COURSE OVERVIEW IE0426
Mark Vle PLC Control Training Maintenance/ Engineering

Course Title
Mark Vle PLC Control Training Maintenance/ Engineering

Course Date/Venue
August 25-29, 2024/TBA Meeting Room, Pullman Doha West, Doha, Qatar

Course Reference
IE0426

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

Course Description

This hands-on, 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 a detailed and up-to-date overview of speedtronic mark Vle {HMI} operations of gas turbine unit. It covers the control system covering system architecture, Mark Vle communication network, operator interface and toolbox ST and mark Vle system file basics; the I/O packs and terminal boards controller and power supplies as well as configurs digital and analog I/O and apply hardware and I/O troubleshooting; troubleshoot alarms shutdowns and other fault conditions; and the viewing and collecting of data using watch windows and trend recorder.

During this interactive course, participants will learn the work with data and alarms on the operator interface; the basic adjustments including Mark Vle network configuration and troubleshooting; the TCI for alarms, data captures, trip logs and alarm history as well as use workstation ST for alarms, data capture and trip logs; the advanced hardware system level troubleshooting using screens; and the advance hardware troubleshooting, hardware replacement, I/O pack initialization and UCCX controller initialization.

Course Objectives

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

- Apply and gain an in-depth knowledge on Speedtronic Mark Vle {HMI} operations of gas turbine unit
- Discuss control system covering system architecture, Mark Vle communication network, operator interface and toolbox ST and Mark Vle system file basics
- Discuss I/O packs and terminal boards controller and power supplies as well as configure digital and analog I/O and apply hardware and I/O troubleshooting
- Troubleshoot alarms shutdowns and other fault conditions
- View and collect data using watch windows and trend recorder
- Work with data and alarms on the operator interface
- Employ basic adjustments including Mark Vle network configuration and troubleshooting
- Use TCI for alarms, data captures, trip logs and alarm history as well as use workstation ST for alarms, data capture and trip logs
- Apply advanced hardware system level troubleshooting using screens
- Employ advanced hardware troubleshooting, hardware replacement, I/O pack initialization and UCCX controller initialization

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 Speedtronic Mark VIe {HMI} operations of gas turbine for engineers, operators and maintenance technicians.

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

Certificates are accredited by the following international accreditation organizations:-

- USA International Association for Continuing Education and Training (IACET)

  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 Association 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.

- 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.

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:

Dr. Ahmed El-Sayed, PhD, MSc, BSc, is a **Senior Electrical & Instrumentation Engineer** with **35 years** of extensive experience within the **Oil**, **Gas**, **Power**, **Petroleum**, **Petrochemical** and **Utilities** industries. His experience widely covers in the areas of 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, Siemens **PLC Simatic S7-400/S7-300/S7-200**, **Siemens SIMATIC S7** Maintenance & Configuration, **Siemens WINCC**, SCADA System: Siemens **SIMATIC & WinCC**, **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's** & **Bachelor's** degree 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.

Course Fee

US$ 6,000 per Delegate. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

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,25th of August 2024***

0730 – 0745	*Registration & Coffee*
0745 – 0800	*Welcome & Introduction*
0800 – 0815	***PRE-TEST***
0815 – 0915	***Introduction to Speedtronic Mark Vle {HMI} Operations of Gas Turbine Unit***
0915 – 0930	*Break*
0930 – 1030	***Control System Overview*** *System Architecture • Mark Vie Communication Networks • Operator Interface • Toolbox ST and Mark Vie System File Basics*
1030 – 1215	***Hardware & I/O Configuration & Troubleshooting*** *I/O Packs and Terminal Boards Controllers and Power Supplies • Configuring Digital I/O*
1215 – 1230	*Break*
1230 – 1420	***Hardware & I/O Configuration & Troubleshooting(cont'd)*** *Configuring Analog I/O • Hardware and I/O Troubleshooting*
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2: ***Monday, 26th of August 2024***

0730 – 0915	***Troubleshooting Alarms Shutdowns & Other Fault Conditions*** *Software Familiarization • Variables and Constants • Tracing Signals in Software Using Toolbox ST*
0915 – 0930	*Break*
0930 – 1030	***Troubleshooting Alarms Shutdowns & Other Fault Conditions(cont'd)*** *Viewing and Collecting data Using Watch Windows and Trend Recorder • Basic Troubleshooting of Alarms and Other Fault Conditions*
1030 – 1215	***Working with Data & Alarms on the Operator Interface*** *HMI Documentation and Files • Operating and Navigating Graphical Interface Screens*
1215 – 1230	*Break*
1230 – 1420	***Working with Data & Alarms on the Operator Interface (cont'd)*** *Graphical Screen Trends • TCI vs. Workstation ST Methods of Data Collection and Alarm History*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3: ***Tuesday, 27th of August 2024***

0730 – 0915	***Basic Adjustments*** *Adding Alarms, Events and SOE's • Adjusting Constants and Tables*
0915 - 0930	*Break*
0930 – 1030	***Basic Adjustments (cont'd)*** *Servo LVDT Calibration • Making Changes Permanent*

1030 – 1215	***Mark Vle Network Configuration & Troubleshooting*** *Mark Vie Networks • Peer-to-peer Communications*
1215 – 1230	*Break*
1230 – 1420	***Mark Vle Network Configuration & Troubleshooting (cont'd)*** *Using the System Database for Peer-to-peer Communications Changes • Troubleshooting Common Communications Issues and Loss of Data*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4: Wednesday, 28th of August 2024

