COURSE OVERVIEW EE0441
Switchman High Voltage Switching

Course Title
Switchman High Voltage Switching

Course Reference
EE0441

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

Course Date/Venue

Session(s)	Date	Venue
1	May 18-22, 2025	Olivine Meeting Room, Fairmont Nile City, Cairo, Egypt
2	August 24-28, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE
3	November 23-27, 2025	Safir Meeting Room, Divan Istanbul, Turkey

Course Description

This practical and highly-interactive course includes various practical sessions where participants will be engaged in HV/LV power switching and other working practices.

HV/LV electrical systems require special application of maintenance, repair, test, and safety procedures. Personnel must be trained in special precautions to ensure both personnel and workplace safety. OSHA requires training for all qualified employees performing operations or maintenance work, or who have access to electrical power generation, transmission and distribution installations. This course will provide authorization certification to work in LV and HV electrical systems for operation and maintenance team.

The course covers the knowledge and skills needed to safely work with energized HV/LV electric power systems. It covers electrical safety requirements including the principles and procedures for the safe operation and maintenance of such systems. Insulated hand tools, proper grounding procedures, proper protective clothing, and thorough job-planning procedures are covered throughout the course. Properties of electric charge, energy, electric potential, dielectric stress, capacitive and inductive coupling, and material behavior in electromagnetic fields are discussed.

The effects of electrical energy on humans and various protection concepts are addressed, as are basic first aid practices. Differential protection schemes, insulation materials, Equi-potential grounding, live-line tools, and isolation techniques are covered from both the technical and practical perspectives.

Various OSHA, IEEE, European and NFPA safety procedures are reviewed. Group exercises include the development of safe-work protocols, use of logout/tagout (LOTO), maintenance task rehearsal, and equipment preparation. Fault current, arc-flash hazards, and proper PPE selection are studied. Other technical topics covered include insulation testing, corona detection by ultrasonic and RF detectors, and signature analysis using an infrared imager.

Successful course participants who attend the course and pass competency exam, will be certified to work on high voltage electrical power systems. Course participants are introduced to the hazards of electrical work and the philosophies of preventing accident and minimizing outage time due to improper safety or work practices. Also included as part of the curriculum are study materials participants may use at their own pace to continue their learning experience. This course addresses OSHA training requirements established in OSHA 29 CFR 1910.269.

Course Objectives

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

- Achieve authorization certification to work in LV and HV electrical systems for operation and maintenance team
- Provide an understanding of industrial high and low voltage power systems including statutory regulations, safe operation, protection and fault diagnosis on a wide range of power equipment
- Enable operation team to perform HV switching operations on industrial HV networks up to and including 33KV, and to prepare them for HV authorisation
- Apply and gain an in-depth knowledge on LV/MV electrical safety in accordance with the international standards OSHA, NFPA, IEEE and EN
- Discuss basic electricity covering direct current and alternating current
- Identify electrical hazards including electrical shock, electrical arc and blast as well as special hazards and special operating requirements
- Enumerate personnel protection comprising of rubber gloves/blankets, flash suits, eye protection, hard hats and explosion protection
- Carryout protection against the potential danger
- Explain good earthing and bonding installation, confined space and the general instructions for working with low and medium voltage
- Recognize HV equipment including power transformers, switches, isolators and fuses, circuit breakers, instrument transformers, surge arrestors, capacitor banks as well as earth and shunt reactors
- Discuss the characteristics and applications of gas insulted substations (GIS) as well as review metal-enclosed and metal clad switchgears
- Identify motor controllers, protection relays and carryout testing and commissioning
- Recognize portable cables as well as discuss de-energized and energized work
- Apply electrical switching practices for loads, transformers, capacitors and air switches
- Carryout test equipment, emergency planning and safety management

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 is designed for electrical operation and maintenance team (team leaders, electrical supervisors/senior electrical technicians, electrical technicians and HVAC supervisors/technicians up to 415V system and also electrical engineers, industrial & utility engineers, HSE personnel and electrical team involved in operation and maintenance of HV/LV electrical systems. Supervisors and managers concerned with the safety of electrical workers will find this course especially useful in providing an insight into electrical safety. Course participants are introduced to the hazards of electrical work and the philosophies of preventing accident and minimizing outage time due to improper safety or work practices. Also included as part of the curriculum are study materials participants may use at their own pace to continue their learning experience. This course addresses OSHA training requirements established in OSHA 29 CFR 1910.269.

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 Fee

Cairo	**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.
Dubai	**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.
Istanbul	**US$ 6,000** 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.

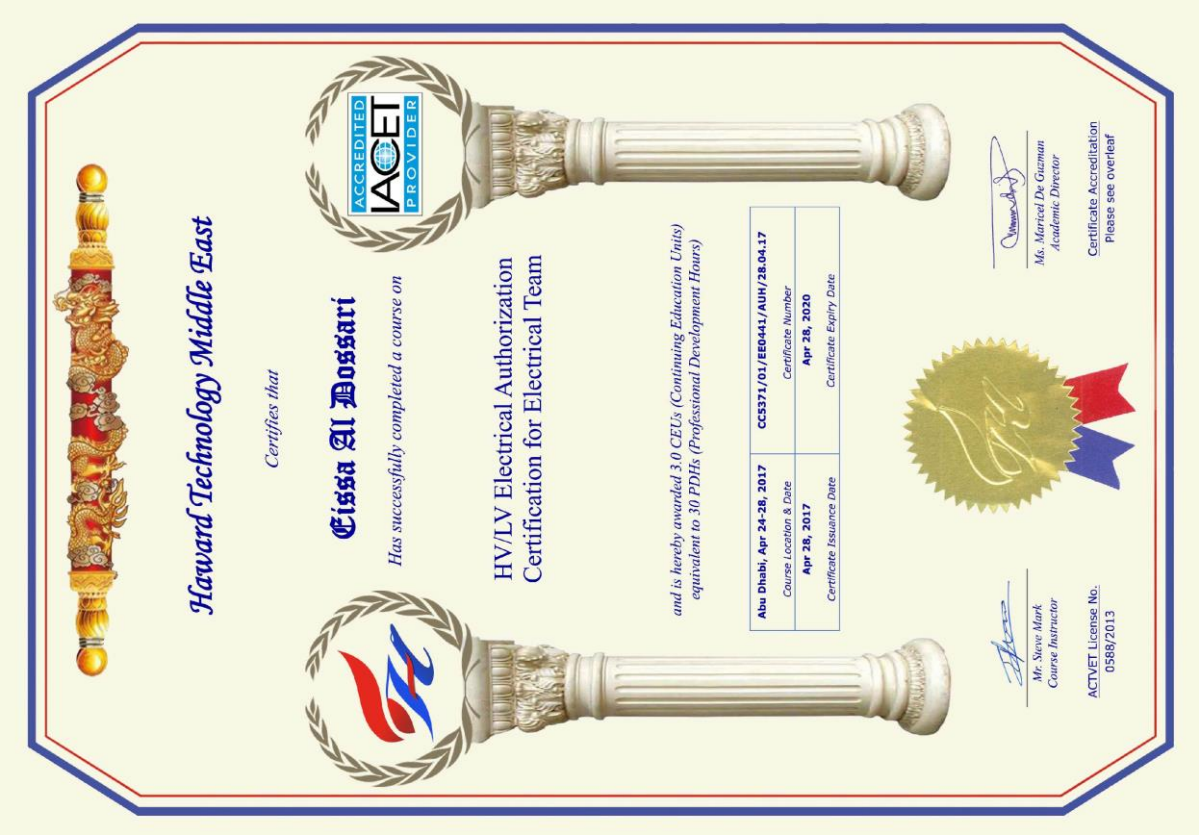
Course Certificate(s)

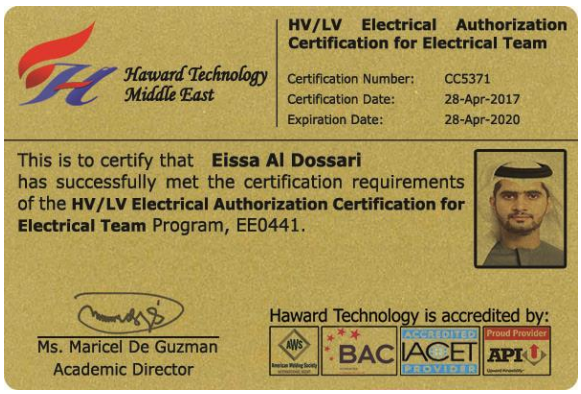
(1) Internationally recognized Competency Certificates and Plastic Wallet Cards will be issued to participants who completed a minimum of 80% of the total tuition hours and successfully passed the exam at the end of the course. Successful candidate will be certified to work in LV and HV electrical. Certificates are valid for 5 years.

Recertification is FOC for a Lifetime.

Sample of Certificates

The following are samples of the certificates that will be awarded to course participants:-





(2) Official Transcript of Records will be provided to the successful delegates with the equivalent number of ANSI/IACET accredited Continuing Education Units (CEUs) earned during the course.

