

COURSE OVERVIEW EE0167
Hazardous Area Classification & Intrinsic Safety
(IEC 60079, ATEX 95/137 & API RP 500/505)

Course Title

Hazardous Area Classification & Intrinsic Safety
(IEC 60079, ATEX 95/137 & API RP 500/505)

Course Date/Venue

Session 1: September 15-19, 2024/Boardroom
 1, Elite Byblos Hotel Al Barsha,
 Sheikh Zayed Road, Dubai, UAE
 Session 2: December 15-19, 2024/Boardroom,
 Warwick Hotel Doha, Doha, Qatar



Course Reference

EE0167



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 offer a working knowledge in the Hazardous Area Classification with respects to Electrical and Instrumentation control. The objective of hazardous area classification is to identify areas in a plant where flammable atmospheres may exist and to determine their likely extent. From this, the risk of ignition from electrical apparatus in the areas can be minimized by specification of a suitable degree of protection for such apparatus.



In this course, you will learn about the regulations, guidance and standards for the classification of hazardous areas. The hazards of fires and explosions will be introduced, together with the sources of ignition arising from electrical apparatus. Further an approach to defining the type of zone will be introduced, together with the criteria for determining the extent of zones. Practical examples will be used to illustrate the principles presented in the lectures.

Further, this course will cover the classification of hazardous areas in situations where flammable atmospheres arise from the presence of both combustibles dusts and flammable gases and vapours. The levels of protection for electrical apparatus appropriate for use in hazardous zones will be discussed in some detail, together with the importance of ensuring that these levels of protection are maintained throughout the lifetime of the equipment.

This course presents information on division and zone classification schemes and explains the electrical equipment and wiring methods that are allowed within classified areas at operation and production locations. Material presented is primarily from IEC 60079, ATEX Directive 99/92/EC (ATEX 137), ATEX Directive 94/91/EC (ATEX 95), API RP 500, and API RP505, and includes standards and recommended practices published by IEEE and ISA. A syndicate exercise, followed by interactive discussion, will be used to help delegates to appreciate the principles presented in the course.

Course Objectives

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

- Apply the correct hazardous area classification and classify the hazardous materials and the control of ignition sources as per standards
- Implement the Hazardous Area Classification (HAC) Standards including the IEC 60079, ATEX 95, ATEX 137, API RP 500, API RP 505, IEEE and ISA
- Reduce the risk of fires and explosions and control the sources of ignition arising from electrical apparatus in the plant
- Select the proper electrical & control equipment in hazardous areas
- Explain the relation between area classification and the various ex apparatus as well as the relation between classification and equipment's voltage
- Enumerate the different temperature & gas group classification, flammable mixture, mig. Explosion and various EX apparatus
- Execute installation of the different types of equipments which include flameproof and N" types
- Give emphasis on equipment maintenance recommendations in hazardous areas including the documentation of hazardous area by reading P & ID
- Heighten awareness on new equipment and innovation in the fields for hazardous area classification

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 hazardous area classification and intrinsic safety in accordance with IEC 60079, ATEX 95/137 and API RP 500/505. Electrical, control and safety managers, engineers and other technical staff will definitely benefit from the international standards and regulation part of the course.

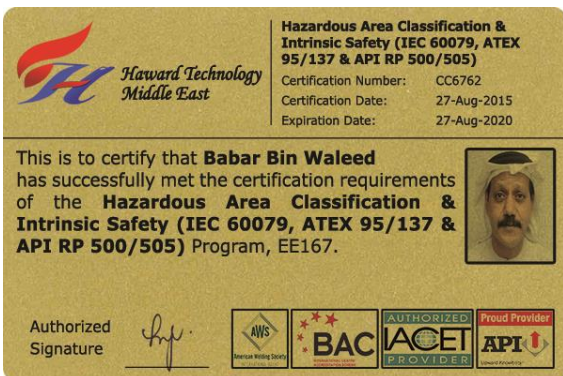
Course Certificate(s)

- (1) Internationally recognized Wall Competency Certificates and Plastic Wallet Card Certificates 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.

Page 1 of 1

Haward Technology Middle East
Continuing Professional Development (HTME-CPD)

CEU Official Transcript of Records

TOR Issuance Date: 28-Apr-16

HTME No. PAR213884

Participant Name: Wadah Al Darmaki

Program Ref.	Program Title	Program Date	No. of Contact Hours	CEU's
EE167	Hazardous Area Classification & Intrinsic Safety (IEC 60079, ATEX 95/137 & API RP 500/505)	April 24-28, 2016	30	3.0

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

TRUE COPY


 Maricel De Guzman
 Academic Director

Haward Technology has been approved as an Authorized Provider by the International Association for Continuing Education and Training (IACET), 1760 Old Meadow Road, Suite 500, McLean, VA 22102, USA. In obtaining this approval, Haward Technology has demonstrated that it complies with the ANSI/IACET 1-2013 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 1-2013 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











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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 **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.

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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 Fee

Dubai	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.
Doha	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.

