COURSE OVERVIEW EE0834
ETAP Basic

Course Title
ETAP Basic

Course Date/Venue
Session 1: June 22-26, 2025/Tamra Meeting Room, Al Bandar Rotana Creek, Dubai UAE
Session 2: November 30-December 04, 2025/Crowne Meeting Room, Crowne Plaza Al Khobar, KSA

Course Reference
EE0834

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

Course Description

This hands-on, highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.

The purpose of this course is to develop a thorough understanding of ETAP's capabilities and analytical techniques to solve a variety of power system practical problems. This hands-on course provides the skills, knowledge, and techniques necessary to become proficient in ETAP to conduct power system studies, from modeling to analysis.

Along with the essentials of ETAP user interface capabilities, this course will cover power system component modeling (electrical sources, branches, loads, protective d evices, etc.), one-line diagram, libraries (data and interface), 3-dimensional database (presentation, configuration, and engineering Data revisioning), report manager, etc.

The fundamental power system studies (load flow and short circuit) will be covered including input data requirements, study methods, and result analysis. The cable sizing feature of ETAP will be explained considering a variety of standards, installation type, and ambient conditions. In addition, this course comprises other essential system studies such as power system protection and relay coordination using time-current curves, and arc flash analysis based on NFPA and IEEE standards.

As part of this course, other topics including dynamic and static motor starting based on motor characteristics and load behavior will be explained. Harmonic modeling and filter sizing will also be covered. The study approach for designing the ground grid system based on standard and user-defined configurations will be provided. The rest of this course will go over underground raceway systems including conduit and duct bank modeling, temperature analysis and cable ampacity calculation.

Course Objectives

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

- Apply and gain an in-depth knowledge on ETAP (electrical design software) and independently work on ETAP software
- Discuss ETAP and its various modules including the information of various capabilities, toolbars and data base library
- Review engineering design, technical specifications, system studies and short circuit levels
- Select HV/LV switchboards for substations and motor control centers
- Prepare systematic structure project for any study, single line diagram and grid system
- Illustrate grid system design with multiple substations as well as determine the capability and importance of various IEC and ANSI
- Identify the data required for each equipment, importance of each data, data selection and entry in prepared single line diagram as well as the importance of load flow study in power system and various types of load flow methods
- Conduct power system studies for load flow, circuit levels and relay coordination studies
- Analyze load flow, optimize the size of equipments and interpret the effect of switching on and off of breakers in load flow
- Insert new data base for equipments which are not available in library, discuss short circuit study and enumerate the various types of short circuit and its importance in power system
- Carryout system study for reduction of short circuit study, selection of various equipments based on short circuit study result, protection device selection and coordination in power system as well as selection of various types of protection of protection curves depending upon the requirement and grading between protection devices
- Illustrate the sequence of operation and selectivity of protection zone for specified fault in system including the various curves based on protection devices and insertion of new curve in library

- Recognize the effect of motor load study in power system as well as describe motor dynamic and static acceleration study, motor starting with various types of loads, cable selection criteria, ampacity and sizing for various loads and transient stability study

- Employ transformer sizing by changing loads and identify basic requirement of harmonic load flow, filter design and sizing

- Determine practical problem faced in various types of system design by ETAP as well as the various difficulties in power system and its solution through ETAP

Who Should Attend

This course provides an overview of all significant aspects and considerations of ETAP for electrical engineers, planners, supervisors and other technical staff interested in ETAP.

