COURSE OVERVIEW IE0097
Human-Machine Interface (HMI)

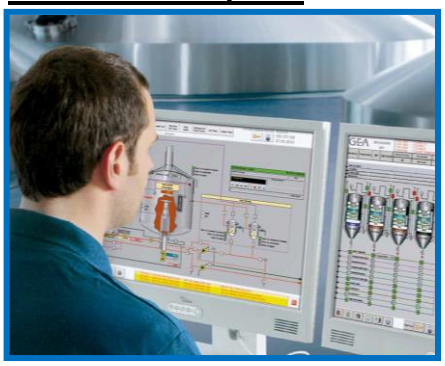
Course Title
Human-Machine Interface (HMI)

Course Date/Venue
October 06-10, 2025/Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE

Course Reference
IE0097

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 one of our state-of-the-art simulators.

This course is designed to provide participants with a detailed and up-to-date overview of PLC-HMI-Controls (MVC, De-Oiling, WTP, RO). It covers the control systems including direct digital control, centralized computer control, distributed control systems, programmable logic; the processor characteristics; the simple application and binary numbers of logic numbering systems; the octal and hexadecimal numbers and common codes of ASCII, BCD and gray codes; and the programmable controller systems including hardware, racks, slots, grouping and analog inputs, outputs and field communications.

During this interactive course, participants will learn the special interface modules; the PLC applications and loop tuning, modes of operation and process control; the digital field communication; the HMI systems and iconics SCADA package genesis32; the alarm management; the safety considerations, ESD permissive and interlocks; and the instrumented systems covering safety instrumented functions (SIF), safety instrumented systems (SIS) safety integrity level (SIL), hazard and risk analysis and safety PLC.

Course Objectives

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

- Apply and gain a comprehensive knowledge on PLC-HMI-Controls (MVC, De-Oiling, WTP, RO)
- Utilize the tools in the HMI such as trending, change in parameter ranges, identify alarms in F&G or process
- Discuss control loops (open loop and close loop) as well as permissive and interlocks
- Distinguish between different controls such as remote, cascade and local
- Identify the ICONICS PLC functions and how to distinguish from SCADA system
- Recognize trending different parameters within different pages in one graph for comparison key parameters as well as PID controller and based on what tuned
- Discuss control systems including direct digital control, centralized computer control, distributed control systems, programmable logic controllers and emergency shutdown system
- Identify ladder logic covering ladder logic programming, air compressor, air compressor sequence and auto operation
- Carryout processor characteristics covering program files and data files
- Recognize the simple application and binary numbers of logic numbering systems
- Explain octal and hexadecimal numbers and define common codes of ASCII, BCD and gray codes
- Implement programmable controller systems including hardware, racks, slots, grouping and analog inputs, outputs and field communications
- Describe special interface modules covering PID module and PID controller
- Employ PLC applications and loop tuning, modes of operation and process control
- Apply digital field communication covering data highway, fieldbus communications, advantages of fieldbus, fieldbus technologies, HART, foundation fieldbus and profibus
- Discuss HMI systems and iconics SCADA package genesis32 including basic architecture, levels of hierarchy, communication systems and SCADA configuration
- Carryout alarm management covering architecture, identify alarms in F&G or process, update times, speed of response, operator considerations, alarm types, alarm displays, alarm priorities, alarm functions and hierarchies and seven steps to alarm management
- Identify safety considerations, ESD permissive and interlocks
- Recognize instrumented systems covering safety instrumented functions (SIF), safety instrumented systems (SIS) safety integrity level (SIL), hazard and risk analysis and safety PLC

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 all significant aspects and consideration of PLC-HMI-controls (MVC, de-oiling, WTP, RO) for engineers or technicians who are working on a daily basis with the PLC platform or ESD; for those who are responsible for designing and configuring a new automation system; and those who are responsible for isolating and correcting problems or performing basic maintenance on PLC components or platform.

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.

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.

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.

