



COURSE OVERVIEW EE0159(AD4)

Selection, Installation of Electrical Equipment Hazard

Course Title

Selection, Installation of Electrical Equipment Hazard

Course Date/Venue

Session 1: April 28-May 02, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
Session 2: October 26-30, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

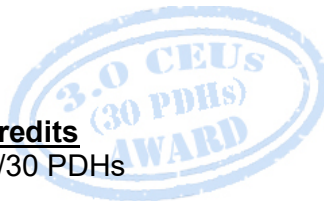


Course Reference

EE0159(AD4)

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.

Working with electrical system is a risk so some precautions shall be always taken to be in safe side. However, working with electrical system in hazardous areas will increase the risk and hazards level so specific precautions shall be followed to have electrical equipment in such areas.



This course is designed to provide participants with a detailed and an up-to-date overview of the selection, installation and testing of electrical equipment in hazardous area. It covers the hazard and hazard materials classification; the nature of the risk and the necessity to eliminate sources of ignition; the relationship between area classification and the various different types of Ex apparatus; the relationship between electrical equipment and gas groups and temperature classes; the installation and maintenance of the different types of equipment that include flameproof, increased safety, intrinsic safety, etc.; the need for and typical approach to electrical equipment inspection; and the documentation of the hazardous area.



Course Objectives

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

- Apply and gain an in-depth knowledge on selection and installation of electrical equipment hazard
- Define the hazard, classify hazard materials and recognize the nature of the risk and the necessity to eliminate sources of ignition
- Discuss the relationship between area classification and the various different types of Ex apparatus
- Determine the relationship between electrical equipment and gas groups and temperature classes
- Identify the installation and maintenance of the different types of equipment that include flameproof, increased safety, intrinsic safety, etc
- Explain the need for and typical approach to electrical equipment inspection
- Prepare and organize the documentation of the hazardous area

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 electrical protection in hazardous areas for senior electrical maintenance engineers, senior equipment & reliability engineers, senior mechanical services foremen, senior electrical & instrument maintenance foremen, instrument maintenance engineers, electrical maintenance engineers & foremen and AC&R foremen.

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\$ 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.

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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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.
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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 **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.

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:



Dr. Hassan Ibrahim, PhD, MSc, BSc, is a Senior Electrical & Instrumentation Engineer with over 25 years of extensive industrial experience. He specializes in Pipeline Flowmetering, Fluid Mechanics of Pipe Flows, Ultrasonic Flowmeters, Flow Measurement Devices, Electrical Installations & Utilities, Fixed Installations, Equipment & Appliances, Inspection & Test of Fixed Installations, Monitoring & Recording of Data for Consumer Utilities, HV/MV Cable Splicing, Jointing & Termination; LV/MV/HV; Power Cabling; Micro Electromechanical Systems (MEMS); Load Calculations; Electrical Engineering Design, Installation, Maintenance, Troubleshooting, Inspection & Testing; Engineering Drawings, Codes & Diagrams; Power System Protective Relay; Power Generation; Transformers; Lighting System, Earthing & Grounding; Electrical Circuits; Switchgear & Circuit Breakers; CCTV; AutoCAD; DCS, PLC, SCADA, Instrumentation & Control, Control Valves & Actuators; Power Electronics; Metering Pumps; Flow Metering & Custody Measurement; Pneumatic Systems and Fire & Gas Detection Systems. Further, he is also well-versed in UPS and Battery Systems, Protection Gears, ETAP, System Analysis & Design, Energy Saving Techniques, Rational Use of Energy, Green Houses, Software, Hardware, Modeling, Simulation & Design, Renewable Energy Technologies, Solar PV and Thermal Solar. Currently, he is the Technical Professor for various Academic organizations like the Arab Academy for Science & Technology and Maritime Transport, ARADO, ACTS, PROJACS, ITCC and AlexPetro Technical Service.

During his career life, Dr. Ibrahim has been actively involved in rigorous Teaching and Consulting jobs in the **USA and Middle East**. He has been the **Professor, Associate Professor, Teaching Assistant, Lecturer/Trainer, Consultant, Academic Advisor, Author, Head of Graduate Projects, Technical Consultant and Research & Teaching Assistant** of various international and academic institutions and companies. He has been the **Project Engineer** as well of **Textron Automotive Industry, USA** where he was responsible for the speed and position control for a virtual vehicle simulation system and testing the electronic circuits and overall system.

Dr. Ibrahim is a Registered Professional Engineer and a Registered Professional Consultant Engineer and has a PhD in Systems Engineering from the Oakland University (USA), a Master degree in Electrical Power & Machines Engineering and a Bachelor degree in Power & Electrical Machines Engineering. Further, he is a Certified Instructor/Trainer and a Certified Internal Verifier/Trainer/Assessor by the Institute of Leadership & Management (ILM). He has supervised various electrical and instrumentation graduate projects and master thesis, published numerous papers and delivered innumerable trainings, courses, workshops and seminars worldwide.



