

COURSE OVERVIEW EE0634-4D
Advanced Electrical Safety

Course Title

Advanced Electrical Safety

Course Date/Venue

November 25-28,2024/Boardroom 1, Elite
 Byblos Hotel Al Barsha, Sheikh Zayed Road,
 Dubai, UAE

Course Reference

EE0634-4D



Course Duration/Credits

Four days/2.4 CEUs/24 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 an advanced and up-to-date overview of electrical safety. It covers the electrical components; the history of electrical safety; the power generation and generator excitation; the power factor correction and the qualified person; the energized electrical work permit, employer and employee responsibility; and the electrical safety hazards, arc flash and arc blasts.



During this interactive course, participants will learn the high voltage circuit breakers, circuit breaker isolation and coordination; the shock hazard analysis, arc flash calculations and approach boundaries; the motor control centre safety; and the electrical safety program and selective coordination.

Course Objectives

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

- Apply and gain an advanced knowledge on electrical safety
- Explain why electrical safety is important and discuss the electrical components
- Discuss history of electrical safety
- Review power generation and discuss generator excitation
- Analyse power factor correction and identify who is the qualified person
- Define energized electrical work permit and specify employer and employee responsibility
- Recognize electrical safety hazards and explain arc flash and arc blasts
- Define high voltage circuit breakers and illustrate circuit breaker isolation and coordination
- Describe shock hazard analysis, illustrate arc flash calculations and discuss approach boundaries
- Explain motor control centre safety
- Implement electrical safety program and increase selective coordination

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, sample video clips of the instructor’s actual lectures & practical sessions during the course conveniently saved in a **Tablet PC**.

Who Should Attend

This course provides an overview of all significant aspects and considerations of advanced electrical safety for engineers, technicians, field service engineers, electricians and operators, SAP suitable authorized personnel, distribution and test technicians, post electrical qualified individuals and all electrical personnel.

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

Certificates are accredited by the following international accreditation organizations:-


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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 **2.4 CEUs** (Continuing Education Units) or **24 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.

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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.

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. Taiseer Ali, MSc, BSc, is a Senior Electrical & Telecommunications Engineer with over 30 years of extensive experience Power & Water Utilities and Other Energy Sectors. His expertise includes Electrical Substation & Design, Electrical Safety, Power System Equipment, Power System Protection and Relaying, Power Distribution, HV/LV Equipment, High Voltage Electrical Safety, LV & HV Electrical System, HV Equipments Inspection & Maintenance, HV Switchgear Operation & Maintenance, LV Distribution Switchgear & Equipment, Lock & Tag Out, Circuit Breakers & Switchgears, Portable Cables, Transformers, Gas Insulated Substations (GIS), HV Substation Inspection & Reporting, HV Cable Design, HV Electrical System Commissioning, HV Equipments Inspection & Maintenance, Electrical Signal Analysis (ESA), Electrical Equipment Circuits, Wiring & Testing, Electronic Circuits, Electrostatic Discharge (ESD), Metering Pump Selection, Operation, Maintenance & Troubleshooting, Ultrasonic Flowmetering for Liquid Application, Liquid & Gas Flowmetering & Meter Calibration, Water Meter Calibration, PD Meter Calibration , Distributed Control System (DCS) Applications & Troubleshooting, SCADA & Industrial Communication, Process Logic Controller (PLC), Load Flow Calculation, Cable Installation, Transformer Maintenance, Electrical Safety, Electrical Drawing, Power Generation & Transmission, Power Distribution & Network, Protection Relays, Electrical Troubleshooting, Earthing, Bonding, Lightning & Surge Protection, UPS & Battery, Instrumentation & Control, Process Control & Instrumentation, Industrial Communication, Flow Measurement, Level Measurement, Temperature & Vibration Measurement, Measurement Instrumentation, Pressure Measurement, Analytical Instrumentation, Calibration & Testing Procedures, Final Control Elements, Control Loops Operation, Control Panels, Power Generation, Power Transformers, Uninterruptible Power Systems (UPS), Battery Chargers, AC & DC Transmission, Distribution Network, Grid Input Assessment, Load Flow, Short Circuit, Smart Grid, Grounding, Electrical Equipment, Electrical Motors & Drives, Power System Harmonics, Electrical Substation Design, Power Cable Testing & Fault Location, Circuit Breakers & Switchgears, Electrical Distribution Design, Installation & Commissioning and HVDC Transmission & Control, Advanced Networking, Datron Maintenance, Cisco Internet, Data Base Access, Advanced Computer, AutoCAD, Standard Radio Devices, Advanced Calibration, Repair and Maintenance of VHF Portable Role, Combat Vehicle Reconnaissance 76mm and Target Engagement Using Simulaser.