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. Peter Lalos, PhD, MSc, BSc, is a **Senior IT**, **Telecommunications**, **Control & Electronics Engineer** with over **20 years** of extensive experience in the areas of **Enterprise Architecture** (**EA**) System, **OS Architectures**, **Cybersecurity & Enterprise Resilience**, **Network Security**, **IT Performance** Management, **IT Performance** Success Factors, Critical Factors for **IT Performance**, **IT Metrics** Management, **IT Matrix & Protocols**, **IT Service Management**, **IT Service Management Strategy**, **Information Technology Architectures**, **IT Disaster Recovery & Planning**, **IT Risk Management** Concepts, **IT Risk Management** Standard Approaches, **IT Risk Management** Planning, **IT Risk** Identification, **IT Risk Monitoring** & **Control**, Understanding & Contributing to Company's **IT Strategy**, **E-Communication & Collaboration Skills**, **Virtual Communication**, **Social Networking**, **Business Intelligence** Tools, **Application** Architecture, **Logical Applications**, **Interfaces** & Services, Logical & Physical Components, **Portfolio** Management, **Application Security**, **Application Integration** Technologies & Strategies, **Solution Architecture** Patterns, **Web Applications** & Services, **Mobile** & **Cloud Applications**, **Blended Learning** Programs, **Web Programming**, **E-Commerce Strategies**, Advanced **Database Management** Systems, **Web Design**, **HCI**, 3D Animation, Multimedia Design, Gamification Techniques and Internal & External Auditing. Further, he is also well-versed in ACAD, ASP, PHP, JSP, MS Visual Studio, VB.NET, ASP.NET, Moodle administration, Design & Development, WAMP & LAMP, **Oracle Design**, Oracle JDeveloper, Oracle 11g, PL/SQL, MS SQL Server, MySQL, MS Access, HTML5, CSS, XML, XSD/ XSL, JavaScript, Ajax, Angular, jQuery, Web Services Adobe Suite, MS Office 2013, IIS Servers, MS Exchange Server & Apache Tomcat, Open Source CMS Expert (Xaraya, Joomla, Mambo) & Module Development, Open Source E-commerce Expert (oscommerce, Joomla & Virtuemart) and Module Development. Currently, he is the **IT Instructor/Subject Matter Expert** and **Course Developer** of the **University of Liverpool**, **UK**, wherein he lectures various courses in **Information Systems Program** and develop courses in Information Technology project management and security risk management.

During his career life, Dr. Lalos has gained his practical and field experience through his various significant positions and dedication as the **IT Manager**, **Bid Manager** & **S/W Developer**, **Project Manager**, **E-Learning Software Manager**, **Scrum Master**, **IT Professor**, **IT Lecturer/Trainer**, **Telecommunications**, **Control** & **Electronics Lecturer**, **Physics Instructor**, **Scientific Advisor**, **E-Learning Specialist**, **Undergraduate** & **Postgraduate Thesis Supervisor**, **IT Contractor**, **Laboratory Administrator**, **Moodle Expert** & **Administrator** and **Telecommunications Engineer** for various companies and universities such as the University of Greenwich, Empire State College, Roehampton University, University of East London, Athens Technology Center, University of Athens, **ShellGas**, Advanced Services Group (ASG), Piraeus University, Chemmedia Hellas Ltd., Conceptum S.A, IEK and Frontistirio Apopsi.

Dr. Peter has a **PhD** in **IT**, **Telecommunications**, **Control** & **Electronics** from the **University of Athens**, a **Master's degree** in **Information Technology** with **Web Technology** from the **University** of **Paisley**, **UK** and a **Bachelor's degree** in **Physics** from the **Aristotelian University** of **Thessaloniki**, **Greece**. Further, he is a **Certified Instructor/Trainer**, a **Scrum Master**, a **Certified Administrator**, an **LMS Specialist** and a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**). He has further published several journals, participated as an author in various projects and conducted 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: ***Monday, 06th of October 2025***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Introduction to Control Systems*** *Direct Digital Control ● Centralized Computer Control ● Distributed Control Systems ● Programmable Logic Controllers ● Emergency Shutdown System*
0930 – 0945	*Break*
0945 – 1030	***Ladder Logic*** *Ladder Logic Programming ● Air Compressor Example*
1030 – 1130	***Ladder Logic (cont'd)*** *Air Compressor Sequence ● Auto Operation*
1130 – 1245	*Break*
1245 – 1420	***Processor Characteristics*** *Program Files ● Data Files*
1420 – 1430	***Recap***
1430	*End of Day One*

Day 2: ***Tuesday, 07th of October 2025***

0730 – 0930	***Logic Numbering Systems*** *A Simple Application*
0930 – 0945	*Break*
0945 – 1100	***Logic Numbering Systems (cont'd)*** *Binary Numbers*
1100 – 1230	***Octal & Hexadecimal Numbers***
1230 – 1245	*Break*
1245 – 1420	***Common Codes*** *ASCII ● BCD ● Gray Codes*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3: ***Wednesday, 08th of October 2025***

0730 – 0930	***Programmable Controller Systems*** *Hardware ● Racks, Slots & Grouping*
0930 – 0945	*Break*
0945 – 1100	***Programmable Controller Systems*** *Analog Inputs & Outputs ● Analogue Field Communications*
1100 – 1230	***Special Interface Modules*** *PID Module ● Understand the PID Controller & Based on what Tuned*
1230 – 1245	*Break*
1245 – 1420	***PLC Applications & Loop Tuning*** *Modes of Operation ● Process Control*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4: Thursday, 09th of October 2025

