

COURSE OVERVIEW IE0343
Maintenance of Instrumented Protection Systems (IPS),
Pneumatic Converters, Process Control Systems & Emergency
Shutdown Valves

Course Title

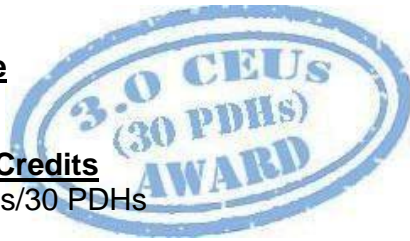
Maintenance of Instrumented Protection Systems (IPS), Pneumatic Converters, Process Control Systems & Emergency Shutdown Valves

Course Reference

IE0343

Course Duration/Credits

Five days/3.0 CEUs/30 PDHs



Course Date/Venue

Session(s)	Date	Venue
1	May 20-24, 2024	Hampstead Meeting Room, London Marriott Hotel Regents Park, London, United Kingdom
2	June 02-06, 2024	Kizkulesi, Crown Plaza Istanbul Asia Hotels & Convention Center, Istanbul, Turkey
3	September 15-19, 2024	The Kooch Al Noor Meeting Room, The H Dubai Hotel, Sheikh Zayed Rd - Trade Centre, Dubai, UAE
4	January 12-16, 2025	Oryx Meeting Room, Doubletree By Hilton Doha-Al Sadd, Doha, Qatar

Course Objectives



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 Maintenance of Instrumented Protection Systems (IPS), Pneumatic Converters, Process Control Systems & Emergency Shutdown Valves. It covers the role and importance of instrumented protection systems in industrial safety; the principles and key components of operation and best practices for maintaining IPS effectively; the IPS troubleshooting common issues and problems; the relevant industry safety standards, compliance and regulations; the role of pneumatic converters in process control and instrumentation; and the installation and calibration of pneumatic converters.

Further, the course will also discuss the preventive maintenance techniques and strategies to prevent failures and ensure reliability; the diagnostic procedures and techniques for diagnosing issues in pneumatic converters; emerging new trends and technologies in pneumatic converters; and the fundamentals and importance of process control systems.

During this interactive course, participants will learn the techniques for configuring and optimizing process control systems; maintaining key components of sensor and transmitter; the control loops tuning and analysis and techniques for tuning control loops for optimal performance; the advanced troubleshooting strategies for diagnosing and resolving complex issues; the critical role of ESDVs in safety and process control; the guidelines for regular inspection and testing of ESDVs; the techniques for analyzing and learning from ESDV failures; the proven maintenance best practices and strategies for ESDVs; the valve actuators and positioners focusing on maintaining the vital components; the maintenance strategies combining maintenance practices for IPS, pneumatic converters, process control systems and ESDVs; advanced technologies in predictive maintenance; and the management of maintenance records and safety and risk management.

Course Objectives

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

- Apply and gain an in-depth knowledge on maintenance of instrumented protection systems (IPS), pneumatic converters, process control systems and emergency shutdown valves
- Discuss the role and importance of instrumented protection systems in industrial safety
- Explain the principles and key components of operation as well as demonstrate best practices for maintaining IPS effectively
- Identify and resolve frequent IPS troubleshooting common issues and problems
- Apply relevant industry safety standards, compliance and regulations
- Recognize the role of pneumatic converters in process control and instrumentation
- Install and calibrate pneumatic converters and apply preventive maintenance techniques and strategies to prevent failures and ensure reliability
- Implement diagnostic procedures and techniques for diagnosing issues in pneumatic converters as well as
- Emerge new trends and technologies in pneumatic converters as well as discuss the fundamentals and importance of process control systems
- Develop techniques for configuring and optimizing process control systems as well as maintain key components of sensor and transmitter
- Carryout control loops tuning and analysis through using techniques for tuning control loops for optimal performance
- Employ advanced troubleshooting strategies for diagnosing and resolving complex issues
- Explain the critical role of ESDVs in safety and process control as well as use the guidelines for regular inspection and testing of ESDVs
- Carryout systematic techniques for analyzing and learning from ESDV failures and proven maintenance best practices and strategies for ESDVs
- Identify valve actuators and positioners focusing on maintaining the vital components
- Integrate maintenance strategies combining maintenance practices for IPS, pneumatic converters, process control systems and ESDVs
- Explore advanced technologies in predictive maintenance as well as manage efficiently and utilize maintenance records and emphasize safety and risk in maintenance practices

