COURSE OVERVIEW EE0239
Power Transformer Basic

Course Title
Power Transformer Basic

Course Date/Venue
Session 1: July 13-17, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE
Session 2: December 15-19, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Course Reference
EE0239

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 provide participants with a detailed and up-to-date overview of Mastering Maintenance Audit. It covers the functions, basic principles and types of distribution transformers; the transformer construction, components, transformer core, windings, insulation and cooling systems; the techniques for identifying different transformer components; the transformer installation, maintenance and testing requirements; the installation guidelines and best practices, maintenance schedules and checklists; the proper transformer installation and perform routine maintenance tasks and testing; the transformer troubleshooting and diagnostic techniques; and the common transformer problems and their causes.

During this interactive course, participants will learn the diagnosing and repairing common transformer problems; the transformer protection and safety requirements including transformer protection systems and devices; the transformer oil and fluid requirements, repair and upgrade requirements; maintaining and testing transformer oil and fluids; performing transformer repairs and upgrades; the transformer efficiency and energy saving including transformer standards and regulations; optimizing transformer efficiency and energy savings; and the techniques for ensuring transformer compliance with applicable standards and regulations.

Course Objectives

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

- Apply and gain a fundamental knowledge on distribution transformer basic concepts and maintenance
- Discuss the functions, basic principles and types of distribution transformers
- Identify transformer construction, components, transformer core, windings, insulation and cooling systems
- Carryout techniques for identifying different transformer components
- Recognize transformer installation, maintenance and testing requirements
- Employ installation guidelines and best practices, maintenance schedules and checklists
- Ensure proper transformer installation and perform routine maintenance tasks and testing
- Carryout transformer troubleshooting and diagnostic techniques
- Identify the common transformer problems and their causes as well as diagnose and repair common transformer problems
- Recognize transformer protection and safety requirements including transformer protection systems and devices
- Discuss transformer oil and fluid requirements and repair and upgrade requirements
- Maintain and test transformer oil and fluids as well as perform transformer repairs and upgrades
- Describe transformer efficiency and energy saving including transformer standards and regulations
- Optimize transformer efficiency and energy savings
- Employ techniques for ensuring transformer compliance with applicable standards and regulations

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 a basic overview of all significant aspects and considerations of distribution transformer basic concepts and maintenance for electrical engineers, technicians, maintenance personnel, and other professionals who work with distribution transformers in the power distribution system.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

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**. 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.

Accommodation

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

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 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. Pan Marave, PE, MSc, BEng, is a **Senior Electrical & Instrumentation Engineer** with over 3**0 years** of extensive experience in **Oil**, **Gas**, **Petrochemical**, **Refinery** & **Power** industries. His expertise includes **Circuit Breaker**, **HV Switchgear Maintenance**, **HV/LV Electrical** Authorisation, Basic **Electricity**, **Electrical & Special Hazards**, **Personnel Protection**, **HV/LV Equipment**, **Motor Controllers**, **Electrical Switching** Practices, **Emergency Planning**, **Safety Management**, Safety Instrumented Systems (**SIS**), Safety Integrity Level (**SIL**), Emergency Shutdown (**ESD**), **DCS**, **SCADA** & **PLC**, **Measurement** (**Flow**, **Temperature**, **Pressure**), **Process Analyzers** & **Analytical Instrumentation**, **Process Control**, **Instrumentation** & **Safeguarding, Process Controller**, **Control Loop & Valve Tuning**, Industrial **Distribution Systems**, Industrial **Control & Control Systems**, **Power Generation & Transmission**, **Electrical Generator & Power Transformers**, Power Systems **Protection & Relaying**, **Earthing**, **Power System Protective Relay**, **Bonding**, **Grounding**, **Lightning & Surge Protection**, Electric Power **Substation** & **Systems**, Electrical Engineering Principles, **Motor Control Circuit**, **Electrical Fault Analysis**, Electrical Networks & Distribution **Cables, Circuit Breakers**, **Switchgears**, **Transformers**, **Hazardous Areas Classification** and **Detailed Engineering Drawings**, **Codes** & **Standards**. Furthermore, he is also well-versed in Microprocessors Structure, Lead Auditor (**ISO 9000:2000**), **ISO 9002**, Quality Assurance, and Projects & Contracts Management.

Presently, Mr. Marave is the **Technical Advisor** of **Chamber of Industry & Commerce** in Greece. Prior to this, he gained his thorough practical experience through several positions as the **Technical Instructor**, **Engineering Manager**, **Electronics & Instruments Head**, **Electrical**, **Electronics & Instruments Maintenance Superintendent**, **Assistant General Technical Manager** and **Engineering Supervisor** of various international companies such as the **Alumil** Mylonas, **Athens Papermill**, **Astropol** and the **Science Technical Education**.

Mr. Marave is a **Registered Professional Engineer** and has **Master** and **Bachelor** degrees in **Electrical Engineering** from the **Polytechnic Institute of New York** and **Pratt Institute of New York** (**USA**) respectively. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**) and an active member of the **Technical Chamber** and the Institute of Electrical and Electronics Engineer (**IEEE**) in Greece. He has presented and delivered **numerous international** courses, conferences, trainings and workshops worldwide.

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	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0900	***Introduction to Distribution Transformers***
0900 – 0930	***Distribution Transformers & Their Functions***
0930 – 0945	*Break*
0945 – 1030	***Basic Principles of Transformer Operation***
1030 – 1130	***Types of Distribution Transformers***
1130 – 1230	***Transformer Construction & Components***
1230 – 1245	*Break*
1245 – 1345	***Transformer Core, Windings, Insulation & Cooling Systems***
1345 - 1420	***Techniques for Identifying Different Transformer Components***
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0830	***Transformer Installation Requirements***
0830 - 0930	***Installation Guidelines & Best Practices***
0930 – 0945	*Break*
0945 – 1100	***Techniques for Ensuring Proper Transformer Installation***
1100 - 1230	***Transformer Maintenance & Testing Requirements***
1230 – 1245	*Break*
1245 - 1330	***Maintenance Schedules & Checklists***
1330 - 1420	***Techniques for Performing Routine Maintenance Tasks & Testing***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0830	***Transformer Troubleshooting & Diagnostic Techniques***
0830 - 0930	***Common Transformer Problems & Their Causes***
0930 – 0945	*Break*
0945 – 1100	***Techniques for Diagnosing & Repairing Common Transformer Problems***
1100 - 1230	***Transformer Protection & Safety Requirements***
1230 – 1245	*Break*
1245 - 1330	***Transformer Protection Systems & Devices***
1330 - 1420	***Techniques for Ensuring Proper Transformer Safety***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

0730 – 0830	***Transformer Oil & Fluid Requirements***
0830 - 0930	***The Importance of Transformer Oil & Fluid Quality***
0930 – 0945	*Break*
0945 – 1100	***Techniques for Maintaining & Testing Transformer Oil & Fluids***
1100 - 1230	***Transformer Repair & Upgrade Requirements***
1230 – 1245	*Break*
1245 - 1330	***Common Transformer Repairs & Upgrades***
1330 - 1420	***Techniques for Performing Transformer Repairs & Upgrades***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 – 0930	***Transformer Efficiency & Energy-Saving Techniques***
0930 – 0945	*Break*
0945 – 1030	***Techniques for Optimizing Transformer Efficiency & Energy Savings***
1030 – 1130	***Transformer Standards & Regulations***
1130 - 1230	***Transformer Regulatory Requirements & Compliance***
1230 – 1245	*Break*
1245 – 1345	***Techniques for Ensuring Transformer Compliance with Applicable Standards & Regulations***
1345 – 1400	***Course Conclusion***
1400 – 1415	***POST-TEST***
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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