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**.*

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 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 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:

Dr. Ahmed El-Sayed, PhD, MSc, BSc, is a **Senior Electrical & Instrumentation Engineer** with over **30 years** of extensive experience in the **Oil**, **Gas**, **Power**, **Petroleum**, **Petrochemical** and **Utilities**. He specializes in **P&ID** Reading & Interpretation, **Engineering Drawings**, **Electrical Drawing & Schematics, Electrical Drawing & Wiring,** Developing & Revising **Engineering Drawing**, **Piping & Instrument Drawing** Reading, **Electrical & Instrument Drawings**, **Relay** Design & Maintenance, **Relay** Programming, **Relay** Construction & Functions, **Protective Relaying**, **Relay** Coordination, **Siemens Protection Relays**, **Power System Protection Relays & Hardware**, **Electrical Power System Protection Relays**, **Electrical Faults & Relay** Protection, **ABB Relay** REG 216, **Fault Calculation Relay**, Modern **Power System Protective Relaying**, **Power System Study on ETAP**, **ETAP-Power System Analysis**, **Flow Measurement** Foundation, **Hydrocarbon** Measurement & Sampling, **Gas Dosiers** Preparation, **Gas/Liquid Fuel** Measurement, **Instrumentation Measurement & Control System**, **Flow** Measurement, **Pressure** Measurement, **Level & Temperature** Measurement, **Measurement Devices & Control System**, **Instrumentation & Control** Systems, **Control System** Orientation, Uninterruptible Power Supply (**UPS**) **Battery Charger**, **Industrial UPS Systems Construction & Operation**, **Test Lead-Acid & Ni-cad Battery Systems**, **Hazards & Safe Work Practice**s, **Transformer** Operational Principles, Selection & Troubleshooting; **HV & LV Transformers**, **Control Valves & Actuators**, **Electrical Safety**, **Protection Relay Application**, **Maintenance & Testing**, **NEC** (National Electrical Code), **NESC** (National Electrical Safety Code), **Electrical Safety**, **Electrical Hazards Assessment**, **Electrical Equipment**, **Personal Protective Equipment**, Lock-Out & Tag-Out (**LOTO**), Confined Workspaces, Alerting Techniques, Electrical Transient Analysis Program (**ETAP**), Power **Quality**, Power **Network**, Power **Distribution**, **Distribution Systems**, **Power Systems Control**, **Power Systems Security**, Power **Electronics**, Electrical **Substations**, **UPS** & **Battery System**, **Earthing & Grounding**, Power **Generation**, **Protective Systems**, **Electrical Generators**, **Power** & **Distribution Transformers**, **Electrical Motors**, **Switchgears**, **Transformers**, **AC** & **DC Drives**, **Variable Speed Drives** & **Generators**, **Generator Protection**, **GE Gas Turbines**, PLC, SCADA, DCS, Process Control, Control Systems & Data Communications, Instrumentation, Automation, Valve Tuning, SIS, SIL, ESD, Alarm Management Systems, Engine Management System, Bearing & Rotating Machine, Fieldbus Systems and Fiber Optics Technology. He is currently the **Systems Control Manager** of **Siemens** where he is in-charge of Security & Control of Power **Transmission Distribution** & **High Voltage** Systems and he further takes part in the Load Records Evaluation & Transmission Services Pricing.

During his career life, Dr. Ahmed has been actively involved in different Power System Activities including Roles in Power System Planning, Analysis, Engineering, **HV Substation** Design, Electrical Service Pricing, Evaluations & Tariffs, Project Management, Teaching and Consulting. His vast industrial experience was honed greatly when he joined many International and National Companies such as **Siemens**, **Electricity Authority** and **ACETO** industries as the **Instrumentation & Electrical Service Project Manager**, **Instrumentation & Control Engineer**, **Energy Management Engineer**, **Department Head**, **Assistant Professor**, **Instrumentation & Control Instructor**, **Project Coordinator**, **Project Assistant and Managing Board Member** where he focused more on dealing with Technology Transfer, System Integration Process and Improving Localization. He was further greatly involved in manufacturing some of **Power System** and **Control & Instrumentation Components** such as Series of Digital Protection **Relays**, MV **VFD**, **PLC** and **SCADA** System with intelligent features.

Dr. Ahmed is well-versed in different electrical and instrumentation fields like **ETAP**, Load Management Concepts, **PLC** