



## COURSE OVERVIEW IE0139 Advanced Process Control/Field Device Manager

### Course Title

Advanced Process Control/Field Device Manager

### Course Date/Venue

Session 1: February 02-06, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE  
Session 2: November 23-27, 2025/Business Meeting, Crowne Plaza Al Khobar, Al Khobar, KSA



### Course Reference

IE0139



### 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 APC/FDM course covers the practical application of Advanced Process Control (APC) or Field Device Manager (FDM) systems to a variety of continuous process plants. The course discuss automation and its importance, types of plants and controls, automation hierarchy, control system architecture, instrumentation and control, different types of computer-based control systems including PLCs and DCS. Basic requirements for good operator interface, industrial communication, information interchange, man-machine communication, enterprise level, engineering & commissioning, performance & dependability, dependable control systems, safety & hazard analysis, concepts & implementation of alarm & trip systems, device management protocols and Honeywell field device manager (FDM) will be illustrated during the course.



The course will provide hands-on training sessions in PLC and HMI (OIU and SCADA) programming techniques using one of our state-of-the art Allen Bradley SLC 500, Siemens S7-200, AB Micrologix 1000 (Digital or Analog), AB SLC5/03 and AB WS5610 PLC simulators. Please refer to the last page of this course overview for details of simulators.



### Course Objectives

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

- Apply and gain a comprehensive knowledge on advanced process control (APC) or field device manager (FDM)
- Explain automation and its importance and identify the various types of plants and controls
- Describe automation hierarchy, control system architecture and control
- Enumerate the different types of computer-based control systems including PLCs and DCSs as well as the basic requirements for good operator interface
- Determine industrial communication, information interchange and man-machine communication
- Recognize enterprise level, engineering, commissioning, performance and dependability
- Carryout dependable control systems, safety and hazard analysis, concepts and implementation of alarm and trip systems
- Discuss device management protocols and Honeywell field device manager (FDM)

### 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 provides an overview of all significant aspects and considerations of advanced process control or field device manager for those who are responsible for the selection and implementation of APC or field device manager systems and other process plant control systems. Personnel in technical positions who want to know more about APC or field device manager systems will also benefit from this course.

### 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 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.

### Course 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 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 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. Barry Pretorius** is a **Senior Instrumentation Engineer** with almost **45** years of extensive experience within the **Oil, Gas, Petrochemical, Refinery & Power** industries. His expertise widely covers in the areas of **Distributed Control System (DCS), DCS Operations & Techniques, Plant Control and Protection Systems, Process Control & Instrumentation, Cascade Control Loops, Split-Range Control Loops, Capacity Control & Other Advanced Control Schemes, Safety Instrumented Systems, Plant Automation Operations & Maintenance, Programmable Logic Controller (PLC), Siemens PLC Simatic S7-400/S7-300/S7-200, PLC & SCADA for Automation & Process Control, Artificial Intelligence, Allen Bradley PLC Programing and Hardware Trouble Shooting, Schneider SCADA System, Wonder Ware, Emerson, Honeywell, Honeywell Safety Manager PLC, Yokogawa, Advanced DCS Yokogawa, Endress & Hauser, Field Commissioning and Start up Testing Pre Operations, System Factory Acceptance Test (FAT), FactoryLink ECS, Modicon 484, Rockwell Automation, System Site Acceptance Test (SAT), SCADA HMI & PLC Control Logic, Cyber Security Practitioner, Cyber Security of Industrial Control System, IT Cyber Security Best Practices, Cybersecurity Fundamentals, Ethical Hacking & Penetration Testing, Cybersecurity Risk Management, Cybersecurity Threat Intelligence, OT Whitelisting for Better Industrial Control System Defense, NESA Standard and Compliance Workshop, OT, Cyber Attacks Awareness - Malware/Ransom Ware / Virus /Trojan/ Phishing, Information Security Manager, Security System Installation and Maintenance, Implementation, Systems Testing, Commissioning and Startup, Foxboro DCS & Triconics, SIS Systems, Advanced DC Drives, Motion Control, Hydraulics, Pneumatics and Control Systems Engineering, Electrical & Automation Control Systems, HV/MV Switchgear, LV & MV Switchgears & Circuit Breakers, High Voltage Electrical Safety, LV & HV Electrical System, HV Equipment Inspection & Maintenance, LV Distribution Switchgear & Equipment, Electrical Safety, Electrical Maintenance, Transformers, Medium & High Voltage Equipment, Circuit Breakers, Cable & Overhead Line Troubleshooting & Maintenance, Electrical Drawing & Schematics, Voltage Distribution, Power Distribution, Filters, Automation System, Electrical Variable Speed Drives, Power Systems, Power Generation, Diesel Generators, Power Stations, Uninterruptible Power Systems (UPS), Battery Chargers, AC & DC Transmission, CCTV Installation, Data & Fire Alarm System, Evacuation Systems and Electrical Motors & Variable Speed Drives, & Control of Electrical and Electronic devices.**

