



## COURSE OVERVIEW IE0705 Schneider M171 Logic Controller

### Course Title

Schneider M171 Logic Controller

### Course Date/Venue

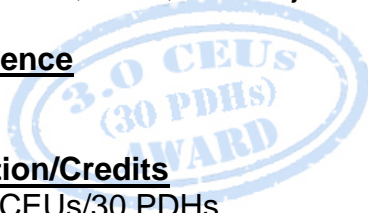
May 31-June 04, 2026/TBA Meeting Room, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE or, TBA Meeting Room, Dinamo Hotel Baku, Baku, Azerbaijan

### Course Reference

IE0705

### Course Duration/Credits

Five days/3.0 CEUs/30 PDHs



### Course Description



***This practical and highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.***



This course is designed to provide participants with a detailed and up-to-date overview of Schneider M171 Logic Controller. It covers the modicon M171 series and applications and its positioning within Schneider EcoStruxure architecture; the hardware architecture, physical installation and I/O wiring basics; the SoMachine HVAC, EcoStruxure machine expert HVAC and communication interfaces; the PLC programming basics, programming languages (IEC 61131-3) and creating a basic program; the variables and data types, timers, counters, debugging, monitoring and function blocks and libraries; and the analog signal processing, control strategies, alarm management, data logging, simulation and testing.



During this interactive course, participants will learn the Modbus communication (RTU/TCP) and BACnet communication; the network configuration and HMI integration; the remote access and monitoring, third-party integration and HVAC application programming; the energy management, system optimization and fault diagnosis and maintenance; the technical documentation and version control practices; and the backup and restore procedures and project handover guidelines.

### Course Objectives/Outcomes & Benefits for the Participants

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

- Apply and gain an in-depth knowledge on Schneider M171 logic controller
- Discuss the modicon M171 series and applications and its positioning within Schneider EcoStruxure architecture
- Recognize hardware architecture, physical installation and I/O wiring basics
- Identify SoMachine HVAC, EcoStruxure machine expert HVAC and communication interfaces
- Apply PLC programming basics, programming languages (IEC 61131-3) and creating a basic program
- Recognize variables and data types, timers, counters, debugging, monitoring and function blocks and libraries
- Employ analog signal processing, control strategies, alarm management, data logging, simulation and testing
- Explain Modbus communication (RTU/TCP) and BACnet communication as well as apply network configuration and HMI integration
- Carryout remote access and monitoring, third-party integration and HVAC application programming
- Employ energy management, system optimization and fault diagnosis and maintenance
- Create technical documentation and apply version control practices, backup and restore procedures and project handover guidelines

### Exclusive Smart Training Kit - H-STK®



Participants of this course will receive the exclusive “Howard 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 Schneider M171 logic controller for instrumentation engineers, automation and control engineers, electrical engineers and technicians, maintenance and service engineers, system integrators, programmers, PLC beginners and other technical staff.

### Course Fee

**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.

### 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

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.

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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.

**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. Mike Tay**, PhD, MSc, BSc, is a **Senior Instrumentation & Communications Engineer and Energy Expert** with over **30 years** of extensive experience. His expertise widely covers in **Energy Management System Awareness, Energy Efficiency & Management, Energy Management International Standards, Energy Audit, Renewable Energy, Nuclear Power Plant, Solar Energy, Thermal Energy, Industrial Energy Efficiency, Process Energy Efficiency, Renewable Energy, Energy**

