COURSE OVERVIEW EE0736(KM1)
Power Circuit Analysis and Software

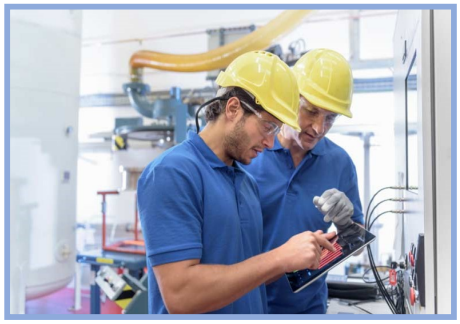
Course Title
Power Circuit Analysis and Software

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
EE0736(KM1)

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 will provide a comprehensive review of the fundamental principles relating to electrical load flow analysis for those involved in a modern electric power system industry. Directed primarily toward the needs of engineers who have not been exposed to a recent treatment of power-system modeling and who wish to gain a detailed understanding of optimum load flow analysis techniques. Emphasis will be placed upon intensive teaching of relevant theory, presentation of practical examples and problem solving using both hand calculations and software packages.

Attendees must be familiar with basic engineering concepts but an extensive knowledge of electrical power systems is not a prerequisite. Appropriate examples will be presented and example problems will be solved. Demonstrations of relevant analysis software will be illustrated and participants will gain a deep understanding of short circuit protection mechanisms.

The principles of power-flow, fault analysis and transient stability of an electrical power network will be presented in a concise and practical manner. The possible damaging effect of these short circuit currents can result in the associated electrical network being out of operation for an extended period of time with the consequent disruption to electricity supply to customers. The magnitude of short circuit current that can flow in an electrical network can be limited in various ways as will be discussed in this training course.

The course will present comprehensive and systematic descriptions of the concepts and principles of application and operation of protection schemes applied for various power system elements and reinforce the concepts of short circuit protect and coordination by presenting practical case studies relating to actual fault occurrences on an electrical system.

A detailed understanding of short circuit protection, device specification, operation, testing and maintenance is essential for all electrical engineers and technicians.

Course Objectives

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

- Apply and gain an in-depth knowledge on load flow analysis and short circuit calculations
- Discuss modern power flow analysis & network operations and explain the protection devices and relays coordination
- Recognize the electrical networks failure modes and analysis
- Explain the electrical networks design studies and discuss the bus voltages, current and power factors
- Analyze power losses control and recognize the voltage drop study & voltage regulation
- Develop electrical networks planning for optimum operation and control and employ load flow study based on system changes
- Integrate with SCADA to make operating decisions and carryout load flow use for management, demand control, switching, load shedding & restoration
- Employ switching optimization of power networks and reconfiguration

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 wide understanding and deeper appreciation of load flow analysis and short circuit calculations for electrical engineers who specialized in power system design and protection with experience in electrical power system analysis.

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: -

- 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 & 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, **Flowmetering & 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.

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.

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 – 0930	***Modern Power Flow Analysis & Network Applications***
0930 – 0945	*Break*
0945 – 1100	***Modern Power Flow Analysis & Network Applications (cont'd)***
1100 – 1230	***Short Circuit Fundamentals Calculation and Protection***
1230 – 1245	*Break*
1245 - 1420	***Short Circuit Fundamentals Calculation and Protection (cont'd)***
1420 - 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0900	***Protection Devices and Relays Coordination***
0900 – 0915	*Break*
0915 – 1100	***Protection Devices and Relays Coordination (cont'd)***
1100 – 1230	***Electrical Networks Failure Modes and Analysis***
1230 – 1245	*Break*
1245 – 1420	***Electrical Networks Design Studies***
1420 - 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0930	***Bus Voltages, Currents & Power Factors***
0930 - 0945	*Break*
0945 – 1100	***Bus Voltages, Currents & Power Factors (cont'd)***
1100 – 1215	***Power Losses Control***
1215 – 1230	*Break*
1230 - 1420	***Power Losses Control (cont'd)***
1420 - 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

0730 – 0930	***Voltage Drop Study & Voltage Regulation***
0930 - 0945	*Break*
0945 – 1100	***Voltage Drop Study & Voltage Regulation (cont'd)***
1100 – 1215	***Electrical Networks Planning for Optimum Operation and Control***
1215 – 1230	*Break*
1230 - 1420	***Electrical Networks Planning for Optimum Operation and Control (cont'd)***
1420 - 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 – 0930	***Load Flow Study Based on System Changes***
0930 - 0945	*Break*
0945 – 1100	***Integration with SCADA to Make Operating Decisions***
1100 – 1215	***Load Flow Use for Management, Demand Control, Switching, Load Shedding & Restoration***
1215 – 1230	*Break*
1230 - 1345	***Switching Optimization of Power Networks and Reconfiguration***
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

Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org