During Mr. Pretorius’s career life, he has gained his practical experience through several significant positions and dedication as the **Technical Director, Automation System's Software Manager, Site Manager, Senior Lead Technical Analyst, Project Team Leader, Automation Team Leader, Automation System's Senior Project Engineer, Senior Project & Commissioning Engineer, Senior Instrumentation & Control Engineer, Project Engineer, Pre-Operations Startup Engineer, PLC Specialist, Radio Technician, A.T.E Technician** and **Senior Instructor/Trainer** from various companies like the **ADNOC Sour Gas, Ras Al Khair Aluminum Smelter, Johnson Matthey Pty. Ltd, Craigcor Engineering, Unitronics South Africa Pty (Ltd), Bridgestone/Firestone South Africa Pty (Ltd)** and **South African Defense Force.**

Mr. Pretorius’s has a **Bachelor of Technology in Electrical Engineering (Heavy Current).** Further, he is a **Certified Instructor/Trainer, a Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management (ILM),** received numerous awards from various institutions and delivered numerous trainings, courses, workshops, seminars 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	<b>PRE-TEST</b>
0830 – 0900	<b>Automation &amp; Its Importance</b>
0900 – 0930	<b>Types of Plants &amp; Controls</b> Continuous Processes • Discrete Processes • Mixed Processes
0930 – 0945	Break
0945 – 1230	<b>Automation Hierarchy</b>
1230 – 1245	Break
1245 – 1420	<b>Control System Architecture</b>
1420 – 1430	<b>Recap</b>
1430	Lunch & End of Day One

#### **Day 2**

0730 – 0930	<b>Instrumentation</b> Binary & Analogue Instruments • Instrumentation Diagrams • Measurement Instrumentation for Flow, Level, Temp, Pressure
0930 – 0945	Break
0945 – 1100	<b>Instrumentation (cont'd)</b> Instrument Calibration Concepts • Final Control Elements (Control Valves,- Actuators, Control Valve Instrumentation)
1100 – 1230	<b>Control</b> Plant Modeling • Loop Dynamics • PID Controller • Various Forms of PID Algorithms • Optimal Tuning Theory and Calculations
1230 – 1245	Break
1245 – 1420	<b>Control (cont'd)</b> Transforming Process Operating Information into Controller Tuning • Identifying Process Dynamics based on DCS Trends and Historical Data • Nested Controllers • Impact of Control Valves on Control Loop Performance
1420 - 1430	<b>Recap</b>
1430	Lunch & End of Day Two

#### **Day 3**

0730 – 0930	<b>Different Types of Computer-Based Control Systems including PLCs &amp; DCSs as well as Basic Requirements for Good Operator Interface</b> PLCs Functions & Construction • DCS Attributes & Features • Continuous & Discrete Control • IEC 61131 Languages
0930 – 0945	Break
0945 – 1100	<b>Industrial Communication</b> Field Bus Principles • Field Bus Operation • Physical Layer (Media & Wiring) • Link Layer (Determinism & Redundancy) • Application Layer (Shared Memory & Messages Paradigm)
1100 – 1230	<b>Information Interchange</b> Device Access Protocols: HART • OPC



1230 – 1245	Break
1245 – 1420	<b>Man-machine Communication</b> Hardware & Software Structure • Tools
1420 – 1430	<b>Recap</b>
1430	Lunch & End of Day Three

