COURSE OVERVIEW EE0457
Electrical Load Estimation

Course Title
Electrical Load Estimation

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
EE0457

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 in the class 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 Electrical Load Estimation. It covers the concept and types of electrical load and its impact on power systems; the load calculation and basic principle; the plant load factor, capacity factor and techniques to estimate load demand at the generation level; the diversity and coincidence factors and their effects on load calculation; the daily, monthly and yearly load curves and how to use load calculations for efficient power generation planning; the different load profiles in power distribution; the short-term, medium-term and long-term load forecasting techniques; using load calculations in implementing demand-side management strategies; and achieving load balancing in power distribution networks.

During this interactive course, participants will learn the role of load calculation in ensuring power reliability and quality; how smart grids change load calculation approaches; the artificial intellligence (AI) techniques used in load forecasting; the load flow and the load flow studies and their importance in power system design and operation; the popular software tools used in load calculation; troubleshooting and solving common issues in load calculation; the renewable energy sources and its impact on load calculations; the load management in microgrids and distributed generation scenarios; the electric vehicles and load management; and the effect of electric vehicle charging on power loads.

Course Objectives

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

- Apply and gain an in-depth knowledge on electrical load estimation
- Explain the concept and types of electrical load and its impact on power systems
- Carryout load calculation and discuss its importance and basic principle
- Identify plant load factor and capacity factor and apply techniques to estimate load demand at the generation level
- Recognize the diversity and coincidence factors and their effects on load calculation
- Plot and interpret daily, monthly and yearly load curves and use load calculations for efficient power generation planning
- Describe the different load profiles in power distribution and apply short-term, medium-term and long-term load forecasting techniques
- Use load calculations in implementing demand-side management strategies and achieve load balancing in power distribution networks
- Recognize the role of load calculation in ensuring power reliability and quality and how smart grids change load calculation approaches
- Apply artificial intellligence (AI) techniques used in load forecasting and analyze load flow and load flow studies and their importance in power system design and operation
- Identify the popular software tools used in load calculation as well as troubleshoot and solve common issues in load calculation
- Recognize the renewable energy sources and its impact on load calculations
- Apply load management in microgrids and distributed generation scenarios
- Employ electric vehicles and load management and discuss the effect of electric vehicle charging on power loads

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 electrical load estimation for electrical engineers, electrical designers, electrical contractors, facility managers, building inspectors and engineering students.

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 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. Amar Namoune, PE, BSc, is a **Senior Electrical Engineer** with over **20 years** of extensive experience within **Oil**, **Gas**, **Petrochemical** and **Power** industries. His expertise widely covers **Transformer Maintenance & Testing**, **Electrical Substation & Design**, **Power Quality** Studies & Load Criteria, LV/MV Electrical Safety (**11 KV, 415 & 220 Voltage**), **Substation Earthing System**, Emergency **Diesel Generator**, **Electrical Safety**, **Power System Equipment**, **Electrical Drawing**, **Electrical Forecasting**, **Transmission Networks**, **Substation**, **Cable & Over Head Line**, **Distribution Networks**, **Substation Automation Systems & Application**, **Electrical Control & Monitoring System**, **Protection & Control of Electric Power System**, **Power System Control**, Communication for **Power System Automation**, **Communication Technologies**, **Substation Architectures**, **Specification & Engineering**, **System Maintenance** of **Substation Automation & Control Systems**, **Power System Information Integration & Automation**, **Power System Standardization**, System Configuration Language (**SCL**), Electrical Distribution System & Single Line Diagram (**SLD**), IEC 61850-6 Engineering Process, **Power Generation**, Generators, Emergency Diesel Generators (**EDG**), **Electrical Power** Systems, Electric Submersible Pumps (**ESP**), **High Voltage Electrical Safety**, **HV Overhead Power Line** Construction & Patrolling, **Power Transmission & Distribution**, **Electrical Distribution** Systems, **Electrical Power Systems** Quality & Troubleshooting, **Protection & Relay**, **Electric & Control** System Commissioning, Practical Troubleshooting & Repair of **Electronic Circuits**, Fault Analysis in **Electrical Networks & Distribution Cables**, **Variable Frequency Drives** (VFD), **Motor Operation and Maintenance**, **Electric Motor** Protection, Testing & Maintenance, **Motors & Variable Speed Drives**, **UPS System & Battery Charger**, **Circuit Breakers & Switchgears**, **HV/LV** Switching and Isolation, HV/MV **Cable** Splicing, Jointing & Termination, Uninterruptible Power Supply (**UPS**), Supervisory Control and Data Acquisition (**SCADA**) Systems, **Introduction to SCADA**, **Distributed Control System and SCADA** Systems, **ABB SCADA**, **Advanced PLC & SCADA** Systems, AC/DC & Batteries, **GIS Substation** Maintenance, **Generator** Maintenance & Troubleshooting, **Diesel Generator** Troubleshooting, **Substation** Automation Systems & Application (IEC 61850), **Transformers** Troubleshooting & Maintenance, **Earthing**, **Bonding**, **Lightning & Surge** Protection, **Process Control & Automation**, **Compressor** Control & Protection, Practical **Industrial Data Communications & Telecommunications**, **Safety Instrumented Functions**, Explosion Protection Type of Electrical Equipment & Systems, Electricity & Wiring Fundamentals, **Fire & Gas** Detection System, **Hazardous Area Classification & Intrinsic Safety** (IEC 60079, ATEX 95/137 & API RP 500/505), **Electrical Drawings & Schematic Layouts**, HSEIA, COMAH, HAZOP, HAZID, MAXIMO, Ex Equipment, Selection, Inspection & Maintenance and Installation, Testing and Commissioning of Electrical Equipment. Currently, Mr. Amar is the **Senior Electrical Instructor & Assessor** wherein he is responsible in providing guidance and training gap analysis on safe electrical and substation automation system maintenance, methodology, installation, testing, certification and operation of electrical and substation automation equipment, plant and systems.

