

**COURSE OVERVIEW IE0536**  
**Meter Maintenance - Advanced**

**Course Title**

Meter Maintenance - Advanced

**Course Date/Venue**

July 20-24, 2025/Boardroom 1, Elite Byblos Hotel, Al Barsha, Sheikh Zayed Road, Dubai, UAE

**Course Reference**

IE0536

**Course Duration/Credits**

Five days/3.0 CEUs/30 PDHs



**Course Description**



***This practical 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 an Advanced overview of Meter Maintenance. It covers the district cooling systems and latest technologies in metering; the meter specifications and standards, safety procedures and precautions; the advanced tools for meter maintenance and calibrating and maintaining diagnostic equipment; and the data management and analysis, pre-installation procedures, site assessment and preparation and meter installation techniques.



Further, the course will also discuss the advanced meter configuration and integrating meter with SCADA and BMS; the post-installation testing and validation, maintaining detailed installation records and generating comprehensive reports; developing a maintenance schedule; the preventive maintenance procedures, predictive maintenance techniques and advanced calibration techniques; the battery and power management; and the advanced meter issues and step-by-step troubleshooting procedures.

During this interactive course, participants will learn the advanced diagnostic tools, advanced repairs and replacing and upgrading components; the firmware and software updates; identifying and resolving data transmission problems; ensuring reliable data communication; the energy efficiency and meter optimization; the emerging trends in metering technology; the importance of cybersecurity in metering systems and security measure; the role of advanced metering in sustainability; the various techniques for reducing environmental impact; and the current regulatory compliance.

### **Course Objectives**

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

- Apply and gain an advanced knowledge on meter maintenance
- Discuss district cooling systems and metering including the latest technologies in metering
- Recognize meter specifications and standards and apply safety procedures and precautions
- Identify the advanced tools for meter maintenance and calibrate and maintain diagnostic equipment
- Carryout data management and analysis, pre-installation procedures, site assessment and preparation and meter installation techniques
- Apply advanced meter configuration, integrate meter with SCADA and BMS
- Employ post-installation testing and validation, maintain detailed installation records and generate comprehensive reports
- Develop a maintenance schedule and employ preventive maintenance procedures, predictive maintenance techniques and advanced calibration techniques
- Carryout battery and power management and identify advanced meter issues
- Implement step-by-step troubleshooting procedures, use advanced diagnostic tools, perform advanced repairs and replace and upgrade components
- Apply firmware and software updates, identify and resolve data transmission problems and ensure reliable data communication
- Employ energy efficiency and meter optimization and discuss the emerging trends in metering technology
- Discuss the importance of cybersecurity in metering systems and implement security measure
- Recognize the role of advanced metering in sustainability including the various techniques for reducing environmental impact and the current regulatory compliance

### 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 advanced overview of all significant aspects and considerations of meter maintenance for maintenance technicians and engineers, metering specialists, field service technicians, operation and maintenance managers, technical support staff, quality assurance personnel, system integration specialists, energy managers and analysts.

### 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 **3.0 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. Sydney Thoresson, PE, BSc, is a Senior Electrical & Instrumentation Engineer with over 40 years of extensive experience within the Power & Water Utilities and Other Energy Sectors. His specialization highly evolves in Electrical Safety, Power System Equipment, Electrical Drawing, Electrical Forecasting, Transmission Networks, Substation, Distribution Networks, Substation Automation Systems & Application, Electrical System, HV/LV Electrical Authorisation, Variable Frequency Drives (VFD), HV/LV Equipment, Circuit Breaker, Motor Controllers, Hazardous Area Classification, Intrinsic Safety, Electrical Power Systems Quality & Troubleshooting, Protection & Relay, Electric & Control System Commissioning, Liquid & Gas Flowmetering, Fault Analysis in Electrical Networks & Distribution Cables, Custody Measurement, Ultrasonic Flowmetering, Loss Control, Gas Measurement, Process Control Instrumentation, Compressor Control & Protection, Control Systems, Programmable Logic Controllers (PLC), SCADA, Distributed Control Systems (DCS) especially in Honeywell DCS, H&B DCS, Modicon, Siemens, Telemecanique, Wonderware and Adroit. Moreover, he has vast experience in the field of Safety Instrumented Systems (SIS), Safety Integrity Level (SIL), Emergency Shutdown (ESD), Flowmetering & Custody Measurement, Multiphase Flowmetering, Measurement and Control, Mass Measuring System Batching (Philips), Arc Furnace Automation-Ferro Alloys, Walking Beam Furnace, Blast Furnace, Billet Casting Station, Cement Kiln Automation, Factory Automation and Quality Assurance Accreditation (ISO 9000 and Standard BS 5750).**