**Day 4**

0730 – 0930	<b>Enterprise Level</b> Enterprise Resource Planning
0930 – 0945	Break
0945 – 1100	<b>Engineering &amp; Commissioning</b> Life Cycle • Project
1100 – 1230	<b>Performance &amp; Dependability</b> Real-Time & Performance Evaluation
1230 – 1245	Break
1245 – 1420	<b>Dependable Control Systems</b> Dependability, Overview & Definitions • Dependability Evaluation
1420 - 1430	<b>Recap</b>
1430	Lunch & End of Day Four

**Day 5**

0730 – 0930	<b>Safety &amp; Hazard Analysis</b> Fault Tolerance • Reliability & Safety • Fault Tolerance
0930 – 0945	Break
0945 – 1100	<b>Concepts &amp; Implementation of Alarm &amp; Trip Systems</b>
1100 – 1230	<b>Device Management Protocols</b>
1230 – 1245	Break
1245 – 1345	<b>Honeywell Field Device Manager (FDM)</b>
1345 – 1400	<b>POST-TEST</b>
1400 - 1415	<b>Course Conclusion</b>
1415 – 1430	Presentation of Course Certificates
1430	Lunch & End of Course

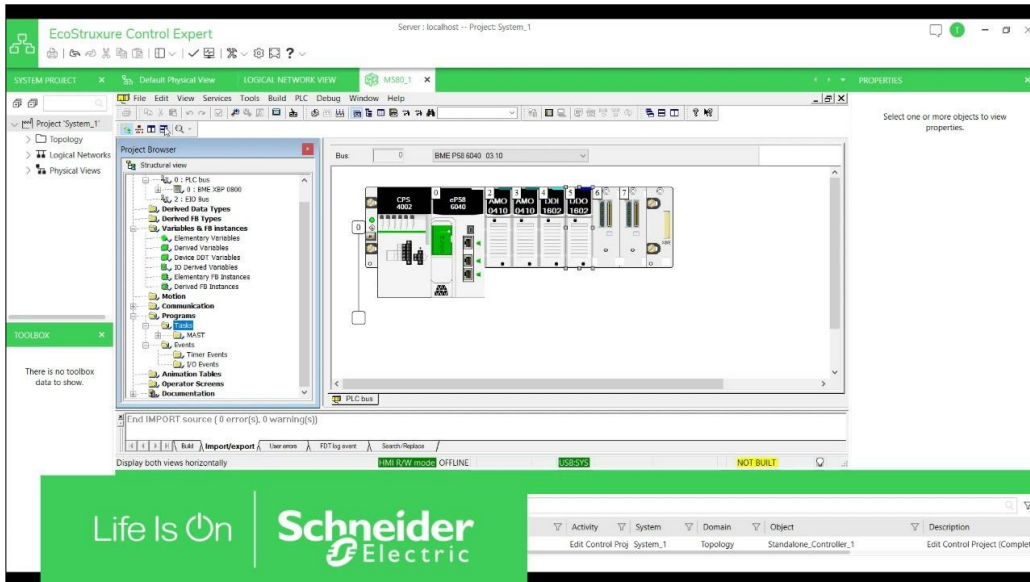


**Simulator (Hands-on Practical Sessions)**

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 one of our state-of-the-art simulators “Modicon M340”, “EcoStruxure Expert Classic”, “Gas Ultrasonic Meter Sizing Tool”, “Liquid Turbine Meter and Control Valve Sizing Tool”, “Liquid Ultrasonic Meter Sizing Tool”, “Orifice Flow Calculator” and “Automation Simulator”.