Mr. Amar gained his expertise and thorough practical experience through several positions as an **Electrical Instructor & Assessor**, **Electrical Instructor & Assessor**, **Technical Department Associate Manager**, **Maintenance Section Head** for various companies such as the PETROFAC & PDO, Oman, ADNOC Gas Processing, IFFCO Group and BENAMOR Mills wherein, he assists in the development of **safety systems experts** to ensure strict compliance with **OSHA regulations** and specifications, codes and standards (IEC & IEEE, NFPA 70E, Shell DEP); oversees the **development** and **implementation** of **operations/process improvement** to include planning, staging and execution; spearheads the organization to a strict compliance with the **Health and Safety processes & standards** and leads in the **development** and **implementation** of an **active safety culture**, integrating a daily behaviour-based process throughout the organization.

Mr. Amar has a **Bachelor's** degree in **Electrical Engineering**. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**) and an **IOSH** Managing Safely Certified and delivered numerous trainings, courses, seminars 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.

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	***Understanding Load in Power Systems:*** *Explanation of the Concept of Electrical Load, Types & its Impact on Power Systems*
0930 – 0945	*Break*
0945 – 1100	***Basics of Load Calculation:*** *Introduction to Load Calculation, its Importance & Basic Principles*
1100 – 1230	***Plant Load Factor & Capacity Factor:*** *Definition, Calculation & Importance*
1230 – 1245	*Break*
1245 – 1420	***Estimating Load Demand:*** *Techniques to Estimate Load Demand at the Generation Level*
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 - 0830	***Diversity & Coincidence Factors:*** *Understanding these Factors & their Effect on Load Calculation*
0830 – 0930	***Load Curve Analysis:*** *How to Plot & Interpret Daily, Monthly & Yearly Load Curves*
0930 – 0945	*Break*
0945 – 1100	***Power Generation Planning:*** *How to Use Load Calculations for Efficient Power Generation Planning*
1100 – 1230	***Case Study:*** *A Practical Example of Load Calculation in Power Generation*
1230 – 1245	*Break*
1245 – 1420	***Load Profiling in Distribution Systems:*** *Understanding Different Load Profiles in Power Distribution*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 - 0830	***Load Forecasting Techniques:*** *Overview of Short-Term, Medium-Term & Long-Term Load Forecasting Techniques*
0830 – 0930	***Demand Side Management:*** *Using Load Calculations in Implementing Demand-Side Management Strategies*
0930 – 0945	*Break*
0945 – 1100	***Load Balancing:*** *How to Achieve Load Balancing in Power Distribution Networks*
1100 – 1230	***Reliability & Quality of Service:*** *The Role of Load Calculation in Ensuring Power Reliability & Quality*
1230 – 1245	*Break*
1245 – 1420	***Case Study:*** *A Practical Example of Load Calculation in Power Distribution*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