Haward Technology Middle East

Continuing Professional Development (HTME-CPD)

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CEU Official Transcript of Records

TOR Issuance Date: 28-Apr-17

HTME No. PAR11317

Participant Name: Eissa Al Dossari

Program Ref.	Program Title	Program Date	No. of Contact Hours	CEU's
EE0441	**HV/LV Electrical Authorization Certification for Electrical Team**	April 24-28, 2017	30	3.0

Total No. of CEU's Earned as of TOR Issuance Date **3.0**

TRUE COPY

Maricel De Guzman
Academic Director

Haward Technology has been approved as an Authorized Provider by the International Association for Continuing Education and Training (IACET), 1760 Old Meadow Road, Suite 500, McLean, VA 22102, USA. In obtaining this approval, Haward Technology has demonstrated that it complies with the ANSI/IACET 1-2013 Standard which is widely recognized as the standard of good practice internationally. As a result of their Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for programs that qualify under the ANSI/IACET 1-2013 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 is accredited by

P.O. Box 26070, Abu Dhabi, United Arab Emirates | Tel.: +971 2 3091 714 | Fax: +971 2 3091 716 | E-mail: info@haward.org | Website: www.haward.org

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:

Mr. Ahmed Abozeid is a **Senior Electrical & Instrumentation Engineer** with over **30 years** of **Onshore** & **Offshore** experience within the **Oil** & **Gas** and **Power** industries. His wide expertise covers **HV Cable** Design, **Cable** Splicing & Termination, **Cable** Jointing Techniques, **High Voltage** Electrical Safety, **HV/MV Cable Splicing**, **High Voltage Circuit Breaker** Inspection & Repair, **High Voltage Power System** Safe Operation, High Voltage Safety, **High Voltage Transformers**, Safe Operation of **High Voltage & Low Voltage Power Systems**, **Electric Distribution System Equipment**, **ABB 11KV Distribution Switchgear**, **Rotork Operation & Maintenance**, **Power System Protection and Relaying**, **Electrical Motors & Variable Speed Drives**, **Motor** Speed Control, Power Electronic Converters, Control Valve, **Flowmetering & Custody Transfer**, **Meters Calibration**, Installation & Inspection, **Crude Metering & Measurement Systems**, **Flow Meter Maintenance Troubleshooting**, AC Converters Section, Electromagnetic Compatibility (**EMC**), **Motor** Failure Analysis & Testing, **Machinery** Fault Diagnosis, **Bearing** Failure Analysis **Process Control & Instrumentation**, **Process Control Measurements**, **Control System Commissioning & Start-Up**, **Control System & Monitoring**, **Power Station Control System**, **Instrumentation Devices**, **Process Control & Automation**, **PID Controller**, Distributed Control Systems (**DCS**), Programmable Logic Controllers (**PLC**), **ABB PLC & DCS System**, **Gas Analyzers**, **Simulation Testing**, **Load Flow**, **Short Circuit**, **Smart Grid**, **Vibration Sensors**, **Cable Installation & Commissioning**, **Calibration Commissioning** and **Site Filter Controller**. Further, he is also well-versed in **Fundamentals of Electricity**, **Electrical Standards**, **Electrical Power**, **PLC**, **Electrical Wiring**, Machines, **Transformers**, **Motors**, **Power Stations**, **Electro-Mechanical Systems**, **Automation & Control Systems**, **Voltage Distribution**, **Power Distribution**, **Filters**, **Automation System**, **Electrical Variable Speed Drives**, **Power Systems**, **Power Generation**, **Power Transformers**, **Diesel Generators**, **Power Stations**, **Uninterruptible Power Systems** (**UPS**), **Battery Chargers** and **AC** & **DC Transmission**. He is currently the **Project Manager** wherein he manages, plans and implements projects across different lines of business.

Mr. Ahmed worked as the **Electrical Manager**, **Electrical Power & Machine Expert**, **Electrical Process Leader**, **Team Leader**, **Electrical Team Leader**, **Technical Instructor**, and **Instructor/Trainer** from various companies such as the Lafarge Nigeria, Egyptian Cement Company, ECC Training Center, Alrajhi Construction & Building Company and Ameria Cement Company, just to name a few.