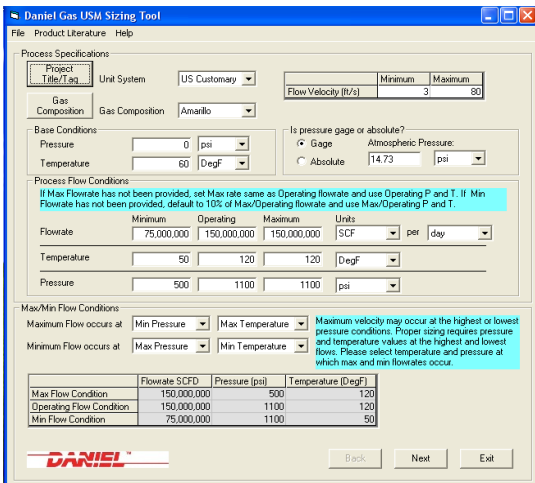


**Modicon M340**

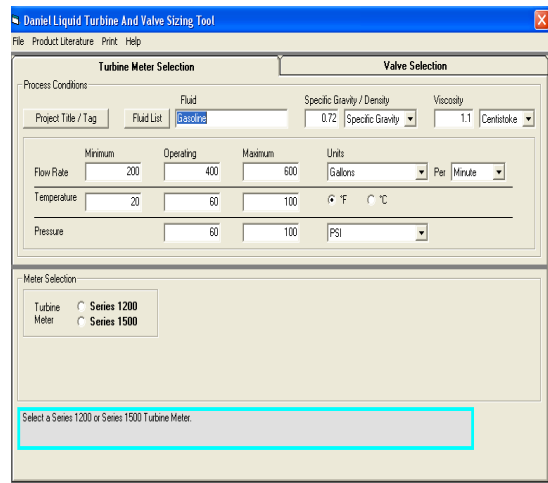


**EcoStruxure Expert Classic**

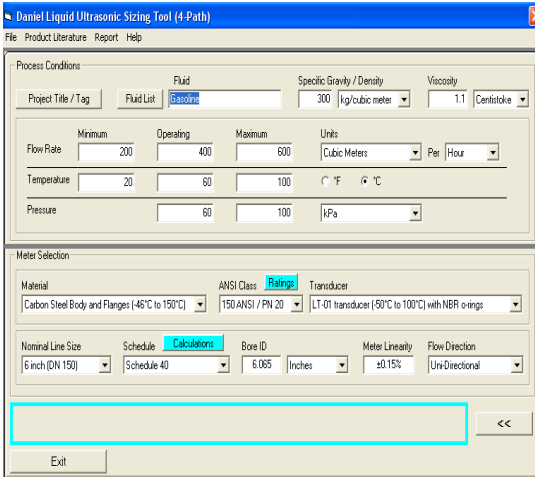




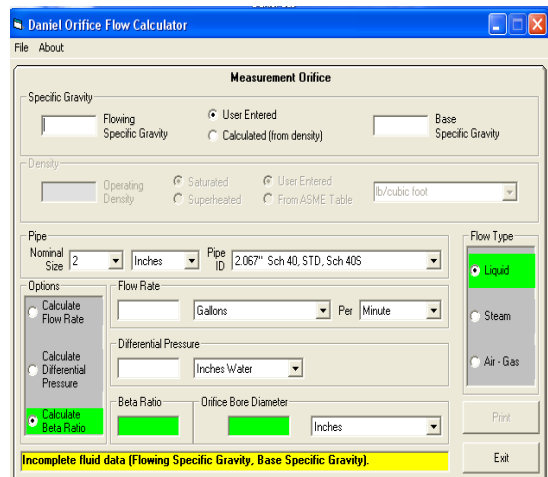
**Gas Ultrasonic Meter (USM) Sizing Tool Simulator**



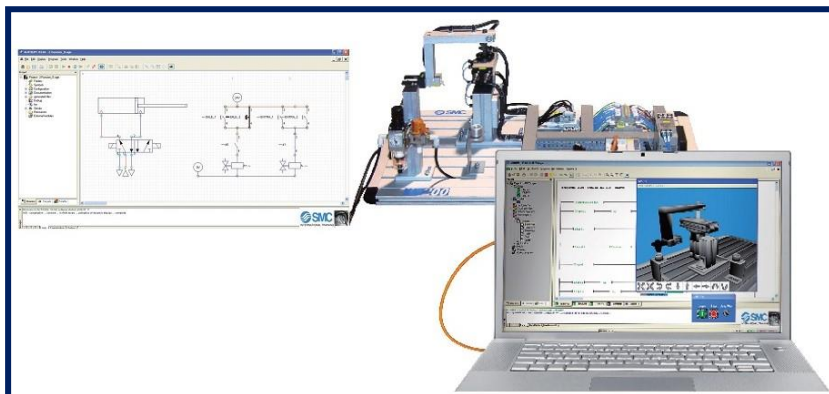
**Liquid Turbine Meter and Control Valve Sizing Tool Simulator**



**Liquid Ultrasonic Meter Sizing Tool Simulator**



**Orifice Flow Calculator Simulator**



**AutoSIM – 200 Automation Simulator**

**Course Coordinator**

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