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. Sydney Thoresson, PE, BSc, is a Senior Electrical & Instrumentation Engineer with over 40 years of extensive experience within the Petrochemical, Utilities, Oil, Gas and Power industries. His specialization highly evolves in Hazardous Area Classification, Hazardous Area & Intrinsic Safety, Temperature & Gas Group Classification, Electrical Load Calculation and Design, Electrical Safety, Power System Equipment, Electrical Drawing, Electrical Forecasting, Transmission Networks, Substation, Distribution Networks, Substation Automation Systems & Application, Electrical System, HV/LV Electrical Authorisation, Variable Frequency Drives (VFD), HV/LV Equipment, Circuit Breaker, Motor Controllers, Intrinsic Safety, Electrical Power Systems Quality & Troubleshooting, Protection & Relay, Electric & Control System Commissioning, Liquid & Gas Flowmetering, Fault Analysis in Electrical Networks & Distribution Cables, Custody Measurement, Ultrasonic Flowmetering, Loss Control, Gas Measurement, Process Control Instrumentation, Compressor Control & Protection, Control Systems, Programmable Logic Controllers (PLC), SCADA, Distributed Control Systems (DCS) especially in Honeywell DCS, H&B DCS, Modicon, Siemens, Telemecanique, Wonderware and Adroit. Moreover, he has vast experience in the field of Safety Instrumented Systems (SIS), Safety Integrity Level (SIL), Emergency Shutdown (ESD), Flowmetering & Custody Measurement, Multiphase Flowmetering, Measurement and Control, Mass Measuring System Batching (Philips), Arc Furnace Automation-Ferro Alloys, Walking Beam Furnace, Blast Furnace, Billet Casting Station, Cement Kiln Automation, Factory Automation and Quality Assurance Accreditation (ISO 9000 and Standard BS 5750).

During Mr. Thoresson's career life, he has gained his thorough and practical experience through various challenging positions such as a **Project Manager, Contracts Manager, Managing Director, Technical Director, Divisional Manager, Plant Automation Engineer, Senior Consulting Engineer, Senior Systems Engineer, Consulting Engineer, Service Engineer and Section Leader** from several international companies such as **Philips, FEDMIS, AEG, DAVY International, BOSCH Instrumentation and Control, Billiton, Endress/Hauser, Petronet, Iscor, Spornet, Eskom and Afrox.**

Mr. Thoresson is a **Registered Professional Engineering Technologist** and has a **National Higher Diploma (NHD) & a National Diploma in Radio Engineering** from the **Witwatersrand Technikon**. Further, he is a **Certified Instructor/Trainer, a Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management (ILM)**, an active member of the **International Society of Automation (ISA)** and the **Society for Automation, Instrumentation, Measurement and Control (SAIMC).**

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

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	<i>Registration & Coffee,</i>
0800 – 0815	<i>Welcome & Introduction</i>
0815 – 0830	PRE-TEST
0830 – 0930	General Principles/Introduction to Hazardous Area Classification <i>Defining Hazardous Areas (Zoning)</i>
0930 – 0945	<i>Break</i>
0945 – 1045	Hazardous Area Classification (HAC) <i>Why Area Classification?</i>
1045 – 1200	Hazardous Area Classification (HAC) (cont'd) <i>Classifying Hazardous Materials</i>
1200 – 1215	<i>Break</i>
1215 – 1420	Hazardous Area Classification (HAC) (cont'd) <i>Ignition Sources – Identification and Control</i>
1420 – 1430	Recap
1430	<i>Lunch & End of Day One</i>

Day 2

0730 – 0930	Hazardous Area Classification (HAC) Standards <i>BS EN 60079-10 • ATEX 95 • ATEX 137 • API RP 500 • North American Hazard Area Category • North American NEC Article for Gas Grouping • Typical Gas Hazard</i>
0930 – 0945	<i>Break</i>
0945 – 1045	Hazardous Area Classification (HAC) Standards (cont'd) <i>North America/NEC500-503 • API RP 505 • IEEE • ISA</i>
1045 – 1200	Identify & Reduce/Eliminate the Risk
1200 – 1215	<i>Break</i>
1215 – 1315	Selection of Electrical Equipment in Hazardous Areas
1315 – 1420	IEC/CENELEC/EUROPE/NEC505+
1420 – 1430	Recap
1430	<i>Lunch & End of Day Two</i>

Day 3

0730 - 0930	Ingress Protection (IP) Codes and NEMA Types
0930 - 0945	Break
0945 - 1045	NEMA & UL Types of Enclosures
1045 - 1200	The Relation Between Area Classification & The Various Ex Apparatus
1200 - 1215	Break
1215 - 1420	The Relation Between Classification & Equipment's Voltage
1420 - 1430	Recap
1430	Lunch & End of Day Three

Day 4

0730 - 0830	Temperature & Gas Group Classification
0830 - 0930	Flammable Mixture, Mig. Explosion, Various EX Apparatus
0930 - 0945	Break
0945 - 1045	Installation of Different Types Equipments Flameproof (Explosion-proof) • N"Types
1045 - 1200	Zones, Divisions & Safety Categories
1200 - 1215	Break
1215 - 1315	Methods of Explosion Protection
1315 - 1420	Explosion Protection in North America Regulation in North America • Class I, zone 0, 1 and 2 Locations • Classification of Locations • Material Groups • Temperature Classification • Protection Techniques • Markings for IEC-based zone certification
1420 - 1430	Recap
1430	Lunch & End of Day Four

Day 5

0730 - 0930	Equipment Maintenance Recommendations in Hazardous Area
0930 - 0945	Break
0945 - 1045	Documentation of Hazardous Area- Reading P&ID
1045 - 1200	New Equipment & Innovation in the Fields
1200 - 1215	Break
1215 - 1300	Summary, Open Forum & Closure
1300 - 1315	Course Conclusion
1315 - 1415	COMPETENCY EXAM
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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