Who Should Attend


This course provides an overview of all significant aspects and considerations of inspection, maintenance and calibration program of oil and gas flowmeters and petroleum custody instruments for instrumentation and control technicians/engineers, process engineers, safety engineers, maintenance engineers, plant operators, maintenance supervisors/managers, control system designers, safety officers and those who are involved in the maintenance, operation, and troubleshooting of industrial instrumentation and control systems.

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. Ahmed Abozeid is a **Senior Electrical & Instrumentation Engineer** with over **30 years** of **Onshore & Offshore** experience within the **Oil & Gas** and **Power** industries. His wide expertise covers Instrumented Protection Systems (IPS), Pneumatic Converters, Process Control Systems & Emergency Shutdown Valves, Smart Meters Communication & Troubleshooting, Fiber Optic Applications in Protective Relaying Systems, Networking

Design and Configurations, Electrical Motors & Variable Speed Drives, Motor Speed Control, Power Electronic Converters, AC Converters Section, Electromagnetic Compatibility (EMC), Motor Failure Analysis & Testing, Machinery Fault Diagnosis, Bearing Failure Analysis Process Control & Instrumentation, Process Control Measurements, Control System Commissioning & Start-Up, Control System & Monitoring, Power Station Control System, Instrumentation Devices, Process Control & Automation, PID Controller, Distributed Control Systems (DCS), Programmable Logic Controllers (PLC), ABB PLC & DCS System, Gas Analyzers, Simulation Testing, Load Flow, Short Circuit, Smart Grid, Vibration Sensors, Cable Installation & Commissioning, Calibration Commissioning and Site Filter Controller. Further, he is also well-versed in Fundamentals of Electricity, Electrical Standards, Electrical Power, PLC, Electrical Wiring, Machines, Transformers, Motors, Power Stations, Electro-Mechanical Systems, Automation & Control Systems, Voltage Distribution, Power Distribution, Filters, Automation System, Electrical Variable Speed Drives, Power Systems, Power Generation, Power Transformers, Diesel Generators, Power Stations, Uninterruptible Power Systems (UPS), Battery Chargers and AC & DC Transmission. He is currently the **Project Manager** wherein he manages, plans and implements projects across different lines of business.

Mr. Ahmed worked as the **Electrical Manager, Electrical Power & Machine Expert, Electrical Process Leader, Team Leader, Electrical Team Leader, Technical Instructor, and Instructor/Trainer** from various companies such as the Lafarge Nigeria, Egyptian Cement Company, ECC Training Center, Alrajhi Construction & Building Company and Ameria Cement Company, just to name a few.

Mr. Ahmed has a **Bachelor's** degree in **Electrical Engineering**. Further, he is a **Certified Instructor/Trainer** and has delivered numerous trainings, seminars, courses, workshops 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

London	US\$ 8,800 per Delegate + VAT . This rate includes Participants Pack (Folder, Manual, Hand-outs, etc.), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
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® (Howard 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® (Howard 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: Introduction to Instrumented Protection Systems (IPS)

0730 – 0800	<i>Registration & Coffee</i>
0800 – 0815	<i>Welcome & Introduction</i>
0815 – 0830	PRE-TEST
0830 – 0930	<i>Overview of Instrumented Protection Systems: Their Role & Importance in Industrial Safety</i>
0930 – 0945	<i>Break</i>
0945 – 1030	<i>Principles of Operation: How IPS Works & its Key Components</i>
1030 – 1130	<i>Routine Maintenance Practices: Best Practices for Maintaining IPS Effectively</i>
1130 – 1230	<i>Troubleshooting Common Issues: Identifying & Resolving Frequent IPS Problems</i>
1230 – 1245	<i>Break</i>
1245 – 1320	<i>Safety Standards & Compliance: Relevant Industry Standards & Regulations</i>
1350 – 1420	<i>Case Studies: Real-world Examples of IPS Maintenance Challenges & Solutions</i>
1420 – 1430	Recap
1430	<i>Lunch & End of Day One</i>

