COURSE OVERVIEW EE0634
Advanced Electrical Safety

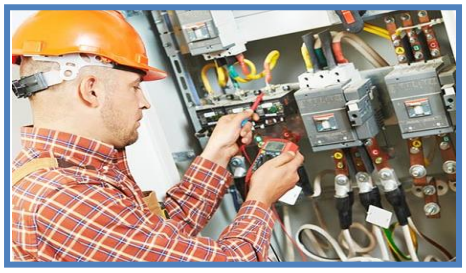
Course Title
Advanced Electrical Safety

Course Date/Venue
Session 1: February 01-05, 2026/Meeting Plus 9, City Centre Rotana Doha, Doha, Qatar
Session 2: August 02-06, 2026/Meeting Plus 9, City Centre Rotana Doha, Doha, Qatar

Course Reference
EE0634

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

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.

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: -

- 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. Pan Marave, PE, MSc, BEng, is a **Senior Electrical & Instrumentation Engineer** with over **30 years** of extensive experience in **Oil**, **Gas**, **Petrochemical**, **Refinery** & **Power** industries. His expertise includes **CEMS** Operations and Maintenance, **ABB 11KV Distribution Switchgear**, Operation & Maintenance of **Rotork make MOVS**, **Maintaining Instrument Air Compressors**, **Circuit Breaker**, **HV Switchgear Maintenance**, **HV/LV Electrical** Authorisation, Basic **Electricity**, **Electrical & Special Hazards**, **Personnel Protection**, **HV/LV Equipment**, **Motor Controllers**, **Electrical Switching** Practices, **Emergency Planning**, **Safety Management**, Safety Instrumented Systems (**SIS**), Safety Integrity Level (**SIL**), Emergency Shutdown (**ESD**); **DCS**, **SCADA** & **PLC**; **Measurement** (**Flow**, **Temperature**, **Pressure**); **Process Analyzers** & **Analytical Instrumentation**; **Process Control**, **Instrumentation** & **Safeguarding**; **Process Controller**, **Control Loop & Valve Tuning**; Industrial **Distribution Systems**; Industrial **Control & Control Systems**, Power Systems **Protection & Relaying**; **Earthing**, **Bonding**, **Grounding**, **Lightning & Surge Protection**; Electric Power **Substation** & **Systems**; Electrical Engineering Principles; **Motor Control Circuit**; **Electrical Fault Analysis**; Electrical Networks & Distribution **Cables**; **Circuit Breakers**, **Switchgears**, **Transformers**, **Hazardous Areas Classification** and **Detailed Engineering Drawings**, **Codes** & **Standards**. Furthermore, he is also well-versed in Microprocessors Structure, Lead Auditor (**ISO 9000:2000**), **ISO 9002**, Quality Assurance, and Projects & Contracts Management.

Presently, Mr. Marave is the **Technical Advisor** of **Chamber of Industry & Commerce** in Greece. Prior to this, he gained his thorough practical experience through several positions as the **Technical Instructor**, **Engineering Manager**, **Electronics & Instruments Head**, **Electrical**, **Electronics & Instruments Maintenance Superintendent**, **Assistant General Technical Manager** and **Engineering Supervisor** of various international companies such as the **Alumil** Mylonas, **Athens Papermill**, **Astropol** and the **Science Technical Education**.

Mr. Marave is a **Registered Professional Engineer** and has **Master** and **Bachelor** degrees in **Electrical Engineering** from the **Polytechnic Institute of New York** and **Pratt Institute of New York** (**USA**) respectively. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**) and an active member of the **Technical Chamber** and the Institute of Electrical and Electronics Engineer (**IEEE**) in Greece. He has presented and delivered **numerous international** courses, conferences, trainings and workshops worldwide.

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 – 0930	***Why Electrical Safety is So Important?***
0930 – 0945	*Break*
0945 – 1100	***Electrical Components***
1100 – 1230	***History of Electrical Safety***
1230 – 1245	*Break*
1245 – 1420	***Power Generation*** *Generator Power Sources ● Anatomy of a Steam or Gas Turbine ● Generator Construction ● Ancillary Equipment ● Governor Systems ● Excitation Systems ● Generator Protection*
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0900	***Generator Exitation*** *Anatomy of An Excitation System ● Excitation Configuration ● AVR Steady State Operation ● AVR Dynamics ● Excitation Protection ● Generator Dynamics ● Dynamic & Transient Stability*
0900 – 0915	*Break*
0915 – 1045	***Power Factor Correction: Basics*** *What is Power Factor? ● Real & Reactive Power ● Inductive Loading ● Passive & Active Power Factor Correction Techniques*
1045 – 1215	***Who is the Qualified Person in Terms of Safety?***
1215 – 1230	*Break*
1230 – 1420	***Energized Electrical Work Permit***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0900	***Employer & Employee Responsibilities***
0900 – 0915	*Break*
0915 – 1100	***Electrical Safety Hazards***
1100 – 1230	***Arc Flash & Arc Blasts***
1230 – 1245	*Break*
1245 – 1420	***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*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