**Conservation & Technologies Programmable Logic Controller (PLC), PLC & SCADA Automation, Process Control & Automation, Distributed Control Systems (DCS), Interruptible Power Systems (UPS), Supervisory Control and Data Acquisition (SCADA), Network Comprehensive, Systems Analysis, SCADA Security, ESD System Function, Protective Devices Troubleshooting, Protective Devices Testing & Process Control System, Advanced Process Control (APC) Technology, Process Control & Loop Tuning, Data Accuracy & System Function, Control System Interface, Analysis & Control, Modern Power Systems Protective Relaying, Custody Measurement & Loss Control, Fiber Optics Access Network Planning, Process Analyzer & Analytical Instrumentation, HV/MV Substation Design & Maintenance, Combined Cycle Power Generation, Advanced Online Analyzer, Protection Relay Maintenance, Power System Faults, Current & Voltage Transformers, Power System Neutral Grounding, Feeder Overcurrent Protection, Electrical Protection Systems, Bus Protection, Motor Protection, Transformer Protection, Generator Protection, Numerical Relays, ESD System Analysis & Control, Custody Measurement, Safety Instrumented System (SIS), Safety Integrity Level (SIL), Power System, Power Supply Design Management, Diesel Generator, Electric Motors and Basic Electricity & Electrical Codes.** Further, he is also well-versed in **Communications, Telecommunications, Mobile Protocols, 4G LTE, GSM/UMTS, CMDA2000, WiMAX Technology, HSPA+, Alarm Management System, Computer Architecture, Logic & Microprocessor Design, Embedded Systems Design plus Computer Networking with CISCO, Network Communication, Industrial Digital Communication, Designing Telecommunications Distribution System, Electrical Engineering, WiMAX Broadband Wireless System, TT Intranet & ADSL Network, TT Web & Voicemail, Off-site ATM Network, IT Maintenance, Say2000i, IP Phone, National Address & ID Automation, Electricity Distribution Network, Customs Network & Maintenance, LAN & WAN Network, UYAP Network, Network Routing Protocols, Multicast Protocols, Network Management Protocols, Mobile & Wireless Networks and Digital Signal Processing.**

During his career life, Dr. Tay worked with various universities and institutions such as the KOC Sistem, Meteksan Sistem, Altek BT, Yasar University, Dokuz Eylul University and METU and occupied significant positions being the **Aegean Region Manager, Group Leader, Technical Services Manager, Field Engineer, IT Engineer, Instrumentation & Control Engineer, Research Assistant, Instructor, Instrumentation & Control Instructor, Technical Advisor, Technical Consultant and Senior Instructor/Lecturer.**

Dr. Tay has **PhD, Master and Bachelor** degrees in **Electrical & Electronics Engineering** from the **Dokuz Eylul University** and the **Middle East Technical University (METU)** respectively. Further, he is a **Certified Instructor/Trainer, a Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management (ILM)**, a **Certified CISCO (CCSP, CCDA, CCNP, CCNA, CCNP) Specialist, a Certified CISCO IP Telephony Design Specialist, CISCO Rich Media Communications Specialist, CISCO Security Solutions & Design Specialist and Information Systems Security (INFOSEC) Professional.** He has further hold certification in **Fundamentals of Process Control and Understanding Process Control: An Overview** and delivered and presented innumerable trainings, courses, workshops, seminars and conferences worldwide.

### 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.

### Learning Design & Customization

This course can be customized to the exact requirements of clients. Haward Technology is so proud of our huge capabilities in tailoring our courses to the training needs of our valued clients.

### 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, 31<sup>st</sup> of May 2026**

0730 – 0800	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	<b>PRE-TEST</b>
0830 – 0930	<b>Introduction to Modicon M171</b> Overview of M171 Series & Applications (HVAC, Pumping, Small Automation) • Positioning within Schneider EcoStruxure Architecture • Comparison with Other PLCs (M221, M241) • Key Features & Capabilities
0930 – 0945	Break
0945 – 1030	<b>Hardware Architecture</b> CPU Types & Variants (M171, M172 Differences) • Power Supply Requirements & Wiring • Built-in I/O Types & Configurations • Expansion Modules Overview
1030 – 1130	<b>Physical Installation</b> Mounting (DIN Rail, Panel Mounting) • Environmental Considerations (Temperature, Humidity) • Grounding & Shielding Techniques • Safety & Compliance Standards
1130 – 1215	<b>I/O Wiring Basics</b> Digital Input/Output Wiring • Analog Signal Wiring (0–10V, 4–20mA) • Sensor & Actuator Interfacing • Noise Reduction & Signal Integrity
1215 – 1230	Break



1230 – 1330	<b>Basics of SoMachine HVAC/EcoStruxure Machine Expert HVAC</b> Software Installation & Setup • User Interface Navigation • Project Creation Basics • Device Catalog & Configuration
1330 – 1420	<b>Communication Interfaces Overview</b> Serial Communication (RS485, Modbus RTU) • Ethernet Capabilities (if Applicable) • CAN Bus Basics • Communication Ports Configuration
1420 – 1430	<b>Recap</b> 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, 01<sup>st</sup> of June 2026**