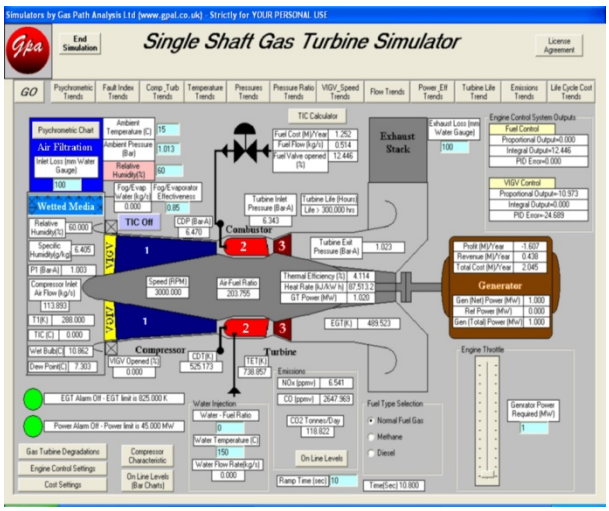
0730 - 0915	***Using TCI for Alarms, Data Captures, Trip Logs & Alarm History*** *TCI Overview and Tools • Viewing alarms*
0915 - 0930	*Break*
0930 – 1030	***Using TCI for Alarms, Data Captures, Trip Logs & Alarm History (cont'd)*** *Configuring and Viewing Alarm History and Trip Logs • Configuring and Viewing Data from Trend Recorder*
1030 – 1215	***Using Workstation ST for Alarms, Data Captures, Data Captures & Trip Logs*** *Workstation ST Overview and Tools • Viewing Alarms Using Workstation ST Alarm Viewer*
1215 - 1230	*Break*
1230 - 1420	***Using Workstation ST for Alarms, Data Captures, Data Captures & Trip Logs(cont'd)*** *Configuring and Viewing Alarm History and Trip Logs • Configuring and Viewing Data from Trend Recorder*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5: Thursday, 29th of August 2024

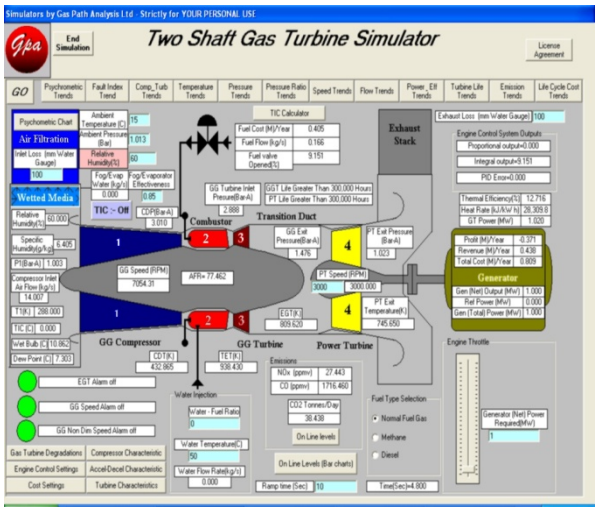
0730 - 0915	***Advanced System Level Troubleshooting Using Screens & Software*** *Advanced Troubleshooting of Alarms, Shutdowns and Other Fault Conditions Using Screens, Worksheets and Toolbox ST Tools*
0915 - 0930	*Break*
0930 – 1030	***Advanced System Level Troubleshooting Using Screens & Software (cont'd)*** *Advanced Troubleshooting of I/O Faults Using F&ID's, Elementary Drawings, Worksheets, Device Summary and Other Site Drawings*
1030 – 1215	***Advanced Hardware Troubleshooting*** *Hardware Diagnostics and Troubleshooting • Hardware Replacement*
1200 – 1215	*Break*
1215 – 1345	***Advanced Hardware Troubleshooting(cont'd)*** *I/O Pack Initialization • UCCX Controller Initialization*
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 "Single Shaft Gas Turbine Simulator", "Two Shaft Gas Turbine Simulator" and "MARK Vle" video simulator".



"Single Shaft Gas Turbine Simulator"



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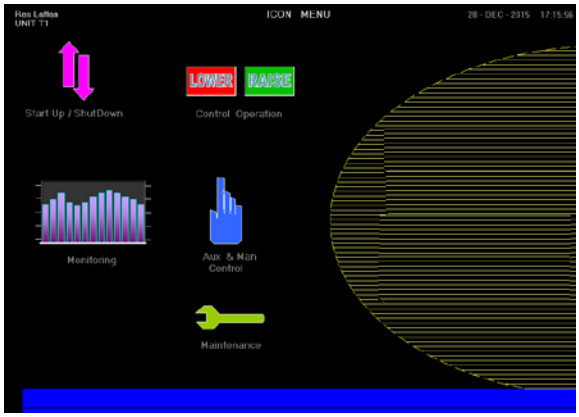

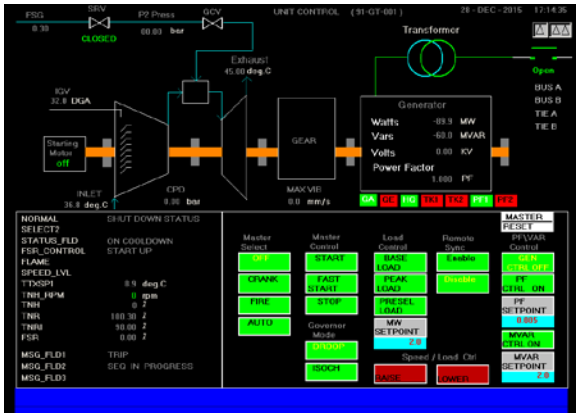

"MARK Vle video simulator"

Course Coordinator

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