During Mr. Thoresson's career life, he has gained his thorough and practical experience through various challenging positions such as a **Project Manager, Contracts Manager, Managing Director, Technical Director, Divisional Manager, Plant Automation Engineer, Senior Consulting Engineer, Senior Systems Engineer, Consulting Engineer, Service Engineer and Section Leader** from several international companies such as **Philips, FEDMIS, AEG, DAVY International, BOSCH Instrumentation and Control, Billiton, Endress/Hauser, Petronet, Iscor, Spornet, Eskom and Afrox.**

Mr. Thoresson is a **Registered Professional Engineering Technologist** and has a **National Higher Diploma (NHD) & a National Diploma in Radio Engineering** from the **Witwatersrand Technikon**. Further, he is a **Certified Instructor/Trainer, a Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management (ILM)**, an active member of the **International Society of Automation (ISA)** and the **Society for Automation, Instrumentation, Measurement and Control (SAIMC)**.

### **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, 20<sup>th</sup> of July 2025**

0730 – 0800	<i>Registration &amp; Coffee</i>
0800 – 0815	<i>Welcome &amp; Introduction</i>
0815 – 0830	<b>POST-TEST</b>
0830 – 0900	<b>Overview of District Cooling Systems &amp; Metering</b> <i>Understanding the Role of Meters in District Cooling • Types of Meters Used (Flow, Energy, Temperature)</i>
0900 – 0930	<b>Advanced Metering Technologies</b> <i>Latest Technologies in Metering • Smart Meters Integration</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<b>Meter Specifications &amp; Standards</b> <i>Detailed Review of Meter Specifications • Industry Standards and Compliance Requirements</i>
1100 – 1230	<b>Safety Procedures &amp; Precautions</b> <i>Advanced Safety Measures • PPE and Safe Working Practices</i>
1230 – 1245	<i>Break</i>
1245 – 1330	<b>Diagnostic Tools &amp; Equipment</b> <i>Advanced Tools for Meter Maintenance • Calibration and Maintenance of Diagnostic Equipment</i>
1330 – 1420	<b>Data Management &amp; Analysis</b> <i>Importance of Data Accuracy • Techniques for Data Analysis and Interpretation</i>
1420 – 1430	<b>Recap</b> <i>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</i>
1430	<i>Lunch &amp; End of Day One</i>

#### **Day 2: Monday, 21<sup>st</sup> of July 2025**

0730 – 0830	<b>Pre-Installation Procedures</b> <i>Site Assessment and Preparation • Advanced Pre-Installation Checks</i>
0830 – 0930	<b>Meter Installation Techniques</b> <i>Best Practices for Accurate Installation • Handling and Preventing Installation Issues</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<b>Advanced Meter Configuration</b> <i>Detailed Configuration Steps • Customizing Settings for Optimal Performance</i>
1100 – 1230	<b>Integration with SCADA &amp; BMS</b> <i>Connecting Meters to Supervisory Systems • Ensuring Seamless Data Integration</i>
1230 – 1245	<i>Break</i>
1245 – 1330	<b>Post-Installation Testing &amp; Validation</b> <i>Comprehensive Testing Procedures • Validating Meter Performance and Accuracy</i>



1330 – 1420	<b>Documentation &amp; Reporting</b> <i>Maintaining Detailed Installation Records • Generating Comprehensive Reports</i>
1420 – 1430	<b>Recap</b> <i>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</i>
1430	<i>Lunch &amp; End of Day Two</i>

**Day 3: Tuesday, 22<sup>nd</sup> of July 2025**

0730 – 0830	<b>Developing a Maintenance Schedule</b> <i>Advanced Techniques for Scheduling Maintenance • Balancing Routine and Predictive Maintenance</i>
0830 - 0930	<b>Preventive Maintenance Procedures</b> <i>Detailed Preventive Maintenance Steps • Ensuring Long-Term Meter Performance</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<b>Predictive Maintenance Techniques</b> <i>Using Data for Predictive Maintenance • Implementing Predictive Maintenance Programs</i>
1100 – 1230	<b>Advanced Calibration Techniques</b> <i>In-depth Calibration Procedures • Ensuring Consistent Accuracy</i>
1230 – 1245	<i>Break</i>
1245 – 1330	<b>Battery &amp; Power Management</b> <i>Advanced Battery Maintenance • Techniques for Reliable Power Supply</i>
1330 – 1420	<b>Documentation &amp; Record Keeping</b> <i>Importance of Detailed Maintenance Records • Best Practices for Documentation</i>
1420 – 1430	<b>Recap</b> <i>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</i>
1430	<i>Lunch &amp; End of Day Three</i>