0730 – 0830	<b>PLC Programming Basics</b> PLC Scan Cycle Concept • Memory Structure & Variable Types • Addressing Methods • Execution Flow
0830 – 0930	<b>Programming Languages (IEC 61131-3)</b> Ladder Diagram (LD) Fundamentals • Function Block Diagram (FBD) • Structured Text (ST) Introduction • Language Selection Criteria
0930 – 0945	Break
0945 – 1100	<b>Creating a Basic Program</b> Creating Tasks & Programs • Writing First Logic (Start/Stop Circuit) • Downloading Program to Controller • Running & Stopping the PLC
1100 – 1215	<b>Variables &amp; Data Types</b> BOOL, INT, REAL, STRING Usage • Local versus Global Variables • Retentive versus Non-retentive Memory • Naming Conventions & Best Practices
1215 – 1230	Break
1230 – 1330	<b>Timers &amp; Counters</b> TON, TOF, TP Timer Functions • Counter Types (CTU, CTD) • Practical Applications • Parameter Configuration
1330 – 1420	<b>Debugging &amp; Monitoring</b> Online Monitoring Tools • Watch Windows & Forcing Variables • Error Messages & Diagnostics • Troubleshooting Basic Logic Errors
1420 – 1430	<b>Recap</b> 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, 02<sup>nd</sup> of June 2026**

0730 – 0830	<b>Function Blocks &amp; Libraries</b> Standard Function Blocks • HVAC-specific Libraries • Creating Custom Function Blocks • Reusability & Modular Design
0830 – 0930	<b>Analog Signal Processing</b> Scaling Analog Inputs • Filtering & Smoothing Signals • Engineering Unit Conversion • Calibration Techniques
0930 – 0945	Break



0945 – 1100	<b>Control Strategies</b> On/Off Control Logic • PID Control Basics • PID Tuning Methods • Practical HVAC Control Examples
1100 – 1215	<b>Alarm Management</b> Alarm Generation Logic • Alarm Prioritization • Alarm Logging & History • Notification Strategies
1215 – 1230	Break
1230 – 1330	<b>Data Logging</b> Logging Parameters & Variables • Memory Management • Data Retrieval Methods • Exporting Data for Analysis
1330 – 1420	<b>Simulation &amp; Testing</b> Offline Simulation Tools • Test Scenarios Creation • Validation of Logic • Debugging Complex Sequences
1420 – 1430	<b>Recap</b> 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, 03<sup>rd</sup> of June 2026**

0730 – 0830	<b>Modbus Communication (RTU/TCP)</b> Master/Slave Concepts • Register Mapping • Configuration in M171 • Troubleshooting Communication Issues
0830 – 0930	<b>BACnet Communication</b> BACnet Basics (MS/TP, IP) • Object Types & Properties • Integration with BMS Systems • Configuration Steps
0930 – 0945	Break
0945 – 1100	<b>Network Configuration</b> IP Addressing & Subnetting • Ethernet Setup (if Applicable) • Network Diagnostics • Security Considerations
1100 – 1215	<b>HMI Integration</b> Connecting to Schneider HMIs • Variable Mapping • Screen Design Basics • User Interaction Design
1215 – 1230	Break
1230 – 1330	<b>Remote Access &amp; Monitoring</b> Remote Connectivity Options • Web Server Capabilities (if Supported) • Cloud Integration Overview • Cybersecurity Best Practices
1330 – 1420	<b>Third-Party Integration</b> Interfacing with VFDs • Sensor Networks Integration • Gateway Usage • Protocol Conversion
1420 – 1430	<b>Recap</b> 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, 04<sup>th</sup> of June 2026**

0730 – 0830	<b>HVAC Application Programming</b> Air Handling Unit (AHU) Control • Chiller Control Basics • Pump Control Systems • Fan Speed Control
0830 – 0930	<b>Energy Management</b> Energy Monitoring Techniques • Load Optimization Strategies • Scheduling & Time-based Control • Efficiency Improvement Methods

