COURSE OVERVIEW HE0238(AL1)
Arc Flash Hazard Analysis

Course Title
Arc Flash Hazard Analysis

Course Date/Venue
Session 1: July 13-17, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE
Session 2: December 15-19, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Course Reference
HE0238(AL1)

Course Duration
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.

Arc flash is the light and heat produced from an electric arc supplied with sufficient electrical energy to cause substantial damage, harm, fire, or injury. Electrical arcs experience negative incremental resistance, which causes the electrical resistance to decrease as the arc temperature increases. Therefore, as the arc develops and gets hotter the resistance drops, drawing more and more current (runaway) until some part of the system melts, trips, or evaporates, providing enough distance to break the circuit and extinguish the arc.

The arc flash incident can be inconsequential but could conceivably easily produce a more severe explosion. The result of the violent event can cause destruction of equipment involved, fire, and injury not only to an electrical worker but also to bystanders. During the arc flash, electrical energy vaporizes the metal, which changes from solid state to gas vapor, expanding it with explosive force. In addition to the explosive blast, called the arc blast of such a fault, destruction also arises from the intense radiant heat produced by the arc. The metal plasma arc produces tremendous amounts of light energy from far infrared to ultraviolet. Surfaces of nearby objects, including people, absorb this energy and are instantly heated to vaporizing temperatures.

One of the most common causes of arc-flash injuries happens when switching on electrical circuits and, especially, tripped circuit-breakers. A tripped circuit-breaker often indicates a fault has occurred somewhere down the line from the panel. The fault must usually be isolated before switching the power on, or an arc flash can easily be generated. Small arcs usually form in switches when the contacts first touch, and can provide a place for an arc flash to develop. If the voltage is high enough, and the wires leading to the fault are large enough to allow a substantial amount of current, an arc flash can form within the panel when the breaker is turned on.

This course is designed to provide delegates with detailed and up-to-date overview of arc flash and shock hazard safety. Further, the course will provide information that will be used to improve electrical safety standards, predict the hazards associated with arcing faults and accompanying arc blasts, and provide practical safeguards for all the employees in the workplace.

At the completion of the course, participants will be able to understand the introduction to arc flash hazard and terminology; the arc flash safety program and how it impacts current work methods; how to read the arc flash hazard calculation report and link hazard calculations to work activities; risk assessments and creating a safe environment; selection of the right amount of PPE from an arc flash label; and the results of the arc flash hazard calculation report.

Course Objectives

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

- Apply and gain a comprehensive knowledge on arc flash and shock hazard safety
- Recognize the electrical safety principles and safety controls, types of electrical hazards and the shock and arc flash approach boundaries
- Identify “qualified” person, components of an electric arcs, arc flash hazard analysis flash protection boundary, incident energy and cal/cn
- Describe warning labels and enumerate various types of electrical faults and their characteristics as well as the effects of arc flash and arc blast
- Select PPE using hazard risk classification of NFPA E tables
- Recognize the rubber insulating gloves, sleeves and leather protectors as well as the electrical safety equipment and the general safety requirements for electricians
- Identify hot sticks (shotguns), electrical test equipment, low voltage tester, audio type voltage tester and high voltage proximity type
- Recognize high voltage direct contract type, test equipment use, safety precautions insulated hand tools, power chords, protective shields and barricades
- Explain OSHA subpart S and NFPA E as well as employ lockout/tagout procedure and procedure for applying the lock and removing the lock
- Discuss ground fault circuit interrupters, ungrounded systems and temporary grounding
- Install and remove temporary equipment grounds and re-energize equipment and apply task planning and control
- Discuss electro-static coupling, capacitors and auxiliary hazards

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 RAC flash hazards and regulations that provides information that will be used to improve electrical safety standards, predict the hazards associated with arcing faults and accompanying arc blasts, and provide practical safeguards for all the employees in the workplace.

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.

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:-

- 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. Peter Christian is an **International Expert** in **Safety**, **Health**, **Environmental** and **Quality** with over **30 years** of practical and industrial experience in **NEBOSH** International General Certificate in Occupational Health & **Safety**, **Lifting & Rigging Equipment HAZOP**, **HAZWOPER**, **HAZMAT**, **HAZCOM**, **PHA** (**Process Hazard Analysis**), **FMEA**, **HAZID**, **ISO 14001**, **OHSAS 18001**, **ISO 9001**, Process Safety Management (**PSM**), Safety, Health, Environmental & Quality Management (**SHEQ**), **Behavioral Safety Management**, **Industrial Hygiene**, **Human Factors Engineering**, **Risk Assessment**, Fire Fighting, Rope Rescue Operations, Emergency Response within process industries. He is currently the **President** of **NKWE** and spearheads the companies major projects and business ventures, where he specializes in the areas of **SHEQ** solutions, **ISO**, **Quality Control** and **OSHA systems**. Previously, he has had much on–hand experience in the initiation and management of projects (technical as well organizational development) including involvement in **design of process plants**; **the commissioning & decommissioning** of process plants; the **operational and financial responsibility** for large process operations; **risk management**; **operational and maintenance management**, **crisis and emergency management**, **accident investigation**, **risk assessment**, **hazard identification** and **emergency preparedness & response** (oil spillage and gas explosions).

Much earlier in his career, Mr. Christian was a **HAZOP Team Leader** for numerous **HAZOP** studies and he has further managed the **Health, Safety & Environmental** and **Quality** requirements of a large process company. This included responsibilities as an auditor for compliance against **SHEQ standards**, **ISO standards** and the **Fatal Risk Control Protocols**. He then facilitated the development and implementation of the above standards as a group and at site level as part of the SHEQ council. Moreover, he established, trained and led a Rope rescue team and a high level emergency care clinic and ambulance service for many years. He still abseils recreationally and leads adventure groups during abseiling activities and serves as a rescue team member for mountain and water emergencies.

During his career life, Mr. Christian has gained his practical and field experience through his various significant positions as the **Plant Manager**, **Project Metallurgist**, **Metallurgist**, **HSE Team Leader**, **SHEC Superintendent**, **Mentor**, Instructor/Trainer, Acting **Technical Manager**, **Process Plant Superintendent**, Acting **Project Leader**, Acting **Plant Superintendent**, Appointed **Health & Safety & Environmental Superintendent**, Production Technician, Acting **Senior Shiftsman**, Foreman and Learner – Official Extraction Metallurgy from various companies such as the NKWE Consulting, SAMANCOR, Middleburg Mine Services (Pty) Ltd., Koomfontein Mines, Emelo Mine Services, Gencor Group and South African Defence Force.

Mr. Christian has a **Postgraduate Studies** in **Advanced Executive Programme** and a **National Higher Diploma** (**NHD**) & a **National Diploma** in **Extraction Metallurgy**. He is also a **Certified/Registered Tutor** in **NEBOSH International General Certificate**, **Certified Auditor** in **OHSAS 18001**, **ISO 14001** & **ISO 9001**, a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**), a **Six Sigma Black Belt Coach** and holds a Certificate in Facilitate Learning Using a Variety of Given Methodologies **NQF Level 5** (**EDTP-SETA**) as a **Certified Facilitator**. He has further delivered innumerable courses, trainings, workshops and conferences globally.

