **Metallurgy**, **Thermal** and **Electrical Modelling** of **Battery Problems**. He is also well-versed in various simulators such as i**-Learn Vibration**, **AutoCAD**, **Word Access**, **Aspen One**, **Fortran**, **VB**, **C ANSYS**, **ABAQUS**, **DYNA3D**, **Ceasar**, **Caepipe**, **MS Project**, **Primavera**, **MS Excel**, **Maximo**, **Automation Studio** and **SAP**. Currently, he is the **Maintenance Manager** of the PPC Incorporation wherein he is responsible for the maintenance and upgrading of all **Power Station** components.

During his career life, Dr. Dimitry held a significant positions such as the **Operations Engineers**, **Technical Trainer**, **HSE Contracts Engineer**, **Boilers Section Engineer**, **Senior Engineer**, **Trainee Mechanical Engineer**, **Engineer**, **Turbines Section Head**, **Professor**, **Lecturer/Instructor** and **Teaching Assistant** from various multinational companies like **Chloride Silent Power Ltd.**, **Technical University of Crete**, **National Nuclear Corporation**, **UMIST Aliveri Power Station** and **HFO Fired Power Station**.

Dr. Dimitry has **PhD**, **Master** and **Bachelor** degrees in **Mechanical Engineering** from the **Victory University of Manchester** and the **University of Newcastle**, **UK** respectively. Further, he is a **Certified Instructor/Trainer,** a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**) and an associate member of the American Society of Mechanical Engineers (**ASME**) and Institution of Mechanical Engineers (**IMechE**). He has further delivered various trainings, seminars, courses, workshops and conferences internationally.

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:-

20% Lectures
15% Practical Workshops & Work Presentations
50% Hands-on Practical Exercises & Case Studies
15% 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 workshop for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1: ***Sunday, 05th of October 2025***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Introduction to Pump Systems*** *What is a Pump • Types of Pumps (Centrifugal, Positive Displacement) • Basic Terminology • Common Applications*
0930 – 0945	*Break*
0945 – 1030	***Centrifugal Pump Principles & Operation*** *Pump Components • How Centrifugal Pumps Work • Head & Flow Relationships • Efficiency Considerations*
1030 – 1130	***Positive Displacement Pumps Basics*** *Working Principle • Gear & Diaphragm Pumps • Application Examples • Maintenance Essentials*
1130 – 1215	***Valve Types & Functions*** *Purpose of Valves • Gate, Globe, Ball & Check Valves • Actuation Types • Typical Installations*
1215 – 1230	*Break*
1230 – 1330	***Piping System Components*** *Pipes & Fittings Overview • Flanges & Gaskets • Supports & Hangers • Pipe Material Types*
1330 – 1420	***Safety Precautions in Pump, Valve & Piping Work*** *Hazard Identification • PPE Requirements • Lockout/Tagout Procedures • Pressure Release Practices*
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, 06th of October 2025**

0730 – 0830	***Pump Installation Procedures*** *Foundation & Alignment • Coupling Methods • Piping Connections • Start-up Checks*
0830 – 0930	***Pump Troubleshooting Techniques*** *Common Faults (Cavitation, Vibration, Leakage) • Diagnosis Tools • Reading Gauges • Case Studies*
0930 – 0945	*Break*
0945 – 1100	***Routine & Preventive Maintenance for Pumps*** *Lubrication Requirements • Seal & Bearing Inspection • Cleaning Procedures • Recording Maintenance Data*
1100 – 1215	***Pump Performance Monitoring*** *Vibration Analysis Basics • Flow & Pressure Monitoring • Temperature Checks • Efficiency Tracking*
1215 – 1230	*Break*
1230 – 1420	***Pump Alignment Techniques*** *Need for Alignment • Dial Indicator Method • Laser Alignment Introduction • Practical Exercise*
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, 07th of October 2025**

