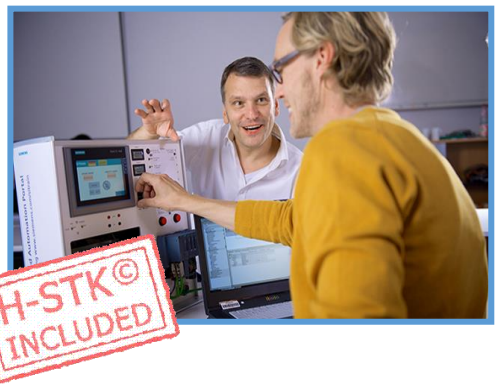
COURSE OVERVIEW EE0613
Siemens PLC and Siemens Switch Gear (GIS)



Course Title
Siemens PLC and Siemens Switch Gear (GIS)

Course Date/Venue
Session 1: May 25-29, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE
Session 2: November 16-20, 2025/Crowne Meeting Room, Crowne Plaza Al Khobar, KSA

Course Reference
EE0613

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 course is designed to provide delegates with a detailed and up-to-date overview of Siemens PLC and Siemens Switch Gear (GIS). It covers the numerical protection and of protective relay fundamentals; the diagnostic testing of relay and the symbols used; the interlocking functions through programming and DIGSI programming; the remedy and troubleshooting of the system; the causes and effect; programming the relay using laptop; and downloading software and retrieving data.

During this interactive course, participants will learn the communication between SCADA and relays; the different types of relays; the logic, configuration, setting and downloading and utilizing digital inputs and outputs; the inputs to give different alarms and output contacts; the logic diagrams and communication protocols; the time delay that will be encountered during data transfer; and the related programming in the siemens relays to take care of the GIS interlocks.

Course Objectives

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

- Apply and gain a good working knowledge on Siemens PLC and switchgear
- Employ numerical protection and interpret refreshing of protective relay fundamentals
- Carryout diagnostic testing of relay and interpret the symbols used
- Apply and make interlocking functions through programming and practice DIGSI programming
- Remedy and troubleshoot the system and identify the causes and effect
- Practice programming of the relay using laptop and download software and retrieve data
- Differentiate the communication between SCADA and the relays and demonstrate different types of relays
- Edit logic, configuration, setting and download and utilize digital inputs and outputs
- Practice programming the inputs to give different alarms and output contacts
- Discuss logic diagrams and carryout communication protocols and the time delay that will be encountered during data transfer
- Gain an insight into PLC related programming in the siemens relays to take care of the GIS interlocks

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 overview of all significant aspects and considerations of Siemens PLC and Siemens Switch Gear (GIS) for the engineers and technicians of electrical maintenance department.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

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.

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: -

- 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.

- 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. Ahmed El-Sayed, PhD, MSc, BSc, is a **Senior Electrical & Instrumentation Engineer** with **30 years** of extensive experience within the **Oil**, **Gas**, **Power**, **Petroleum**, **Petrochemical** and **Utilities** industries. His experience widely covers in the areas of **Flow Measurement** Devices, **Water Network** Pipe Materials & Fittings, **Mapping & Inventory** of Pipes & Fittings in the Water Supply System, **Water Distribution System** Operator, **Sewer System and Sewage Flows**, **Ultrasonic Inspection**, and **Advanced Visual Techniques** of Predictive Maintenance, Water Meter Reading (**MMR**), **Network Management & Supervision**, **Leakage Prevention & Control**, Waste Water Treatment, **Water Utility Regulation and Economics**, **Health & Safety Rules & Regulations**, **Safety Management**, **Accident Investigation**, Advanced Distributed Control System (**DCS**), **DCS** Operation & Configuration, **DCS** Troubleshooting, **DCS Yokogawa** ProSafe-RS Safety Instrumented System, **DCS Yokogawa** Centum VP, **DCS Emerson** DeltaV, **DCS GE Mark VI**, Programable Logic Controller (**PLC**), Supervisory Control & Data Acquisition (**SCADA**) Systems, **Process Control**, **Control Systems & Data Communications**, **Instrumentation**, **Automation**, **Valve Tuning**, Safety Instrumented Systems (**SIS**), Safety Integrity Level (**SIL**), Emergency Shutdown (**ESD**), **Telemetry** Systems, **Boiler Control & Instrumentation**, Advanced Process Control (**APC**) Technology, Practical **Fiber-Optics** Technology, **Compressor** Control & Protection, **GE Gas Turbines**, **Alarm** Management Systems, **Engine** Management System, **Fieldbus** Systems, **NEC** (National Electrical Code), **NESC** (National Electrical Safety Code), **Electrical Safety**, **Electrical Hazards** Assessment, **Electrical Equipment**, Electrical Transient Analysis Program (**ETAP**), Power **Quality**, Power **Network**, Power **Distribution**, **Distribution Systems**, **Power Systems Control**, **Power Systems Security**, Power **Electronics**, **Power System** Harmonics, **Power System** Planning, Control & Stability, **Power Flow** Analysis, **Smart Grid & Renewable** Integration, **Power System Protection & Relaying**, Economic Dispatch & Grid Stability Constraints in Power Plants, Electrical Demand Side Management (DSM), Electrical **Substations**, **Substation Automation** Systems & Application (IEC 61850), **Distribution Network** System Design, **Distribution Network Load**, Electrical **Distribution** Systems, **Load Forecasting** & System Upgrade (Distribution), **Overhead Power Line** Maintenance & Patrolling, High Voltage **Switching** Operations, Industrial **UPS Systems & Battery** Power Supplies, Electric **Motors & Variable Speed Drives**, **Generator** Maintenance & Troubleshooting, **Generator** Excitation Systems & AVR, **Transformer** Maintenance & Testing, Lock-Out & Tag-Out (**LOTO**), Confined Workspaces and **Earthing & Grounding**, He is currently the **Systems Control Manager** of **Siemens** where he is in-charge of Security & Control of Power **Transmission Distribution** & **High Voltage** Systems and he further takes part in the Load Records Evaluation & Transmission Services Pricing.