Mr. Ahmed has a **Bachelor's** degree in **Electrical Engineering**. Further, he is a **Certified Instructor/Trainer, Certified TQUK Level 3 Vocational Achievement (RQF) Assessor** and has delivered numerous trainings, seminars, courses, workshops 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	***PRE-TEST***
0830 – 0845	***Basic Electricity*** *Direct Current (Basic Terms, Ohm's Law, Application, Controls, Power Supplies, Batteries, Control & UPS, Testing and Maintenance) ● Alternating Current (Basic Terms, Sine Wav, Peak & RMS Voltage, Formulas and Calculation, Frequency)*
0845 – 0900	***Electrical Hazards*** *Electrical Shock ● Electrical Arc ● Blast ● Accident Discussions*
0900 – 0915	*Break*
0915 – 0930	***Special Hazards*** *Unique Designs ● Special Operating Requirements*
0930 – 0945	***Personnel Protection*** *Rubber Gloves/Blankets (Use, Maintenance, Care) ● Flash Suits ● Eye Protection ● Hard Hats ● Explosion Protection*
0945 – 1015	***Protection Against the Potential Danger***
1015 – 1030	***Good Earthing & Bonding Installation***
1030 – 1045	***Confined Space*** *Scope and Application ● Training Requirements ● Duties of Employees*
1045 – 1130	***General Instructions for Working with High Voltage*** *Electrical Safety ● Electrical Work Permit*
1130 – 1200	***HV Equipment – Power Transformers*** *Types ● Connections ● Hazards & Testing ● Troubleshooting ● High Pot Testing ● Step Regulators*
1200 – 1215	*Break*
1215 – 1245	***HV Equipment – Switches, Isolators & Fuses*** *Characteristics and Functions ● Types & Ratings ● Testing & Hazards*
1245 – 1315	***HV Equipment – Circuit Breakers*** *Characteristics and Functions • Types & Ratings ● Testing & Hazards*
1315 – 1345	***HV Equipment – Instrument Transformers*** *Characteristics and Functions ● Types & Ratings ● Connections ● Grounding● Testing*
1345 – 1420	***HV Equipment – Surge Arrestors*** *Characteristics and Functions ● Types & Ratings ● Testing & Hazards*
1420 – 1430	***Recap*** *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

0730 – 0745	***HV Equipment – Capacitor Banks*** *Theory of Operation ● Application & Hazards*
0745 - 0815	***HV Equipment – Earth & Shunt Reactors*** *Characteristics and Functions ● Types*

0815 - 0900	***Gas Insulated Substations (GIS)*** *Characteristics ● Applications*
0900 - 0930	***Metal-Enclosed & Metal Clad Switchgears*** *Characteristics ● Cubicles and Equipments*
0930 – 0945	*Break*
0945 – 1015	***Motor Controllers***
1015 – 1045	***Protection Relays***
1045 - 1100	***Testing & Commissioning***
1100 - 1115	***Portable Cables*** *Application ● Hazards*
1115 - 1200	***Energized Work*** *Policies and Procedures ● Recognition (Voltage Classification, Energized Equipment) ● Work Zones (Controlled Areas) ● Work Clearances ● Proper Tools*
1200 – 1215	*Break*
1215 – 1245	***De-Energized Work*** *Policies and Procedures ● Voltage Detection Equipment ● Lock and Tag Out ● Grounds/Grounding ● Personal Protective Grounds*
1245 - 1300	***Electrical Switching Practices*** *Loads (Pickup & Dropout, Sequence) ● Transformers ● Paralleling ● Split Buss ● Capacitors ● Air Switches (Gloves & Grounds)*
1300 - 1330	***Test Equipment*** *Ammeters, Ohmmeters, Voltmeters ● Phase Angle Meters ● Phasing Sticks/Devices ● Oscilloscopes ● Voltage Testers-Wiggy, etc. ● Thumpers ● Relay & Meter Test Equipment ● Insulation Testers (Meggers, Power Factor/Dissipation)*
1330 - 1400	***Emergency Planning*** *Communications ● Electrical Fires ● Phone Numbers ● Panic Button ● Tools/Equipment*
1400 – 1420	***Safety Management*** *Audits ● Policies ● Costs*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0930	***Practical Sessions*** *Switching Programs*
0930 – 0945	*Break*
0945 – 1100	***Practical Sessions (cont'd)*** *Isolation Certificates*
1100 – 1115	*Break*
1115 – 1245	***Practical Sessions (cont'd)*** *Isolation Certificates (cont'd)*
1245 – 1420	***Practical Sessions (cont'd)*** *Electrical Permit to Work*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

0730 – 0930	***Practical Sessions (cont'd)*** *Danger Notices & Pre-Cautions*
0930 – 0945	*Break*