Day 2: Advanced Maintenance of Pneumatic Converters

0730 – 0830	Pneumatic Converters: Their Role in Process Control & Instrumentation
0830 – 0930	Installation & Calibration: Best Practices for Installing & Calibrating Pneumatic Converters
0930 – 0945	Break
0945 – 1130	Preventive Maintenance Techniques: Strategies to Prevent Failures & Ensure Reliability
1130 – 1230	Diagnostic Procedures: Techniques for Diagnosing Issues in Pneumatic Converters
1230 – 1245	Break
1245 – 1345	Hands-On Session: Practical Exercises on Maintaining & Troubleshooting Pneumatic Converters
1345 – 1420	Emerging Technologies: Introduction to New Trends & Technologies in Pneumatic Converters
1420 – 1430	Recap
1430	Lunch & End of Day Two

Day 3: Process Control Systems

0730 – 0830	Fundamentals of Process Control Systems: The Basics & their Importance
0830 – 0930	Configuration & Optimization: Techniques for Configuring & Optimizing Process Control Systems
0930 – 0945	Break
0945 – 1130	Sensor & Transmitter Maintenance: Best Practices for Maintaining Key Components
1130 – 1230	Control Loop Tuning & Analysis: Techniques for Tuning Control Loops for Optimal Performance
1230 – 1245	Break
1245 – 1345	Advanced Troubleshooting: Advanced Strategies for Diagnosing & Resolving Complex Issues
1345 – 1420	Interactive Workshop: Group Activity Focused on Practical Problem-Solving in Process Control Systems
1420 – 1430	Recap
1430	Lunch & End of Day Three

Day 4: Emergency Shutdown Valves (ESDVs) Maintenance

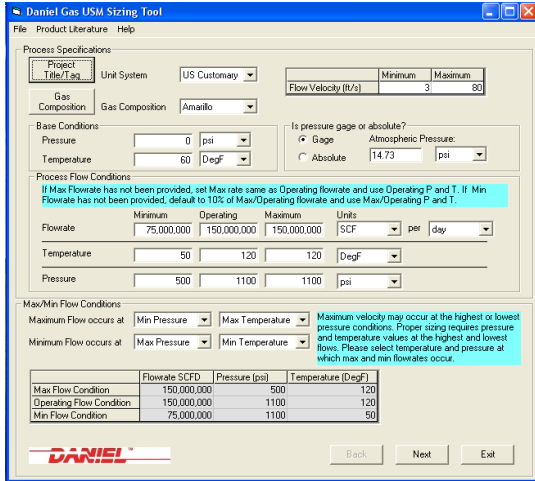
0730 – 0830	Introduction to ESDVs: Their Critical Role in Safety & Process Control
0830 – 0930	Routine Inspection & Testing: Guidelines for Regular Inspection & Testing of ESDVs
0930 – 0945	Break
0945 – 1130	Failure Analysis: Techniques for Analyzing & Learning from ESDV Failures
1130 – 1230	Maintenance Best Practices: Proven Maintenance Strategies for ESDVs
1230 – 1245	Break
1245 – 1345	Valve Actuators & Positioners: Maintaining these Vital Components
1345 – 1420	Simulation Exercises: Practical Simulation of ESDV Maintenance Scenarios
1420 – 1430	Recap
1430	Lunch & End of Day Four