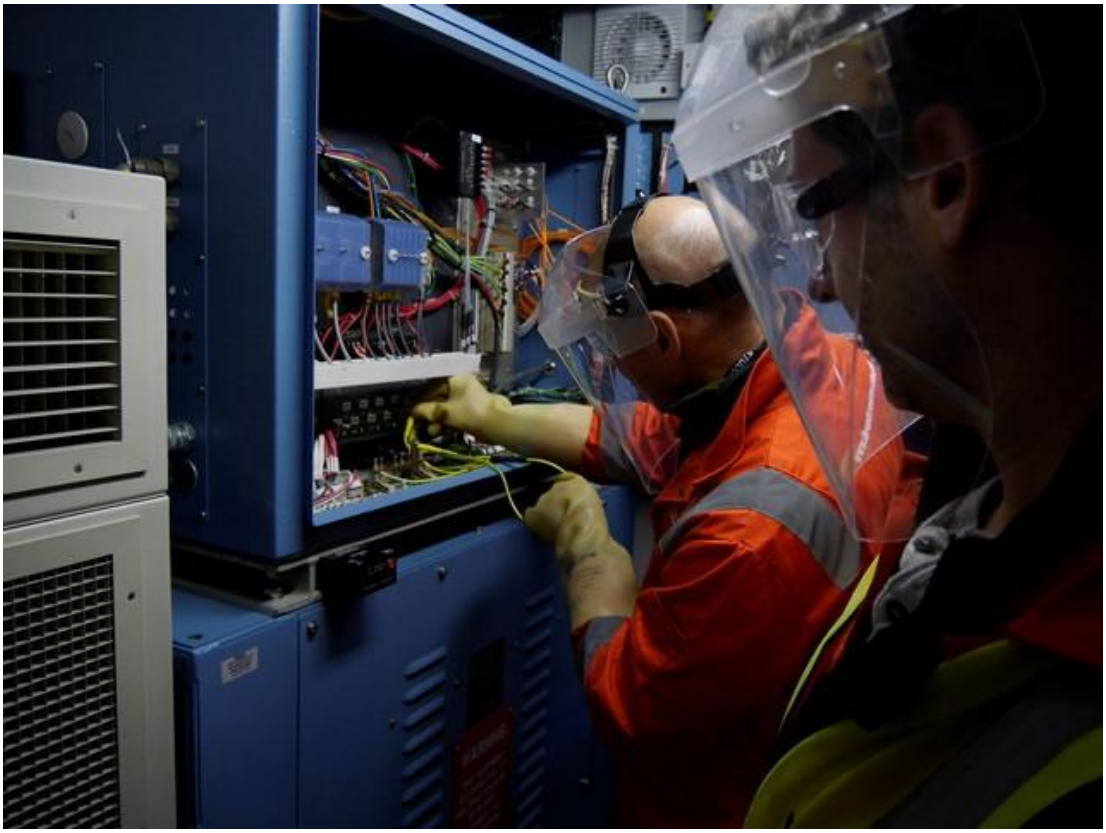
0730 – 0900	***Circuit Breaker Isolation & Co-ordination*** *Circuit Breaker to Fuse • Fuse to Circuit Breaker • Auto-Reclosing of Circuit Breakers • Back-Up Protection • Limitation of Fault Current • Selective Zones of Protection*
0900 – 0915	*Break*
0915 – 1100	***Shock Hazard Analysis***
1100 – 1230	***Electrical Hazards Analysis***
1230 – 1245	*Break*
1245 – 1420	***Arc Flash Calculations***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 – 0900	***Approach Boundaries***
0900 – 0915	*Break*
0915 – 1100	***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.*
1100 – 1230	***Implementing an Electrical Safety Program***
1230 – 1245	*Break*
1245 – 1345	***Increasing Selective Coordination***
1345 – 1400	***Course Conclusion***
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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