COURSE OVERVIEW EE0770
High Voltage Cable Jointing Techniques

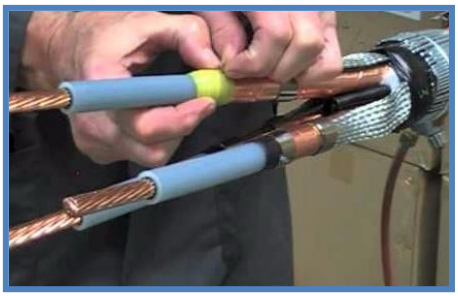
Course Title
High Voltage Cable Jointing Techniques

Course Date/Venue
September 14-18, 2025/TBA Meeting Room, The H Dubai Hotel, Sheikh Zayed Rd - Trade Centre, Dubai, UAE

Course Reference
EE0770

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

Course Description



This practical and highly-interactive course includes practical sessions and exercises where participants carryout HV/MV cable jointing, termination, splicing and testing. Theory learnt in the class will be applied using the latest heat-shrink jointing and termination methods suitable for in-class training.

The range of voltage and capacity of power transmitted through cables is showing a steady increase over the years. Environmental concerns, aesthetic issues, lack of transmission corridors and difficulty in routing overhead lines in crowded human habitats are some of the reasons for the explosive growth of cable technology well into the new voltage range. Due to physical limits on cable lengths for manufacturing and packaging, joints in cable become inevitable, particularly in the context of the utility sector. The cables need to be also terminated at sending and receiving end equipment, a very wide variety of them, in utility as well as industry applications and these calls for appropriate cable termination accessories.

Cable terminations and joints form the weakest link in any distribution system. Also, a failed joint in an underground distribution system is much more difficult to locate and repair compared to any similar problem in overhead distribution systems. This means that we should do our utmost to achieve a good joint or termination, which can give years of trouble-free service.

The quality of a joint or termination depends to a large extent on the skill of cable jointer/splicer. The aim of a cable jointer/splicer must therefore be to obtain a joint which electrical properties are as good as the original cable both in electrical and mechanical terms. The design of cable splicing, jointing and termination accessories is based on this perception. Dependence on operator-skill is sought to be reduced to the extent possible by good choice and quality of jointing materials, though such dependence cannot be totally eliminated.

This course is designed to provide participants with a detailed and an up-to-date overview of HV/MV cable splicing, jointing, terminating and QA/QC. It covers the cable jointing and the different types of cables, insulation materials, terminations and joints; the construction of cables, conductor materials and configurations; the different applications and voltages of cables; the various types of cable connectors, materials and method of connection; the theory of joints and terminations; the stress control and the effect of joints and terminations on stress gradients; the areas requiring stress control; the cable jointing, splicing, testing and termination; the applicable standards, types of tests, routine tests and its limitations; the training and certification of personnel involved; the reasons for cable failures and analysis of failures with a predictive approach; and the new trends and technologies utilized in the industry.

Course Objectives

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

- Apply proper techniques in HV/MV cable splicing, jointing, terminating and testing
- Discuss cable jointing and the different types of cables, insulation materials, terminations and joints
- Describe the construction of cables, conductor materials and configurations, the different applications and voltages of cables
- Identify the various types of cable connectors, materials and method of connection
- Apply the theory of joints and terminations
- Calculate stress control and determine the effect of joints and terminations on stress gradients and the areas requiring stress control
- Practice cable jointing, splicing, testing and terminating
- Implement the applicable standards, the types of tests, routine tests and its limitations and the training and certification of personnel involved
- Find reasons for cable failures and perform analysis of failures with a predictive approach
- Apply new trends and technologies utilized in the industry

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 HV/MV cables for those who are involved in splicing, jointing, termination and testing of power cables. This includes electrical engineers, instrumentation and control engineers, project engineers, maintenance engineers, power system protection and control engineers, building service designers, data systems planners and managers as well as electrical, instrumentation and control technical staff.