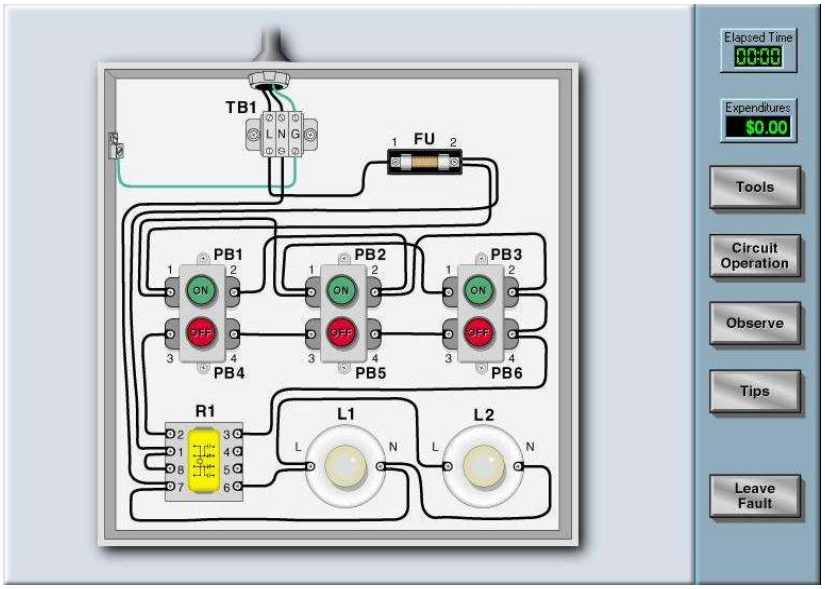
0730 - 0830	***Smart Grids & Load Calculation:*** *Understanding How Smart Grids Change Load Calculation Approaches*
0830 – 0930	***Artificial Intelligence in Load Forecasting:*** *Introduction to AI Techniques Used in Load Forecasting*
0930 – 0945	*Break*
0945 – 1100	***Load Flow Analysis:*** *Understanding Load Flow Studies & their Importance in Power System Design & Operation*
1100 – 1230	***Software Tools for Load Calculation:*** *Introduction to Popular Software Tools Used in Load Calculation*
1230 – 1245	*Break*
1245 – 1420	***Hands-on Activity:*** *Simulated Activity Using Software Tools for Load Calculation*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

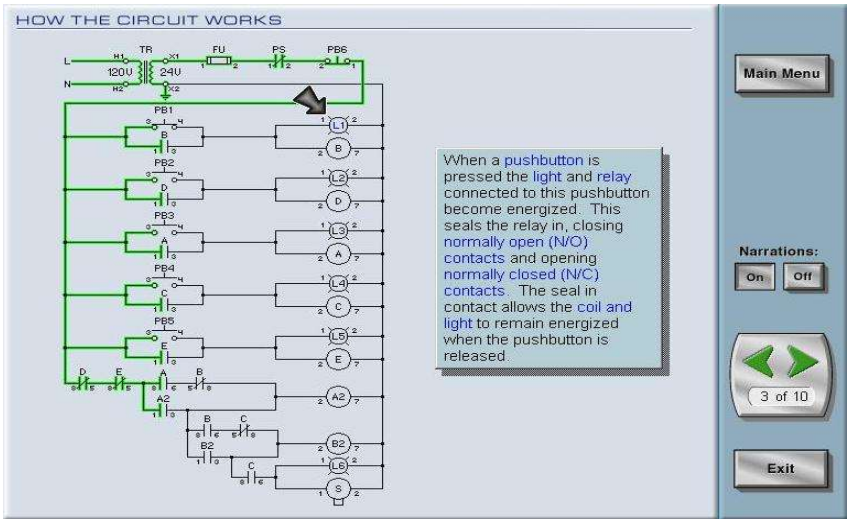
0730 - 0930	***Troubleshooting:*** *How to Solve Common Issues in Load Calculation*
0930 – 0945	*Break*
0945 – 1100	***Renewable Energy Sources & Load Calculation:*** *Impact of Renewable Energy Sources on Load Calculations*
1100 - 1230	***Electric Vehicles & Load Management:*** *Discussing the Effect of Electric Vehicle Charging on Power Loads*
1230 - 1245	*Break*
1245 - 1345	***Microgrids & Distributed Generation:*** *Load Management in Microgrids & Distributed Generation Scenarios*
1345 – 1400	***Course Conclusion***
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Simulator (Hands-on 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 simulators "Troubleshooting Electrical Circuits V4.1", Power World" and "ETAP software".