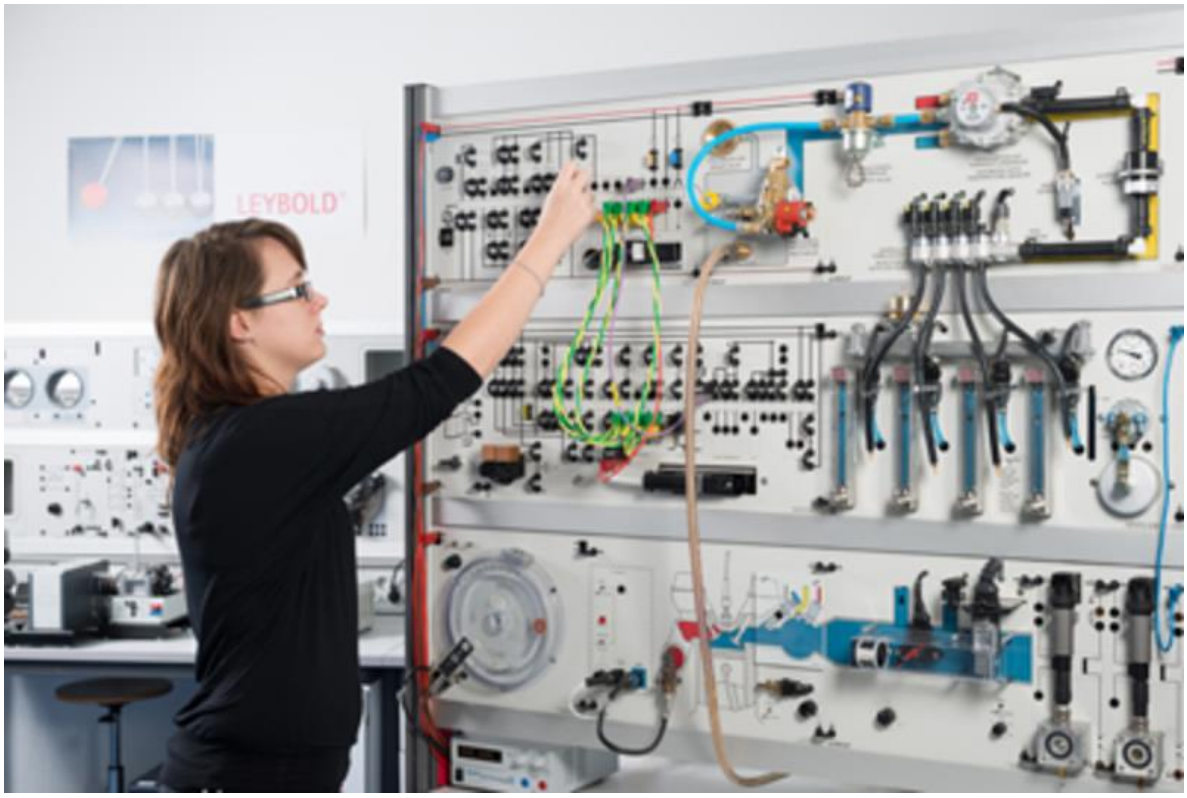
0945 – 1100	***Practical Sessions (cont'd)*** *Sanction for Test*
1100 - 1115	*Break*
1115 – 1245	***Practical Sessions (cont'd)*** *Sanction for Test (cont'd)*
1245 – 1420	***Practical Sessions (cont'd)*** *Lock-Out & Tag-Out*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 – 0930	***Practical Sessions (cont'd)*** *Safe Key Systems*
0930 – 0945	*Break*
0945 – 1100	***Practical Sessions (cont'd)*** *Electrical Safety Systems- Interlocks-Earthing-Isolation & Access Control*
1100 - 1115	*Break*
1100 – 1215	***Practical Sessions (cont'd)*** *Electrical Safety Systems- Interlocks-Earthing-Isolation & Access Control (cont'd)*
1215 – 1245	***Practical Sessions (cont'd)*** *Fault Reports*
1245 – 1300	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1300 – 1400	***COMPETENCY EXAM***
1400 – 1415	*Evaluation of Competency Exam*
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Practical Sessions (Online-Virtual)

This practical and highly-interactive course includes the following practical sessions using Haward's HV Switchgears: -



(1) Switching Programs
(2) Isolation Certificates
(3) Electrical Permit to Work
(4) Danger Notices & Pre-Cautions
(5) Sanction for Test
(6) Lock-Out & Tag-Out
(7) Safe Key Systems
(8) Electrical Safety Systems-Interlocks-Earthing-Isolation & Access Control
(9) Fault Reports

Course Coordinator

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