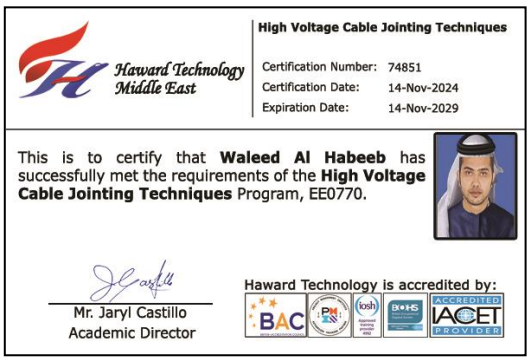
Course Certificate(s)

(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. 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 * CEUs * Haward Technology * CEUs * Haward Technology * CEUs * Haward Technology *

Haward Technology Middle East

Continuing Professional Development (HTME-CPD)

CEUs

CEU Official Transcript of Records

TOR Issuance Date: 14-Nov-24

HTME No. 74851

Participant Name: Waleed Al Habeeb

Program Ref.	Program Title	Program Date	No. of Contact Hours	CEU's
EE0770	High Voltage Cable Jointing Techniques	Nov 10-14, 2024	30	3.0

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

TRUE COPY

Jaryl Castillo
Academic Director

Haward Technology has been approved as an Accredited Provider by the International Association for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this approval, Haward Technology has demonstrated that it complies with the ANSI/IACET 1-2018 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 1-2018 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 | E-mail: info@haward.org | Website: www.haward.org

Certificate Accreditations

Haward's 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**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). 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 Fee

US$ 6,250 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 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. Steve Mark, PE, MSc, BSc, is a **Senior Electrical & Telecommunications Engineer** with over **20 years** of extensive experience within the **Oil & Gas**, **Petrochemical** and **Power** industries specializing in **HV/LV Equipment**, **High Voltage Electrical Safety**, **LV & HV Electrical System**, **HV Equipments Inspection & Maintenance**, **HV Switchgear Operation & Maintenance**, **LV Distribution Switchgear & Equipment**, Basic **Electricity**, **Electrical & Special Hazards**, **Personnel Protection**, **Motor Controllers**, **Electrical Switching Practices**, **Emergency Planning**, **Safety Management**, **Earthing & Bonding Installation**, **Energized & De-Energized Work**, **Protection Relays**, **Testing & Commissioning**, **Lock & Tag Out**, **Circuit Breakers & Switchgears**, Portable **Cables**, **Transformers**, **Surge Arrestors**, **Isolators & Fuses**, **Capacitor Banks**, Earth & Shunt Reactors, Gas Insulated Substations (**GIS**), **HV Substation Inspection & Reporting**, **HV Cable Design**, **HV Electrical System Commissioning**, **HV Equipments Inspection & Maintenance**, **UPS & Generators**, Electrical Installations Design & Construction, **Electrical Mechanical Installations**, **GIS Substations**, **GE Turbine Power Plant** and **Steam Power Plants**. Further, he is also well-versed in **Network & System Administration**, Data/Voice Networking, Network Capacity Calculations, VPN Connection Implementation, Structured Cabling Constructions, Engineering Design, Security Installations Design & Implementation, Logistics Management, IT Analysis, Business Continuity Plan Design, Disaster Recovery Simulations, Supply Chain System Design, Barcode Marking & RFID Applications. He is currently the **Lead Electrical Engineer** of Public Power Corporation S.A wherein he is responsible for site manufacturing supervision of works and electrical maintenance support for the existing Steam Electrical Power Plant.

During his career life, Mr. Mark has gained his expertise and thorough practical experience through handling challenging positions such as being the **IT & Telecommunications Manager**, **IT & Organization Manager**, **Logistics Manager**, **Electrical Engineer**, **Safety Engineer**, **Public Works Contractor**, **IT Support Analyst**, **Project Supervisor**, **Systems & Network Administrator**, **Data Protection Officer**, Shop Auditor and Amateur Radio Operator for various multi-national companies and institutes.

Mr. Mark is a **Registered Professional Engineer** and holds a **Master's** degree in **Quality Management & Technology** from the **Hellenic Open University** as well as a **Bachelor's** degree in **Electrical Engineering** from the **Technical University of Halkida**, **Euboea**, **Greece**. Further, he is a **Certified Instructor/Trainer**, a **Certified Safety Engineer** and a **Certified Data Protection Officer** (**DPO**). Moreover, he is a member of Scientific Society of Technological Education of Engineers (EETEM) and has delivered numerous trainings, courses, seminars, workshops and conferences internationally.