**Day 4: Wednesday, 23<sup>rd</sup> of July 2025**

0730 – 0830	<b>Identifying Advanced Meter Issues</b> <i>Common Advanced Meter Problems • Techniques for Accurate Diagnosis</i>
0830 - 0930	<b>Systematic Troubleshooting Process</b> <i>Step-by-Step Troubleshooting Procedures • Using Advanced Diagnostic Tools</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<b>Repair Techniques for Meters</b> <i>Performing Advanced Repairs • Replacing and Upgrading Components</i>
1100 – 1230	<b>Firmware &amp; Software Updates</b> <i>Importance of Keeping Firmware Updated • Procedures for Software Upgrades</i>
1230 – 1245	<i>Break</i>
1245 – 1330	<b>Troubleshooting Data Communication Issues</b> <i>Identifying and Resolving Data Transmission Problems • Ensuring Reliable Data Communication</i>

1330 – 1420	<b>Practical Workshop: Troubleshooting &amp; Repair</b> <i>Hands-On Troubleshooting Exercises • Applying Advanced Repair Techniques</i>
1420 – 1430	<b>Recap</b> <i>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</i>
1430	<i>Lunch &amp; End of Day Four</i>

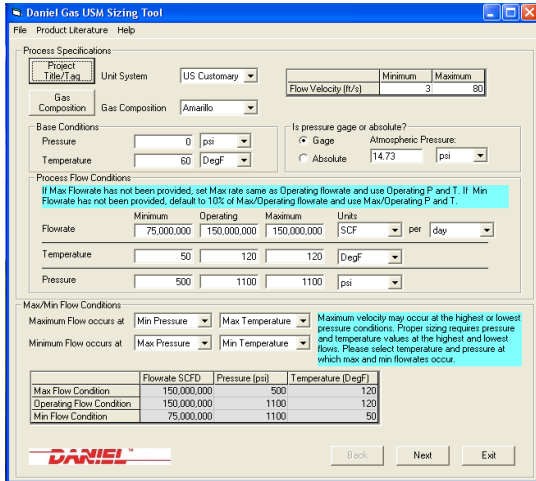
**Day 5: Thursday, 24<sup>th</sup> of July 2025**

0730 – 0830	<b>Energy Efficiency &amp; Meter Optimization</b> <i>Techniques for Optimizing Meter Performance • Role of Accurate Metering in Energy Efficiency</i>
0830 - 0930	<b>Emerging Trends in Metering Technology</b> <i>Introduction to the Latest Innovations • Future Trends in Metering</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<b>Cybersecurity in Metering Systems</b> <i>Importance of Cybersecurity • Implementing Security Measures</i>
1100 – 1230	<b>Sustainability &amp; Environmental Considerations</b> <i>Role of Advanced Metering in Sustainability • Techniques for Reducing Environmental Impact</i>
1230 – 1245	<i>Break</i>
1245 – 1345	<b>Regulatory Compliance &amp; Updates</b> <i>Understanding Current Regulations • Ensuring Ongoing Compliance</i>
1345 – 1400	<b>Course Conclusion</b> <i>Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course</i>
1400 – 1415	<b>POST-TEST</b>
1415 – 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch &amp; 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 carry out 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.



**Daniel Gas USM Sizing Tool**

Process Specifications

Project Title / Tag: [ ] Unit System: US Customary

Gas Composition: Amalio

Base Conditions: Pressure: 0 psi, Temperature: 60 DegF

Process Flow Conditions

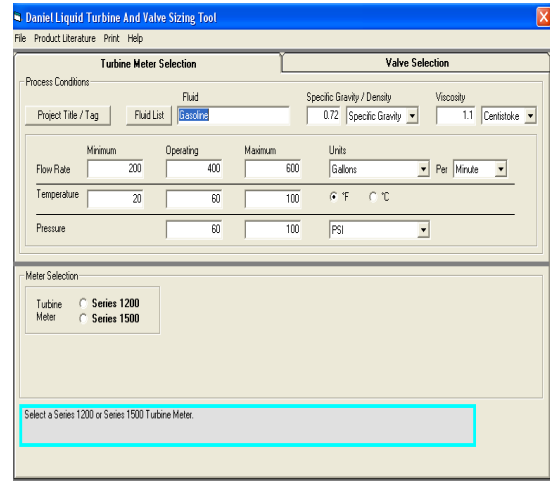
Flowrate: Minimum 75,000,000, Operating 150,000,000, Maximum 150,000,000 SCF per day