During his career life, Mr. Taiseer has gained his expertise and thorough practical experience through handling challenging positions such as being the **Head of the Command Control & Communication Department, Head of the Academic and Technical Branch, Chief of the Frequency Branch, Commander, Electrical Engineer, Spectrum Management Engineer, Safety Engineer, Engineering Manager, Electrical Engineering Head, Quality Control Department Head, Engineering Supervisor and Lecturer/Instructor** for various companies and universities such as the Yarmouk University, C3 Directorate, JAF C3 Communication Workshops, Jordan Armed Forces Joint Officer and Military Communication College and multi-national companies and institutes.

Mr. Taiseer has a **Master's** degree in **Industrial Engineering/Engineering Management** and a **Bachelor's** degree in **Electrical/Communication Engineering**. Further, he is a **Certified Instructor/Trainer** and delivered various trainings internally in his previous companies.



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

US\$ 4,500 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day

Course 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, 25th of November 2024

0730 – 0800	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 - 0830	PRE-TEST
0830 - 0930	Why Electrical Safety is So Important?
0930 - 0945	Break
0945 - 1030	Electrical Components
1030 - 1130	History of Electrical Safety
1130 - 1230	Power Generation Generator Power Sources • Anatomy of a Steam or Gas Turbine • Generator Construction • Ancillary Equipment • Governor Systems • Excitation Systems • Generator Protection
1230 - 1245	Break
1245 - 1420	Generator Excitation Anatomy of An Excitation System • Excitation Configuration • AVR Steady State Operation • AVR Dynamics • Excitation Protection • Generator Dynamics • Dynamic & Transient Stability
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: Tuesday, 26th of November 2024

0730 – 0930	Power Factor Correction: Basics What is Power Factor? • Real & Reactive Power • Inductive Loading • Passive & Active Power Factor Correction Techniques
0930 - 0945	Break





0945 - 1030	Who is the Qualified Person in Terms of Safety?
1030 - 1130	Energized Electrical Work Permit
1130 - 1230	Employer & Employee Responsibilities
1230 - 1245	Break
1245 - 1420	Electrical Safety 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 Two

Day 3: Wednesday, 27th of November 2024

0730 - 0930	Arc Flash & Arc Blasts
0930 - 0945	Break
0945 - 1030	HV Circuit Breakers Fundamentals of Circuit Breakers • Types of Breakers • Construction • Ratings • Tripping Characteristics • SF6 & Vacuum CB • Operating Mechanisms • Diagnostic Techniques • Oil Circuit Breakers • Air Blast CB • Batteries Condition & Monitoring
1030 - 1130	Circuit Breaker Isolation & Co-ordination Circuit Breaker to Fuse • Fuse to Circuit Breaker • Auto-Reclosing of Circuit Breakers • Back-Up Protection • Limitation of Fault Current • Selective Zones of Protection
1130 - 1230	Shock Hazard Analysis
1230 - 1245	Break
1245 - 1420	Electrical Hazards Analysis
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 Three