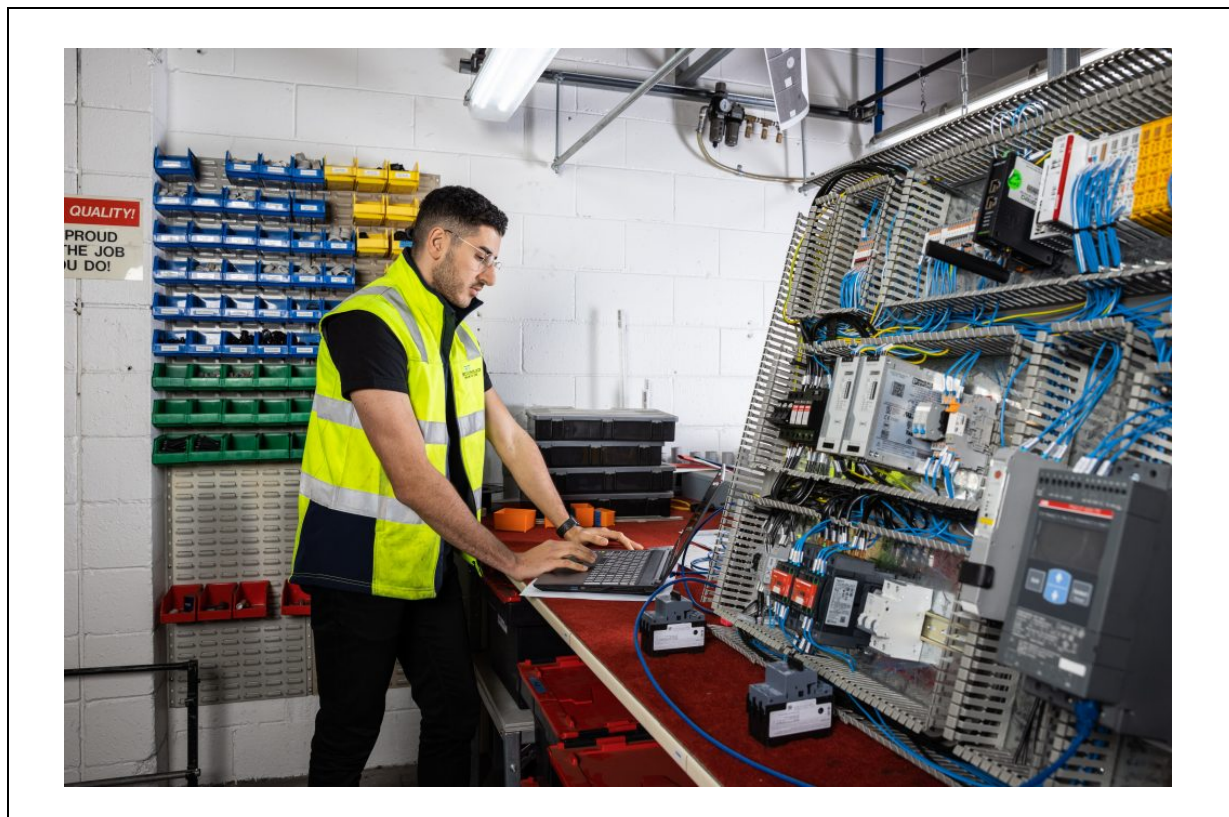




0930 – 0945	Break
0945 – 1030	<b>System Optimization</b> Code Optimization Techniques • Reducing Scan Time • Memory Usage Optimization • Performance Tuning
1030 – 1130	<b>Fault Diagnosis &amp; Maintenance</b> Diagnostic Tools in M171 • Common Hardware Faults • Preventive Maintenance Practices • Firmware Updates & Upgrades
1130 – 1230	<b>Documentation &amp; Project Management</b> Creating Technical Documentation • Version Control Practices • Backup & Restore Procedures • Project Handover Guidelines
1230 – 1245	Break
1245 – 1345	<b>Final Project &amp; Case Study</b> Designing a Complete HVAC Control System • Implementation of Communication Protocols • Testing & Validation • Presentation & Review
1345 – 1400	<b>Course Conclusion</b> Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course
1400 – 1415	<b>POST-TEST</b>
1415 – 1430	Presentation of Course Certificates
1430	Lunch & End of Course

**Practical Sessions**

This practical and highly-interactive course includes real-life case studies and exercises:-



**Course Coordinator**

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