Temperature: 50, 120, 120 DegF

Pressure: 500, 1100, 1100 psi

Condition	Flowrate SCFD	Pressure (psi)	Temperature (DegF)
Max Flow Condition	150,000,000	500	120
Operating Flow Condition	150,000,000	1100	120
Min Flow Condition	75,000,000	1100	50

**Gas Ultrasonic Meter (USM) Sizing Tool Simulator**



**Daniel Liquid Turbine And Valve Sizing Tool**

Turbine Meter Selection

Process Conditions

Fluid: Gasoline, Specific Gravity / Density: 0.72, Viscosity: 1.1 Centistoke

Flow Rate: Minimum 200, Operating 400, Maximum 600 Gallons Per Minute

Temperature: 20, 60, 100 °F °C

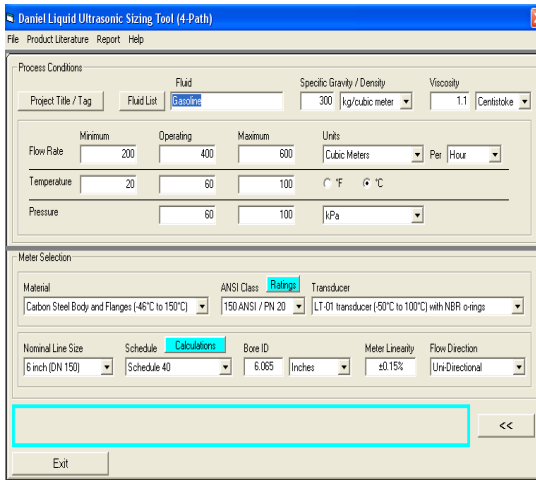
Pressure: 60, 100 PSI

Meter Selection

Turbine Meter: Series 1200, Series 1500

Select a Series 1200 or Series 1500 Turbine Meter.

**Liquid Turbine Meter and Control Valve Sizing Tool Simulator**



**Daniel Liquid Ultrasonic Sizing Tool (4-Path)**

Process Conditions

Fluid: Gasoline, Specific Gravity / Density: 300, Viscosity: 1.1 Centistoke

Flow Rate: Minimum 200, Operating 400, Maximum 600 Cubic Meters Per Hour

Temperature: 20, 60, 100 °F °C

Pressure: 60, 100 kPa

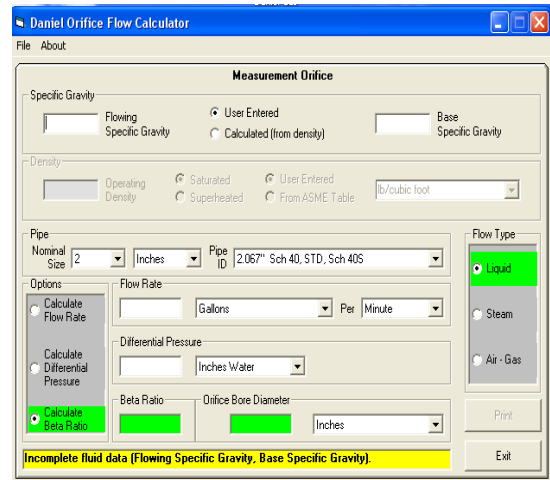
Meter Selection

Material: Carbon Steel Body and Flanges (45°C to 150°C)

ANSI Class: Ratings, Transducer: LT-01 transducer (50°C to 100°C) with NBR o-rings

Nominal Line Size: 6 inch (DN 150), Schedule: Schedule 40, Beta ID: 6.065, Meter Linearity: ±0.15%, Flow Direction: Uni-Directional

**Liquid Ultrasonic Meter Sizing Tool Simulator**



**Daniel Orifice Flow Calculator**

Measurement Orifice

Specific Gravity: Flowing Specific Gravity, User Entered, Base Specific Gravity

Density: Operating Density, Saturated, Superheated, User Entered, From ASME Table, lb/cubic foot

Pipe: Nominal Size 2 Inches, Pipe ID 2.067" Sch 40, STD, Sch 40S

Flow Type: Liquid, Steam, Air - Gas

Options: Calculate Flow Rate, Calculate Differential Pressure, Calculate Beta Ratio

Differential Pressure: Inches Water

Beta Ratio, Orifice Bore Diameter: Inches

Incomplete fluid data (Flowing Specific Gravity, Base Specific Gravity).

**Orifice Flow Calculator Simulator**

## Course Coordinator

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