0730 – 0930	***Digital Field Communications*** *Data Highway ● Fieldbus Communications ● Advantages of Fieldbus ● Fieldbus Technologies ● HART ● Foundation Fieldbus ● Profibus*
0930 – 0945	*Break*
0945 – 1100	***HMI Systems & Iconics SCADA Package Genesis32*** *Basic Architecture ● Levels of Hierarchy ● Communication Systems ● SCADA Configuration*
1100 – 1230	***Alarm Management*** *Architecture ● Identify Alarms in F&G or Process ● Update Times ● Speed of Response ● Operator Consideration*
1230 – 1245	*Break*
1245 – 1420	***Alarm Management (cont'd)*** *Alarm Types ● Alarm Displays ● Alarm Priorities ● Alarm Functions ● Hierarchies ● Seven Steps to Alarm Management*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5: Friday, 10th of October 2025

0730 – 0830	***Safety Considerations & ESD***
0830 – 0930	*Break*
0930 – 0945	***Understand Permissive & Interlocks***
0945 – 1230	***Instrumented Systems*** *Safety Instrumented Function (SIF) ● Safety Instrumented Systems (SIS) ● Safety Integrity Level (SIL)*
1230 – 1245	*Break*
1245 – 1345	***Instrumented Systems (cont'd)*** *Hazard & Risk Analysis ● Safety PLC*
1345 – 1400	***Course Conclusion***
1400 – 1415	***POST-TEST***
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 "Allen Bradley SLC 500", "AB Micrologix 1000 (Digital or Analog)", "AB SLC5/03", "AB WS5610 PLC", "Siemens S7-1200", Siemens S7-400" "Siemens SIMATIC S7-300", "Siemens S7-200" "GE Fanuc Series 90-30 PLC", "Siemens SIMATIC Step 7 Professional Software", and "HMI SCADA".

Allen Bradley SLC 500 Simulator

Allen Bradley Micrologix 1000 Simulator (Digital)

Allen Bradley Micrologix 1000 Simulator (Analog)

Allen Bradley SLC 5/03

Allen Bradley WS5610 PLC Simulator PLC5

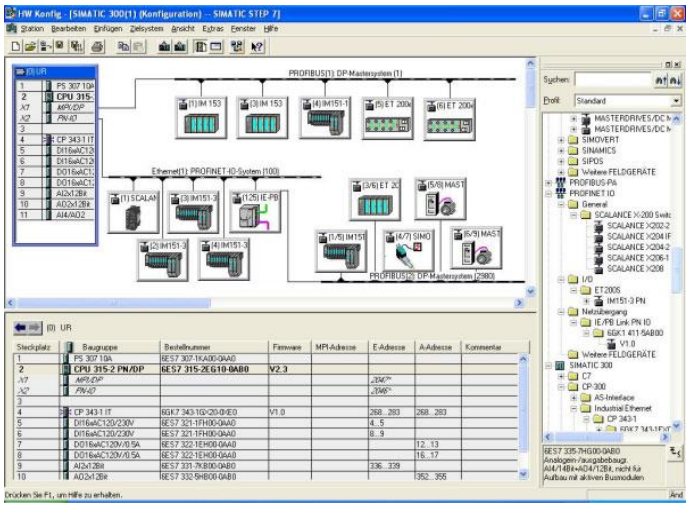
Siemens S7-1200 Simulator

Siemens S7-400 Simulator

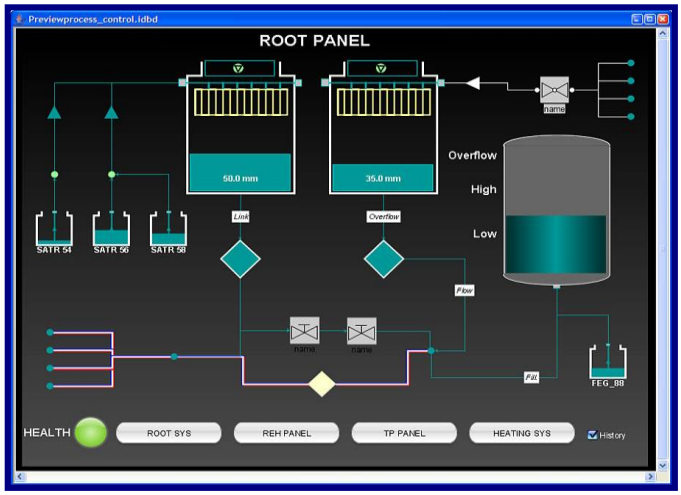
Siemens SIMATIC S7-300

Siemens S7-200 Simulator

GE Fanuc Series 90-30 PLC Simulator



Siemens SIMATIC Step 7 Professional Software



HMI SCADA

Course Coordinator

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