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: ***Sunday, 14th of September 2025***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0900	***Introduction***
0900 – 0930	***Course Overview*** *Need for Cable Joints and Terminations ● Cables- Historic Perspective ● Types of Cables ● Types of Insulation Materials ● Basic Types of Terminations and Joints ● Installation Aspects; Reducing the Number of Joints by Proper Planning ● Standards, Testing and Failures*
0930 – 0945	*Break*
0945 – 1100	***Cables*** *Basic Construction ● Conductor Materials and Configurations ● Insulation Materials for Different Applications and Voltages ● Use of Screen in HV Cables*
1100 – 1200	***Cables (cont'd)*** *Use of Armor for Ground Continuity and Mechanical Protection ● Special Aspects of Single Core Cables ● Voltage Rating of Cables and Impact of System Grounding Method on Voltage Rating ● Stress Distribution in Single Core and Multi-Core Power Cables*
1200 – 1215	*Break*
1215 – 1420	***Cables (cont'd)*** *Electrical Breakdown of Insulating Materials ● MV Cables ● HV Cables Using XLPE Insulation ● Treeing in XLPE and Need for End Sealing of Cables in Storage ● Basic Manufacturing Process*
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: Monday, 15th of September 2025

0730 – 0930	***Cable Connectors*** *Materials ● Types of Connectors for Cable Terminations and Joints ● Current Path ● Method of Connections ● Comparison ● Contact Resistance ● Preferred Methods in Practice for Different Cable Ratings ● Contact of Dissimilar Materials and Galvanic Effects; Use of Bi-Metal Accessories*
0930 – 0945	*Break*
0945 – 1100	***Joints & Terminations-Theory*** *Basic Approaches ● Broad Classification of Joints/Termination Approach ● Comparative Merits ● Prefabricated*
1100 – 1200	***Joints & Terminations-Theory (cont'd)*** *Site Fabricated ● Additional Requirements of Outdoor Terminations ● Reconstitution of Cable Properties ● Connectivity for Cable Screen and Armor ● Mechanical Protection of Joints and Terminations*
1200 – 1215	*Break*
1215 – 1420	***Practical Session #1***
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: Tuesday, 16th of September 2025

0730 – 0930	***Stress Control*** *Effect of Joints and Terminations on Stress Gradients ● Areas Requiring Stress Control ● Basics of Stress Control Approach*
0930 – 0945	*Break*
0945 – 1100	***Jointing & Termination Practice*** *Kits for Joints and Terminations ● Shelf Life Issues ● Importance of Matching Diameter of Insulated Conductor with Kit Specifications in Pre-Fabricated Kits ● Preparation of Cable for Termination and Jointing*
1100 – 1200	***Jointing & Termination Practice (cont'd)*** *Connection ● Reconstitution of Cable Properties ● Continuity and Grounding Aspects ● Sealing ● Healthiness of Joint/Termination ● Installation Aspects for Joints ● Access for Repairs*
1200 – 1215	*Break*
1215 – 1420	***Practical Session #2***
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: Wednesday, 17th of September 2025

0730 – 0930	***Standards & Testing*** *International/National Standards ● Type Tests ● Limitations*
0930 – 0945	*Break*
0945 – 1100	***Standards & Testing (cont'd)*** *Routine Tests ● Training and Certification of Personnel*

1100 – 1200	***Terminations to Equipment*** *Terminations to Indoor Switchgear ● Terminations to Electrical Machines ● Termination of Outdoor HV Installations ● Terminations to GIS Installations ● Importance of Correct Orientation of Terminations*
1200 – 1215	*Break*
1215 – 1420	***Practical Session #3***
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 Four*

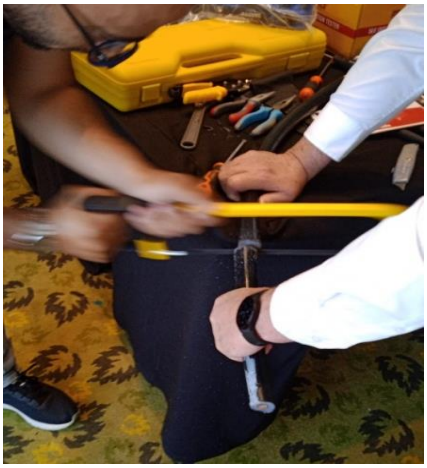
Day 5: ***Thursday, 18th of September 2025***

0730 – 0930	***Failures & Analysis*** *Reasons for Failures ● Documentation of Work ● Documentation of Failures*
0930 – 0945	*Break*
0945 – 1100	***Failures & Analysis (cont'd)*** *Analysis of Failures ● Predictive Approach*
1100 - 1200	***New Trends*** *Reasons for Increasing Preference to Underground Cables ● New Technologies for Very High Capacities and Voltages*
1200 - 1215	*Break*
1215 - 1300	***New Trends (cont'd)*** *EHV XLPE ● High Temperature Superconductivity in Cables and Likely Impact on Current Practices*
1300 - 1315	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1315 – 1415	***COMPETENCY EXAM***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

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 splicing, jointing and termination exercises using heat-shrink kits, suitable for classroom training.






Course Coordinator

Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org