Day 5: Integrative Practices and Advanced Topics

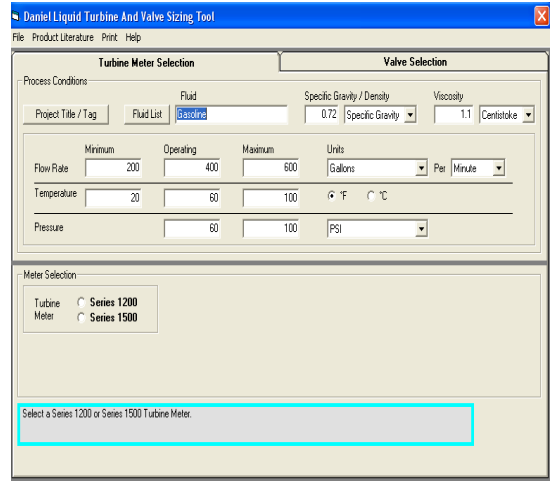
0700 – 0830	<i>Integrated Maintenance Strategies: Combining Maintenance Practices for IPS, Pneumatic Converters, Process Control Systems & ESDVs</i>
0830 – 0930	<i>Predictive Maintenance Technologies: Exploring Advanced Technologies in Predictive Maintenance</i>
0930 – 0945	Break
0945 – 1030	<i>Management of Maintenance Records: Efficiently Managing & Utilizing Maintenance Data</i>
1030 – 1130	<i>Safety & Risk Management: Emphasizing Safety in Maintenance Practices</i>
1130 – 1230	<i>Roundtable Discussion: Sharing Experiences & Strategies Among Participants</i>
1230 – 1245	Break
1245 – 1345	<i>Evaluation & Feedback: Assessing the Knowledge Gained & Providing Feedback for Continuous Improvement</i>
1345 – 1400	Course Conclusion
1400 – 1415	POST TEST
1415 – 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch & End of Course</i>

Simulators (Hands-on Practical Sessions)

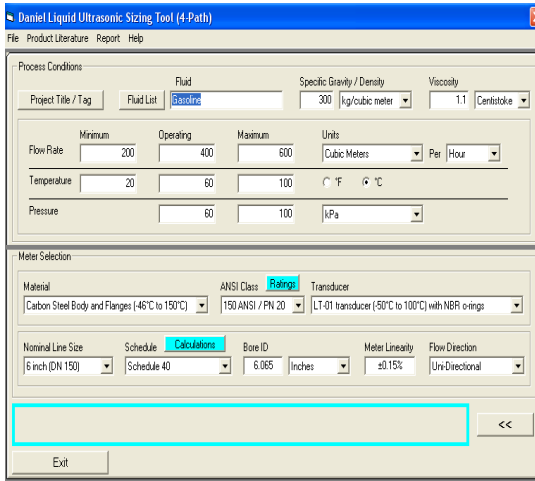
Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using our “Gas Ultrasonic Meter Sizing Tool”, “Liquid Turbine Meter and Control Valve Sizing Tool”, “Liquid Ultrasonic Meter Sizing Tool” and “Orifice Flow Calculator” simulators.



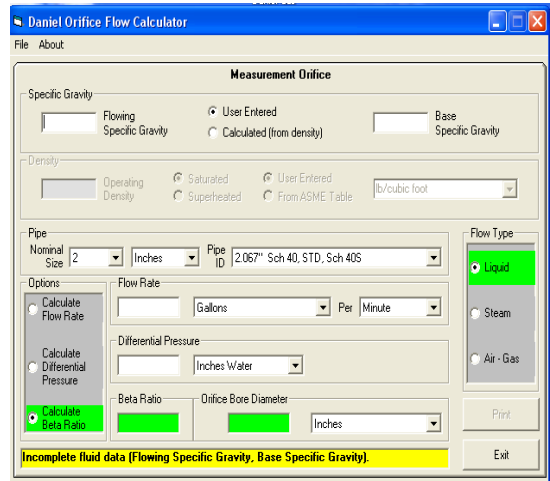
Gas Ultrasonic Meter (USM) Sizing Tool Simulator



Liquid Turbine Meter and Control Valve Sizing Tool Simulator



Liquid Ultrasonic Meter Sizing Tool Simulator



Orifice Flow Calculator Simulator

Course Coordinator

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