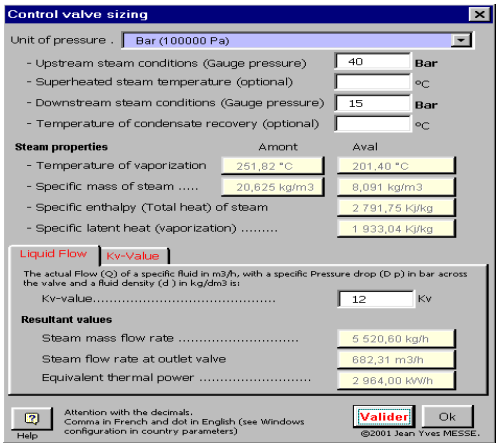
0730 – 0830	***Valve Construction & Operation Details*** *Parts of a Valve • Flow Control Principles • Manual vs Automated Operation • Sealing Mechanisms*
0830 – 0930	***Valve Maintenance Procedures*** *Lubrication of Moving Parts • Packing Adjustment • Replacing Seals • Leak Tests*
0930 – 0945	*Break*
0945 – 1100	***Valve Faults & Troubleshooting*** *Common Valve Issues • Sticking or Leaking Valves • Diagnosis Techniques • Onsite Quick Fixes*
1100 – 1215	***Control & Relief Valves Overview*** *Functions in Systems • Pressure Regulation • Overpressure Protection • Maintenance Requirements*
1215 – 1230	*Break*
1230 – 1420	***Actuators & Valve Automation Basics*** *Pneumatic Actuators • Electric Actuators • Positioners • Integration with Control Systems*
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, 08th of October 2025
0730 – 0830	***Piping Material Selection*** *Metallic versus Non-Metallic • Corrosion Considerations • Pressure Ratings • Compatibility with Fluids*
0830 – 0930	***Piping Layout & Support*** *Expansion Loops & Bends • Support Spacing • Anchoring Techniques • Vibration Minimization*
0930 – 0945	*Break*
0945 – 1100	***Piping Installation Techniques*** *Joining Methods (Welding, Flanges, Threading) • Gasket Selection & Installation • Pipe Cutting & Fitting • Leak Testing*
1100 – 1215	***Common Piping Faults & Troubleshooting*** *Leaks & Cracks • Vibration Issues • Joint Failures • Visual & Instrumental Inspection*
1215 – 1230	*Break*
1230 – 1420	***Piping System Integrity Testing*** *Hydrostatic Testing • Pneumatic Testing Basics • Test Documentation • Safety Precautions during Tests*
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*

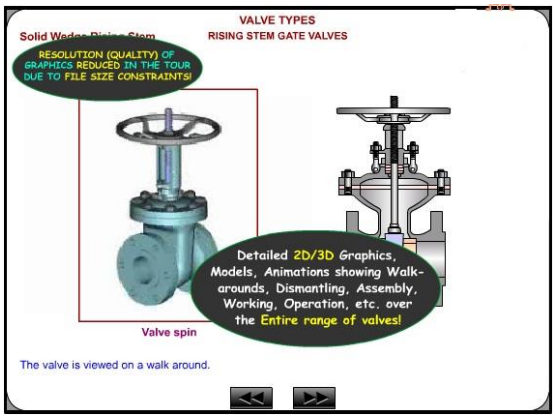
Day 5:	Thursday, 09th of October 2025
0730 – 0930	***System Commissioning & Start-up Checks*** *Pre-Commissioning Inspections • Flushing Procedures • Alignment Verification • Initial Run Checks*
0930 – 0945	*Break*
0945 – 1100	***Energy Efficiency in Pumping Systems*** *Power Consumption Basics • Methods to Improve Efficiency • VFD Integration • Cost Saving Examples*
1100 – 1215	***Troubleshooting Integrated Pump-Valve-Piping Systems*** *Systematic Approach • Flow Issues • Pressure Drop Analysis • Practical Case Reviews*
1215 – 1230	*Break*
1230 – 1345	***Documentation & Reporting*** *Daily Checklists • Maintenance Logs • Fault Reporting Formats • Compliance Requirements*
1345 – 1400	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about t 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)

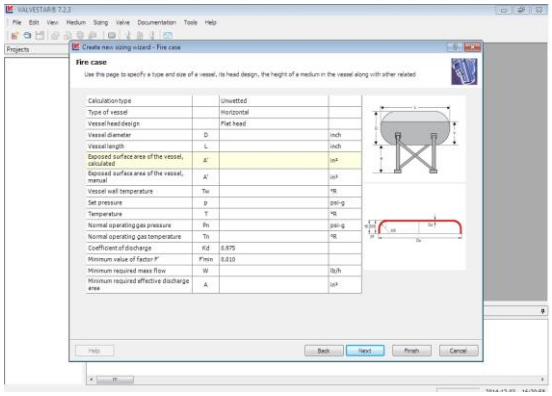
Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using our state-of-the-art simulators “Valve Sizing Software”, “Valve Software 3.0”, “Valvestar 7.2 Software”, “PRV²SIZE Software” and “Centrifugal Pumps and Troubleshooting Guide 3.0”, “Centrifugal Pumps and Troubleshooting Guide 3.0l”& “Pumping Station Simulator”.