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 – 0930	Introduction <i>Understanding the Important Characteristics of Hazard Materials and how They Behave When they are Ignited. Looking at the Data Tables and Seeing how, Flash Point, Boiling Point, L.E.L. etc.</i>
0930 – 0945	Break
0945 – 1100	Area Classification <i>A Look at the Techniques and the Procedures that Result in the Formal Allocations of Zones Zero, One and Two • Sources of Hazard, Duration of Release, Extent of Zones, Calculations, Nature of Hazard and Release Characteristics</i>
1100 – 1230	Area Classification Exercise <i>An Exercise Carried Out in Syndicate Groups where a Small Plant is Classified Against the IP Code of Practice. This will Give Attendees a much Clearer Idea of what Zone 0, Zone 1, and Zone 2 Really Mean at their Own Place of Work</i>
1230 – 1245	Break
1245 – 1320	Apparatus Groups and Temperature Classes <i>How Apparatus and Hazard Materials are Matched Together in Terms of Ignition Energies, Flame Transmission Characteristics and Ignition Temperatures. How Groups and T Classes have Changed Over the Years and from Country to Country and where to Find the Information to Make Comparisons</i>
1320 – 1430	Recap
1430	Lunch & End of Day One

Day 2

0730 – 0930	Source of Ignition <i>A Look at Some of the Possible Sources of Ignition, e.g. Static Electricity, Light Metal there Mite Reactions, Friction etc., Which Can Occur in Hazardous Areas. Also Considering Some of the Steps Which Can be Taken to Eliminate Them</i>
0930 – 0945	Break
0945 – 1100	Source of Ignition (cont'd) <i>A Look at Some of the Possible Sources of Ignition, e.g. Static Electricity, Light Metal there Mite Reactions, Friction etc., Which Can Occur in Hazardous Areas. Also Considering Some of the Steps Which Can be Taken to Eliminate Them</i>
1100 – 1230	Methods of Protection <i>Consider the Recognized Methods of Protection • The Fundamental Concept in Each Case and the Zones in Which They May Be Employed (Ex D Flameproof, Ex I Intrinsic Safety, Ex E Increased Safety, Ex P Pressurized, Ex N Type N, Ex M, Ex O, Ex Q, Ex S And Ex D Flameproof)</i>
1230 – 1245	Break



1245 – 1330	Methods of Protection (cont'd) Considering in Depth the Concept of Flameproof of Protection, How It Works, How is Must Be Installed, How it Must Be Inspected & Maintained
1330 - 1420	Methods of Protection (cont'd) Looking at Weatherproofing, Corrosion, Gaps, Fasteners, etc
1420 – 1430	Recap
1430	Lunch & End of Day Two

Day 3

0730 – 0930	Examining Samples and Answering Questions About Them
0930 – 0945	Break
0945 – 1100	Intrinsic Safety As for Flameproof, an in Depth look at the Subject Considering Minimum Ignition Energies, Associated Apparatus and Systems, Simple Apparatus, IS Clean Earth, Floating Systems, System matChing, etc
1100 – 1230	Intrinsic Safety (cont'd) As for Flameproof, an in Depth look at the Subject Considering Minimum Ignition Energies, Associated Apparatus and Systems, Simple Apparatus, IS Clean Earth, Floating Systems, System matChing, etc
1230 – 1245	Break
1245 – 1330	Intrinsic Safety Installation Segregation of Cables, Screens and Armor, Earthling and Bonding, Induction and Invasion, Creep Age and Clearance etc
1300 - 1420	Intrinsic Safety Installation (cont'd) Segregation of Cables, Screens and Armor, Earthling and Bonding, Induction and Invasion, Creep Age and Clearance etc
1420 – 1430	Recap
1430	Lunch & End of Day Three

Day 4

0730 – 0930	Increased Safety An in-Depth Look at this Concept of Protection Making Comparisons with Flameproof, and Stressing the Vital Importance of Correct Installation. Also Looking at Weatherproofing IP Rating, CTI, Stoppers and Bolts, etc.
0930 – 0945	Break
0945 – 1100	Increased Safety (cont'd) An in-Depth Look at this Concept of Protection Making Comparisons with Flameproof, and Stressing the Vital Importance of Correct Installation. Also Looking at Weatherproofing IP Rating, CTI, Stoppers and Bolts, etc.
1100 – 1230	Ex p Pressurized Apparatus A Close Examination of this Method of Protection, what it can be Applied to, When Certification is Possible and How to Maintain it. Where Pressurized Rooms Fit in and How Uncertified Pressurized Enclosures may be Used in Zone 2
1230 – 1245	Break
1245 – 1420	Ex p Pressurized Apparatus (cont'd) A Close Examination of this Method of Protection, what it can be Applied to, When Certification is Possible and How to Maintain it. Where Pressurized Rooms Fit in and How Uncertified Pressurized Enclosures may be Used in Zone 2
1420 – 1430	Recap
1430	Lunch & End of Day Three



Day 5

0730 – 0930	Type N <i>A Thorough Examination of Type N Considering Non-Sparking, Enclosed Break, Energy Limitation, and Restricted Breathing Concepts. Also Making Comparisons with the Concepts of Protection Already Covered in Detail</i>
0930 – 0945	Break
0945 – 1100	Type N (cont'd) <i>A Thorough Examination of Type N Considering Non-Sparking, Enclosed Break, Energy Limitation, and Restricted Breathing Concepts. Also Making Comparisons with the Concepts of Protection Already Covered in Detail</i>
1100 – 1230	The Less Common Types of Protection <i>A Look at Ex m, Ex o, Ex q, and Ex s Considering Each in Turn and Pointing Out the Safety Critical Features. Also Considering Combined or Dual Certification and the Combination of Many Concepts of Protection into One Item of Equipment</i>
1230 - 1245	Break
1245 – 1345	Labels, Marking and Certificates <i>Coding, Certificate Numbers and Other Essential Markings on Labels and Certificates. Including a Paper Exercise to Identify Equipment and Assess its Suitability for Given Environment</i>
1345 – 1400	Course Conclusion
1400 – 1415	POST-TEST
1415 – 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch & End of Course</i>

Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-



Course Coordinator

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