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 – 0900	***Electrical Safety Principles & Safety Controls***
0900 - 1000	***Types of Electrical Hazards***
1000 – 1100	***Shock & Arc Flash Approach Boundaries***
1100 – 1115	*Break*
1115 – 1145	***"Qualified" Person***
1145 – 1200	***Components of an Electric Arc***
1200 - 1245	***Arc Flash Hazard Analysis***
1245 – 1300	*Break*
1300 – 1345	***Flash Protection Boundary***
1345 – 1420	***Incident Energy & Cal/Cm***
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0830	***Warning Labels***
0830 – 0930	***Types of Electrical Faults & their Characteristics***
0930 – 1015	***Effects of Arc Flash & Arc Blast***
1015 – 1030	*Break*
1030 – 1115	***Selecting PPE using Hazard Risk Classification of NFPA E Tables***
1115 - 1200	***Rubber Insulating Gloves, Sleeves & Leather Protectors***
1200 – 1245	***Electrical Safety Equipment & General Safety Requirements for Electricians***
1245 – 1300	*Break*
1300 – 1345	***Hot Sticks (Shotguns)***
1345 – 1420	***Electrical Test Equipment***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0830	***Low Voltage Testers***
0830 – 0930	***Audio Type Voltage Testers***
0930 – 1015	***High Voltage Proximity Type***
1015 – 1030	*Break*
1030 – 1115	***High Voltage Direct Contact Type (The Live-Dead-Live Check)***
1115 – 1200	***Test Equipment Use & Safety Precautions***
1200 – 1230	***Insulated Hand Tools***
1230 – 1245	*Break*
1245 – 1345	***Power Chords***
1345 - 1420	***Protective Shields & Barricades***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

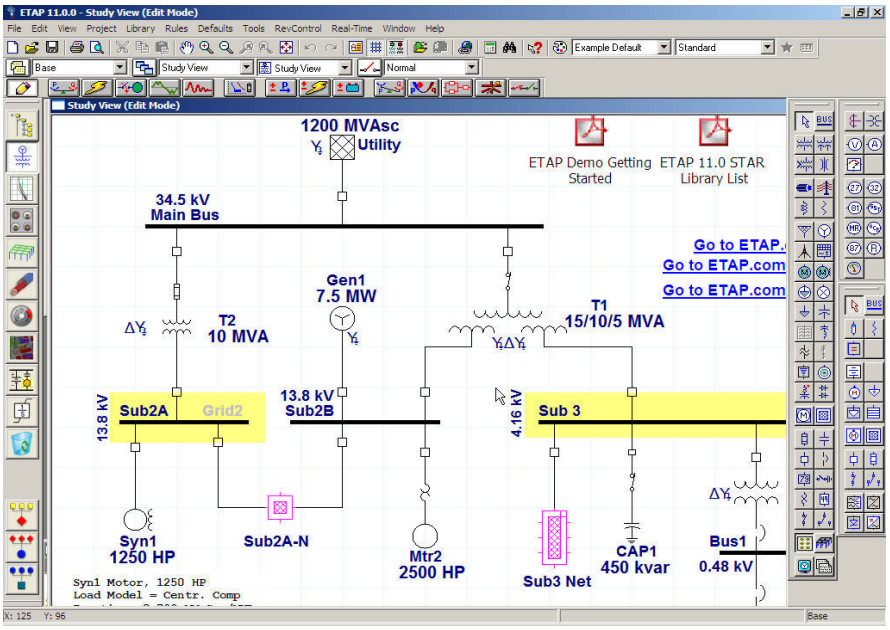
0730 – 0830	***OSHA Subpart S***
0830 - 0930	***NFPA E Overview***
0930 – 0945	*Break*
0945 – 1100	***Lockout/Tagout Procedure***
1100 – 1130	***Lockout/Tagout Devices***
1130 - 1200	***Procedure for Applying the Lock***
1200 - 1245	***Removing the Lock***
1245 – 1300	*Break*
1300 – 1345	***Ground Fault Circuit Interrupters***
1345 - 1420	***Ungrounded Systems & Temporary Grounding***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 – 0830	***Installing Temporary Equipment Grounds***
0830 – 0930	***Removing Temporary Equipment Grounds***
0930 – 0945	*Break*
0945 – 1015	***Re-Energizing Equipment***
1015 – 1100	***Task Planning & Control***
1100 – 1145	***Electro-Static Coupling***
1145 – 1200	*Break*
1200 – 1230	***Capacitors***
1230 – 1300	***Auxiliary Hazards***
1300 - 1345	***Course Review & Open Discussion***
1345 – 1400	***Course Conclusion***
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Simulators (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 the "ETAP Arc Flash" software.



ETAP Arc Flash Software

Course Coordinator

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