COURSE OVERVIEW EE0112
ABB 11kV Distribution Switchgear

Course Title
ABB 11kV Distribution Switchgear

Course Date/Venue
Session 1: January 26-30/Al Khobar Meeting Room, Hilton Garden Inn, Al Khobar, KSA
Session 2: July 06-10, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

Course Reference
EE0112

Course Duration/Credits
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.

This course is designed to provide participants with a detailed and up-to-date overview of ABB 11kV electrical safety. It covers the voltage convention, fundamentals of circuit breakers, types of breakers, construction, ratings and tripping characteristics; the ABB switchgear in a network context; the ABB switchgear in historical perspective and ABB switchgear details; the ABB power circuit breakers, reclosers, sectionalizers, surge arresters and ABB main unit; the ABB metal clad switchgear; the ABB instrument and control power transformers; and the ABB 11kV distribution switchgear relaying system.

During this interactive course, participants will learn the general control and metering, control devices and wiring; the ABB 11kV distribution switchgear comprising of nameplates and testing; the ABB switchgear asset management; the testing codes and standards, test requirements and component testing procedures; the circuit breaker diagnostic techniques; the distribution switchgear commissioning and start-up, acceptance and hand over; and the switchgear vital equipments covering batteries condition and monitoring.

Course Objectives

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

- Apply and gain a comprehensive knowledge on ABB 11kV distribution switchgear
- Discuss voltage convention, fundamentals of circuit breakers, types of breakers, construction, ratings and tripping characteristics
- Explain ABB switchgear in a network context, ABB switchgear in historical perspective and ABB switchgear details
- Identify ABB power circuit breakers, reclosers, sectionalizers, surge arresters, ABB main unit, ABB metal clad switchgear, ABB instrument and control power transformers
- Illustrate ABB 11kV distribution switchgear relaying system, general control and metering, control devices and wiring as well as ABB 11kV distribution switchgear comprising of nameplates and testing
- Carryout ABB switchgear asset management, testing codes and standards, test requirements and component testing procedures
- Employ circuit breaker diagnostic techniques, distribution switchgear commissioning and start-up, acceptance and hand over
- Recognize switchgear vital equipments covering batteries condition and monitoring

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 ABB 11kV distribution switchgear for electrical engineers, industrial and utility engineers and other technical staff.

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 accreditation 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. Ahmed Abozeid is a **Senior Electrical Engineer** with over **25 years** of **Onshore** & **Offshore** experience within the **Oil** & **Gas** and **Power** industries. His wide expertise covers **Electrical Motors & Variable Speed Drives**, **Motor** Speed Control, Power Electronic Converters, 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** and has delivered numerous trainings, seminars, courses, workshops and conferences internationally.

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 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** Voltage Convention ● Fundamentals of Circuit Breakers ● Types of Breakers, Construction ● Ratings, Tripping Characteristics
0930 – 0945	Break
0945 – 1100	**ABB Switchgear in a Network Context** Basic Construction ● Safety ● Single Line ● Utilization
1100 – 1215	**ABB Switchgear in Historical Perspective** Oil Circuit Breakers ● Air Blast CB ● SF6 and Vacuum CB ● Operating Mechanisms
1215 – 1230	Break
1230 – 1420	**ABB Switchgear Details** Ratings Ur, Ik, Ip, Va ● Degree of Protection ● Service Conditions ● Ancillary Equipment
1420 - 1430	**Recap**
1430	Lunch & End of Day One

Day 2

0730 – 0830	**ABB Power Circuit Breakers** Moulded Case Circuit Breakers ● Low-voltage Circuit Breakers ● Medium-voltage Circuit Breakers
0830 – 0930	**Reclosers**
0930 – 0945	Break
0945 – 1030	**Sectionalizers**
1030 – 1130	**Surge Arresters**
1130 – 1215	**ABB Ring Main Unit**
1215 – 1230	Break
1230 – 1330	**ABB Metal Clad Switchgear**
1330 – 1420	**ABB Instrument & Control Power Transformers**
1420 – 1430	**Recap**
1430	Lunch & End of Day Two

Day 3

0730 – 0930	**ABB 11kV Distribution Switchgear Relaying System**
0930 – 0945	Break
0945 – 1100	**ABB 11kV Distribution Switchgear General Control & Metering**
1100 – 1215	**ABB 11kV Distribution Switchgear Control Devices & Wiring**
1215 – 1230	Break
1230 – 1420	**ABB 11kV Distribution Switchgear** Nameplates ● Testing
1420 – 1430	**Recap**
1430	Lunch & End of Day Three

Day 4

0730 – 0930	***ABB Switchgear Asset Management*** *Equipment Register ● CBM and RCM Process ● Switchgear Diagnostic Techniques ● Tripping Devices & Maintenance & Testing*
0930 – 0945	*Break*
0945 – 1100	***Testing Codes & Standards*** *Management of Commissioning Projects ● About NETA ● Certification of Test Technicians ● Certification Test Examples ● NETA – ANSI Standards ● NETA – Frequency of Tests ● ANSI IEC 62337 ● NEC 2011*
1100 – 1215	***Test Requirements*** *Development of Test Regime ● Outline of Typical Tests ● Interpretation of Test Results ● Troubleshooting*
1215 – 1230	*Break*
1230 – 1420	***Component Testing Procedures*** *Types of Commonly Used Test Equipment ● Insulation Resistance Testing ● Contact Resistance Testing ● Current Injections, CT Testing ● DC Voltage Testing Techniques ● AC Voltage Testing Techniques*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 – 0930	***Circuit Breaker Diagnostic Techniques*** *Diagnostic Techniques ● Maintenance Procedures for Medium-voltage Oil Circuit Breakers ● Maintenance Procedures for Medium-voltage Vacuum Circuit Breakers ● Recommended Annual Maintenance*
0930 – 0945	*Break*
0945 – 1100	***Distribution Switchgear Commissioning*** *Capacitors ● Current Transformers ● Instrument Transformers, Test Switches, Metering & Relaying Devices ● NETA Recommended Acceptance Test*
1100 – 1215	***Start-up, Acceptance & Hand Over*** *Systems & Their Integration ● Energizing Sequence ● Safety Considerations ● Load Checks ● Documentation ● Correction of Defects ● Spare Parts ● Warranty ● Final Acceptance ● Training for Operations & Maintenance Personnel*
1215 – 1230	*Break*
1230 – 1345	***Switchgear Vital Equipments*** *Batteries Condition & Monitoring ● Discussions*
1345 – 1400	***Course Conclusion***
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Simulators (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 our state-of-the-art "GE Multilin Relay 469" and "GE Multilin Relay 750".

GE Multilin Relay 469 Simulator

GE Multilin Relay 750 Simulator

Course Coordinator

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