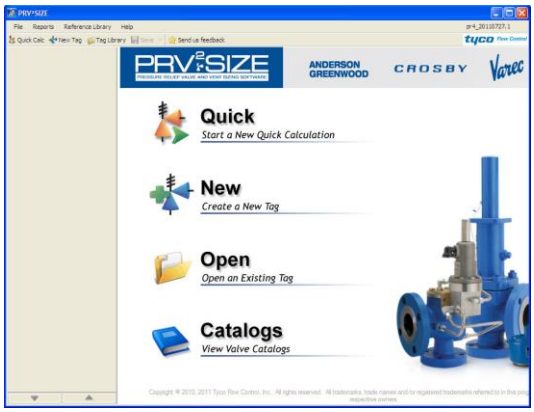
Valve Sizing Software



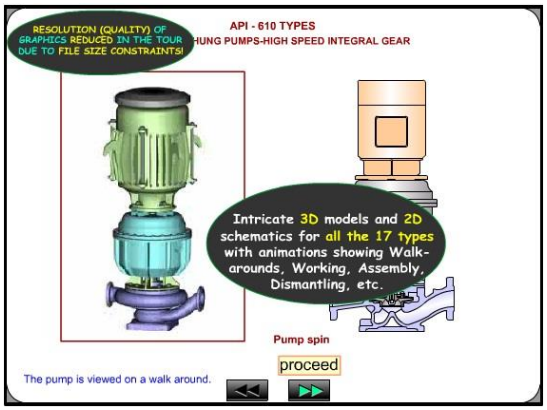
Valve Software 3.0



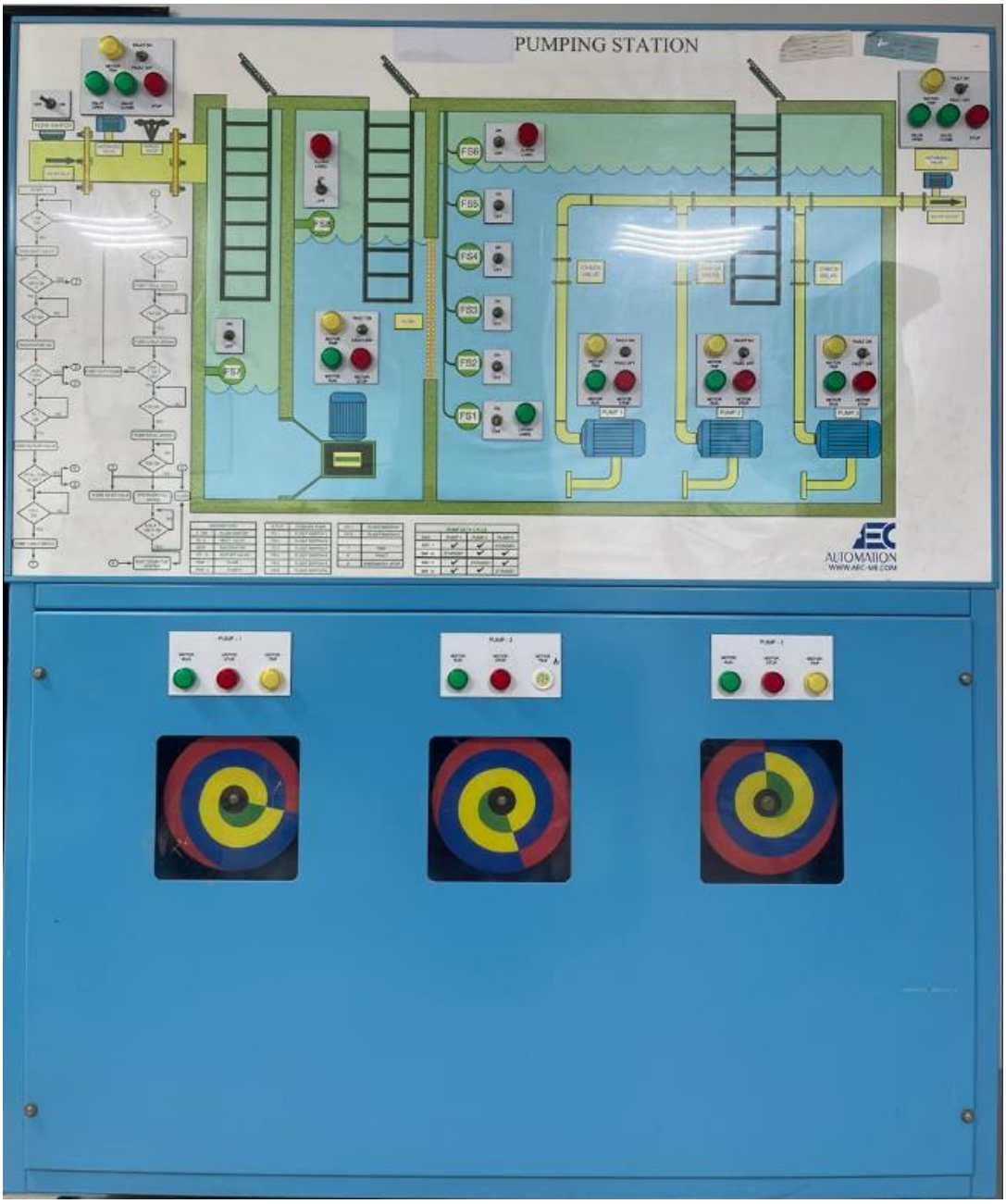
Valvestar 7.2 Software



PRV²SIZE Software



Centrifugal Pumps and Troubleshooting Guide 3.0



Pumping Station Simulator

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