

COURSE OVERVIEW EE0221 Hazardous Area Equipment Inspection & Maintenance Certification

Course Title

Hazardous Area Equipment Inspection Maintenance Certification

Course Date/Venue

Session 1: February 23-27, 2025/Al Khobar Meeting Room, Hilton Garden Inn, Al Khobar, **KSA**

Session 2: September 07-11, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

Course Reference

EE0221

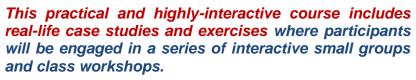
Course Duration/Credits

Five days/3.0 CEUs/30 PDHs

Course Description







This course is designed to provide participants with a detailed and up-to-date overview of hazardous equipment inspection and maintenance. It covers the hazardous area classification; the zones for hazardous area classification (HAC) and apparatus classification; the apparatus grouping and temperature, Ex protection principles and flameproof concept Ex d; the hazardous area classification (HAC) standards; the electrical hazards, earthing, bonding and testing; the certification, certificates, marking and approval: and the code of practice for selection and installation of Ex equipment installation.

During this interactive course, participants will learn the relation between area classification, various Ex apparatus, equipment's voltage, temperature and gas classification; the installation of different types of equipment and interconnecting cabling; the maintenance, inspection, fault finding and repairs of Ex equipment; the test equipment suitability and equipment maintenance recommendations in hazardous area; reading of P&ID in hazardous area documentation, inspection and maintenance of explosion proof instruments; the maintenance of intrinsically safe equipment and purged/pressurized equipment; the risk analysis, assessment and management (QRA); the integrated safety management; and the hazard and operability (HAZOP) process and guidelines.























Course Objectives

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

- Apply and gain an in-depth knowledge on hazardous equipment inspection and maintenance
- Discuss hazardous area classification covering explosion consequences, properties of gases, flammable gases, vapours, ignition sources and protection requirements
- Define zones for hazardous area classification (HAC) and classify apparatus
- Describe apparatus grouping and temperature, Ex protection principles and flameproof concept Ex d
- Apply hazardous area classification (HAC) in accordance with BS EN 6007-10, ATEX 95, ATEX 137 API RP 500, North America/NEC500-503, API RP 505, IEEE, ISA, etc. standards
- Identify electrical hazards, earthing, bonding and testing including basic principles, IS systems requirements, noise and interface control and earthing requirements
- Employ system earthing approach, static protection and lightning protection
- Employ certification, certificates, marking and approval of systems approach, safety descriptions, codes of practice, national standards, hazardous area classification (HAC) standards
- Apply code of practice for selection and installation of Ex equipment installation
- Discuss the relation between area classification, various Ex apparatus and equipment's voltage as well as classify temperature and gas
- Install different types of equipment and interconnect cabling
- Carryout maintenance, inspection, fault finding and repairs of Ex equipment through use of tools procedures and safe methods
- Describe test equipment suitability and equipment maintenance recommendations in hazardous area
- Read P&ID in hazardous area documentation, inspect and maintain explosion proof instruments
- Maintain intrinsically safe equipment and purged/pressurized equipment
- Carryout risk analysis, assessment and management (QRA)
- Discuss the integrated safety management plan as well as the hazard and operability (HAZOP) process and guidelines

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 hazardous equipment inspection and maintenance for engineers and technicians.



























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:-







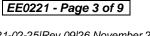
























(2) Official Transcript of Records will be provided to the successful delegates with the equivalent number of ANSI/IACET accredited Continuing Education Units (CEUs) earned during the course.





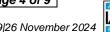






















Certificate Accreditations

Certificates are accredited by the following international accreditation organizations: -

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.



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

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

Accommodation

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



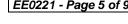






















Course Instructor(s)

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. Ahmed Abozeid is a Senior Electrical & Instrumentation Engineer with over 30 years of Onshore & Offshore experience within the Oil & Gas and Power industries. His wide expertise covers HV Cable Design, Cable Splicing & Termination, Cable Jointing Techniques, High Voltage Electrical Safety, HV/MV Cable Splicing, High Voltage Circuit Breaker Inspection & Repair, High Voltage Power System Safe Operation, High Voltage Safety, High Voltage Transformers, Safe

Operation of High Voltage & Low Voltage Power Systems, Electric Distribution System Equipment, ABB 11KV Distribution Switchgear, Rotork Operation & Maintenance, Power System Protection and Relaying, Electrical Motors & Variable Speed Drives, Motor Speed Control, Power Electronic Converters, Control Valve, Flow metering & Custody Transfer, Meters Calibration, Installation & Inspection, Crude Metering & Measurement Systems, Flow Meter Maintenance Troubleshooting, AC Converters Section, Electromagnetic Compatibility (EMC), Motor Failure Analysis & Testing, Machinery Fault Diagnosis, Bearing Failure Analysis Process Control & Instrumentation, Process Control Measurements, Control System Commissioning & Start-Up, Control System & Monitoring, Power Station Control System, Instrumentation Devices, Process Control & Automation, PID **Controller**, Distributed Control Systems (**DCS**), Programmable Logic Controllers (**PLC**), ABB PLC & DCS System, Gas Analyzers, Simulation Testing, Load Flow, Short Circuit, Smart Grid, Vibration Sensors, Cable Installation & Commissioning, Calibration Commissioning and Site Filter Controller. Further, he is also well-versed in Fundamentals of Electricity, Electrical Standards, Electrical Power, PLC, Electrical Wiring, Machines, Transformers, Motors, Power Stations, Electro-Mechanical Systems, Automation & Control Systems, Voltage Distribution, Power Distribution, Filters, Automation System, Electrical Variable Speed Drives, Power Systems, Power Generation, Power Transformers, Diesel Generators, Power Stations, Uninterruptible Power Systems (UPS), Battery Chargers and AC & DC Transmission. He is currently the Project Manager wherein he manages, plans and implements projects across different lines of business.