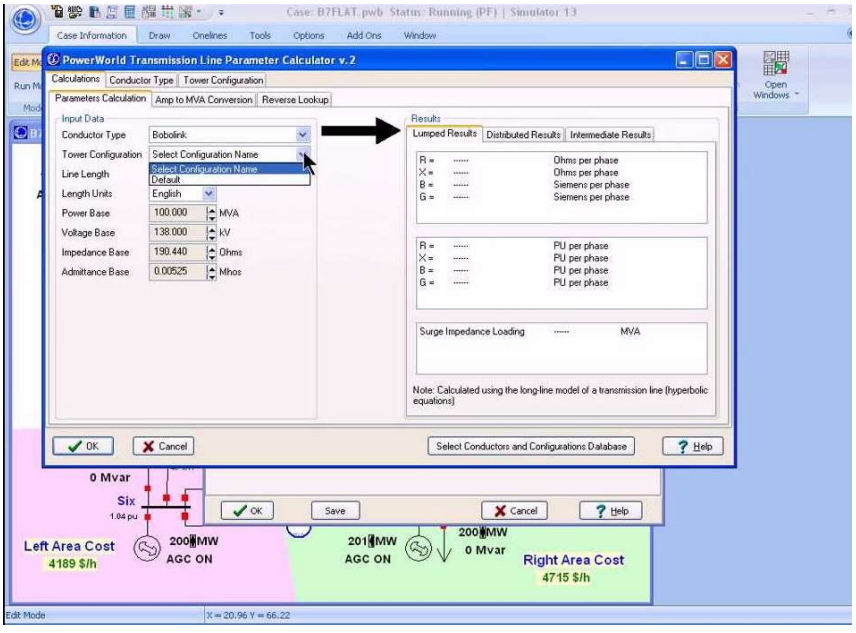


Basic Techniques

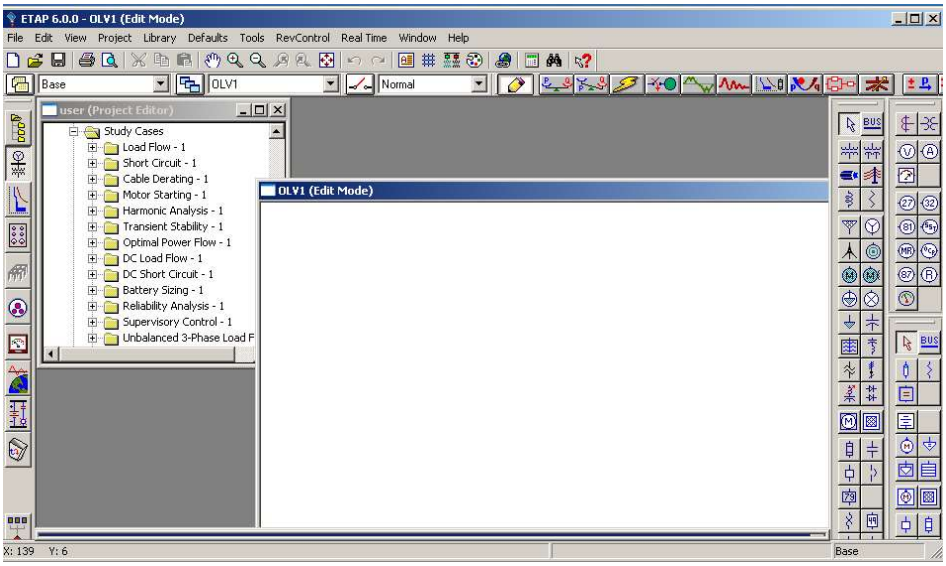


Basic Control Circuits

Motor Control Techniques



Power World Simulator



ETAP Software Simulator

Course Coordinator

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