During his career life, Dr. Ahmed has been actively involved in different Power System Activities including Roles in Power System Planning, Analysis, Engineering, **HV Substation** Design, Electrical Service Pricing, Evaluations & Tariffs, Project Management, Teaching and Consulting. His vast industrial experience was honed greatly when he joined many International and National Companies such as **Siemens**, **Electricity Authority**, Egyptian Electricity Holding, Egyptian Refining Company (ERC), **GASCO**, Tahrir Petrochemicals Project, and **ACETO** industries as the **Instrumentation & Electrical Service Project Manager**, **Energy Management Engineer**, **Department Head**, **Assistant Professor**, **Project Coordinator**, **Project Assistant and Managing Board Member** where he focused more on dealing with Technology Transfer, System Integration Process and Improving Localization. He was further greatly involved in manufacturing some of **Power System** and **Control & Instrumentation Components** such as Series of Digital Protection **Relays**, MV **VFD**, **PLC** and **SCADA** System with intelligent features.

Dr. Ahmed has **PhD**, **Master** & **Bachelor** degrees in **Electrical Engineering** from the **University of Wisconsin Madison**, **USA** and **Ain Shams University**, respectively. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/ Assessor/Trainer** by the **Institute of Leadership and Management** (**ILM**), an active member of IEEE and ISA as well as numerous technical and scientific papers published internationally in the areas of Power Quality, Superconductive Magnetic Energy Storage, SMES role in Power Systems, Power System **Blackout** Analysis, and Intelligent Load Shedding Techniques for preventing Power System Blackouts, HV **Substation Automation** and Power System Stability.

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 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	***PRE-TEST***
0830 - 0930	***Introduction of Numerical Protection***
0930 - 0945	*Break*
0945 – 1100	***Refreshing of Protective Relay Fundamentals***
1100 - 1230	***Carryout Diagnostic Testing of Relay***
1230 – 1245	*Break*
1245 - 1420	***Understanding of Symbols Used***
1420 - 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 - 0930	***Understanding & Making Interlocking Functions Through Programming***
0930 - 0945	*Break*
0945 – 1100	***An Introduction of DIGSI Programming***
1100 - 1230	***Remedy of the System***
1230 – 1245	*Break*
1245 - 1420	***Troubleshooting***
1420 - 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 - 0930	***Cause & Effect***
0930 - 0945	*Break*
0945 – 1100	***Programming of the Relay Using Laptop***
1100 - 1230	***Basic Downloading of Software & Retrieving of Data***

1230 – 1245	*Break*
1245 – 1315	***Communication Between SCADA & the Relays***
1315 - 1420	***Differential & Feeder Protection (7 SJ & 7 UT etc.)***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

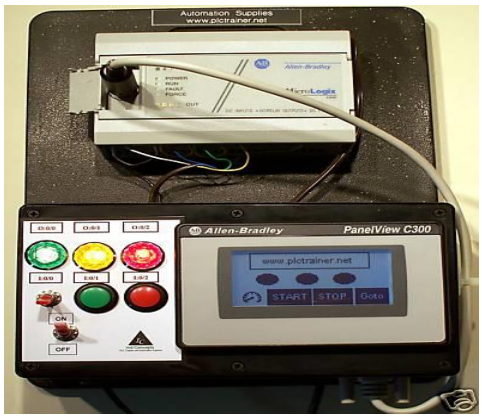
0730 - 0930	***How to Edit Logic/Configuration/Settings & Download***
0930 - 0945	*Break*
0945 – 1100	***Utilization of Digital Inputs & Outputs***
1100 - 1230	***Programming the Inputs to Give Different Alarms & Output Contacts***
1230 – 1245	*Break*
1245 – 1315	***Understanding of Logic Diagrams***
1315 – 1420	***Communication Protocols & the Time Delay That Will be Encountered During Data Transfer***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 – 0930	***An Insight into PLC Related Programming in the Siemens Relays to Take Care of the GIS Interlocks***
0930 – 0945	*Break*
0945 – 1100	***An Insight into PLC Related Programming in the Siemens Relays to Take Care of the GIS Interlocks (cont'd)***
1100 – 1230	***An Insight into PLC Related Programming in the Siemens Relays to Take Care of the GIS Interlocks (cont'd)***
1230 – 1245	*Break*
1245 – 1345	***An Insight into PLC Related Programming in the Siemens Relays to Take Care of the GIS Interlocks (cont'd)***
1345 – 1400	***Course Conclusion***
1400 – 1415	***POST-TEST***
1415 - 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Simulators (Hands-on Practical Sessions)

Hands-on practical sessions will be arranged for all participants throughout the course duration using our **state-of-the-art** simulators **Allen Bradley PLC Micrologix 1000** and **Siemens S7-200.**



Allen Bradley PLC Micrologix 1000

Specifications:

3 Discrete Inputs
3 Discrete Outputs, Power Switch, Power Cable
USB-CBL-PM02 Programming Cable

Siemens S7-200 Simulator

Specifications:

4 Discrete inputs
4 Discrete outputs, power switch
USB or Serial Programming Cable
Trainer runs on 110Vac

Course Coordinator

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