Mr. Ahmed worked as the Electrical Manager, Electrical Power & Machine Expert, Electrical Process Leader, Team Leader, Electrical Team Leader, Technical Instructor, and Instructor/Trainer from various companies such as the Lafarge Nigeria, Egyptian Cement Company, ECC Training Center, Alrajhi Construction & Building Company and Ameria Cement Company, just to name a few.

Mr. Ahmed has a **Bachelor's** degree in **Electrical Engineering**. Further, he is a **Certified Instructor/Trainer, Certified TQUK Level 3 Vocational Achievement (RQF) Assessor** and has delivered numerous trainings, seminars, courses, 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

Registration & Coffee
Welcome & Introduction
PRE-TEST
Introduction to Hazardous Area Classification
Explosion Consequences • Definition of Hazardous Area (Zoning) • Properties of
Gases • Flammable Gases, Vapours and Ignition Sources • Protection Requirements
Break
Zones & Definitions
Hazardous Area Classification (HAC) • Classification of Apparatus • Apparatus
Grouping and Temperature • Principles of Ex Protection • Flameproof Concept Ex d
Hazardous Area Classification (HAC) Standards
BS EN 60079-10 • ATEX 95 • ATEX 137 • API RP 500 • North American
Hazard Area Category
Break
Hazardous Area Classification (HAC) Standards (cont'd)
North American NEC Article for Gas Grouping • Typical Gas Hazard • North
America/NEC500-503 ◆ API RP 505 ◆ IEEE ◆ ISA
Recap
Lunch & End of Day One

Day 2

- 7	
0730 - 0930	Electrical Hazards, Earthing & Bonding & Testing Basic Principles • Requirements for IS Systems • Noise and Interference Control • Earthing Requirements • System Earthing Approach • Static Protection • Lightning Protection
0930 - 0945	Break
0945 - 1100	Certification, Certificates, Marking & Approval Authorities • Marking and Identification • Apparatus Certification • Systems Certification • Systems Descriptive Documentation • Interconnected apparatus
1100 - 1230	Certification, Certificates, Marking & Approval (cont'd) Systems Approach • Safety Descriptions • Codes of Practice • National Standards • Hazardous Area Classification (HAC) Standards























1230 - 1245	Break
12405- 1420	Code of Practice for Selection & Installation of Ex Equipment Installation
	Selection of Electrical Equipment in Hazardous Areas • The Relation Between Area
	Classification and The Various Ex Apparatus • The Relation Between Classification
	and Equipment's Voltage • Temperature & Gas Group Classification
1420 - 1430	Recap
1430	Lunch & End of Day Two

Day 3	
0730 - 0930	Code of Practice for Selection & Installation of Ex Equipment Installation (cont'd) Flammable Mixture, Mig. Explosion, Various Ex Apparatus Installation of Different Types of Equipments Safe Area Requirements
0930 - 0945	Break
0945 - 1100	Code of Practice for Selection & Installation of Ex Equipment Installation (cont'd) Interconnecting Cabling • Hazardous Area Junction Boxes • Hazardous Area Apparatus
1100 - 1230	Maintenance, Inspection, Fault Finding & Repairs of Ex Equipment Maintenance - Introduction • Planned Maintenance • Use of Tools Procedures
1230 - 1245	Break
12405- 1420	Maintenance, Inspection, Fault Finding & Repairs of Ex Equipment (cont'd) Safe Methods • Test Equipment Suitability • Equipment Maintenance Recommendations in Hazardous Area
1420 - 1430	Recap
1430	Lunch & End of Day Three

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Day 4	
	Maintenance, Inspection, Fault Finding & Repairs of Ex Equipment (cont'd)
0730 - 0930	Documentation of Hazardous Area-Reading P&ID • Maintenance - General
	Guidelines – 1 • Maintenance – General Guidelines – 2
0930 - 0945	Break
	Maintenance, Inspection, Fault Finding & Repairs of Ex Equipment (cont'd)
0945 - 1100	Inspection • Maintenance of Explosion Proof Instruments/Equipment - 1 •
	Maintenance of Explosion Proof Instruments/Equipment – 2
	Maintenance, Inspection, Fault Finding & Repairs of Ex Equipment (cont'd)
1100 - 1230	Inspection of Explosion Proof Equipment • Maintenance of Increased Safety
	Equipment • Maintenance of Intrinsically Safe Equipment – 1
1230 - 1245	Break
	Maintenance, Inspection, Fault Finding & Repairs of Ex Equipment (cont'd)
12405- 1420	Maintenance of Intrinsically Safe Equipment – 2 • Maintenance of Intrinsically Safe
	Equipment – 3 • Maintenance of Purged/Pressurized Equipment
1420 - 1430	Recap
1430	Lunch & End of Day Four

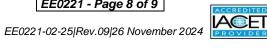
























Day 5

0730 - 0930	Risk Analysis, Assessment & Management (QRA)
	Probability Basics • Probabilistic Risk Assessment Concepts and Methodology •
	Fault Tree and Event Tree Analysis • Quantitative Risk Assessment Concepts and
	Methodology
0930 - 0945	Break
	Integrated Safety Management Plan
0945 - 1100	Hazard and Effect Management Plan • Bow-Tie Process • Risk Matrix •
	Determining Acceptability of Risk
1100 – 1215	Hazard & Operability (HAZOP) Reviews
	Process and Guidelines
1215 - 1230	Break
1230 - 1300	ATEX Directive
	Scope of Directive • Group I Mining (M1 & M2) • Group II Non-mining (1G or
	1D/2G or 2D/3G or 3D) • Verifying Conformity
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:-



<u>Course Coordinator</u>
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