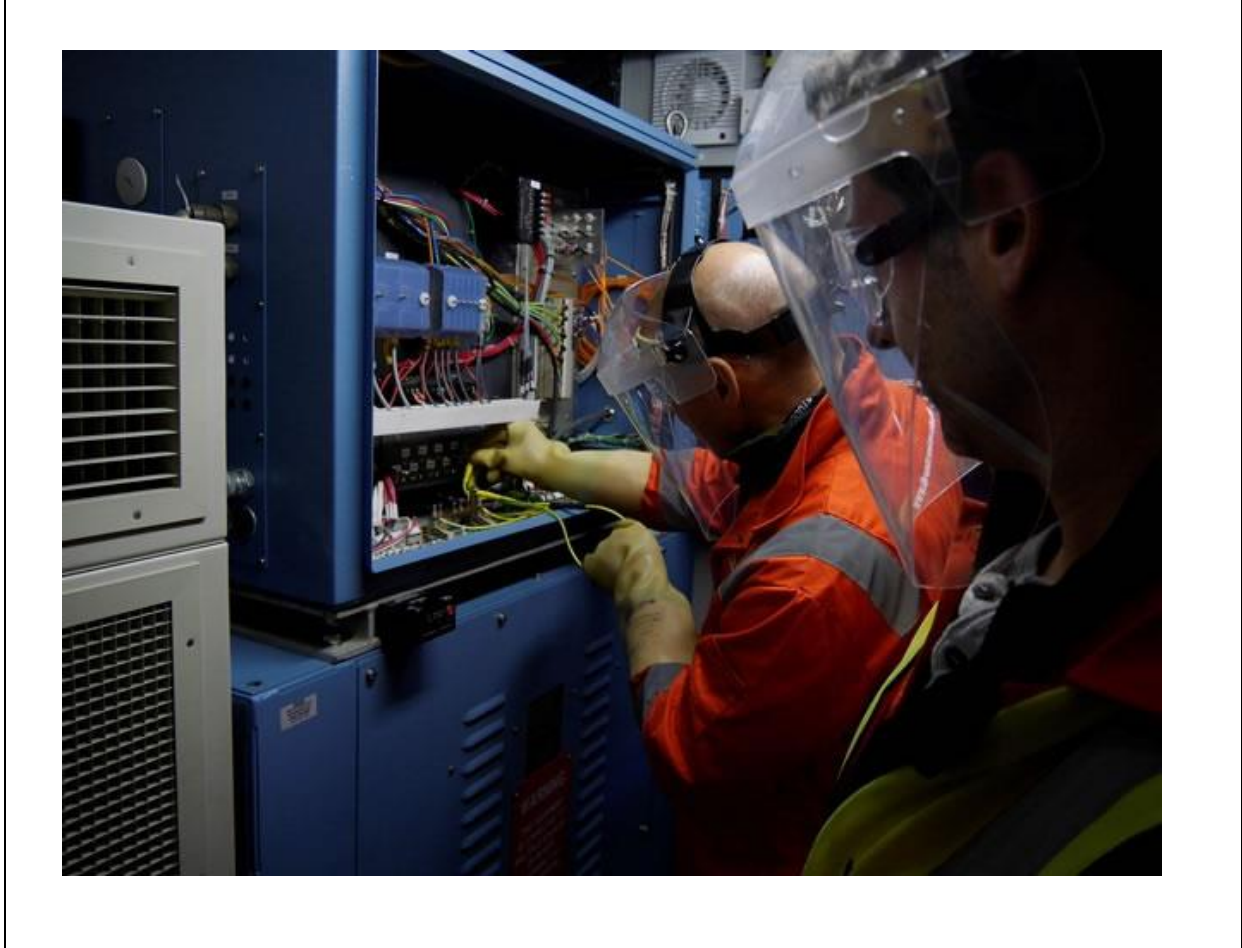
Day 4: Thursday, 28th of November 2024

0730 - 0930	Arc Flash Calculations
0930 - 0945	Break
0945 - 1030	Approach Boundaries
1030 - 1130	Motor Control Centre Safety Applicable Motor Standards • Protecting the Machine, Differential Protection, Phase Unbalance, Overcurrent • Ground Fault Protection • Electrical Code Requirements • Microprocessor-Based Motor Control & Protection Devices & Sensors • Safety standards with Machines.
1130 - 1230	Implementing an Electrical Safety Program
1230 - 1245	Break
1245 - 1315	Increasing Selective Coordination
1315 - 1400	Course Conclusion Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course
1400 - 1415	POST-TEST
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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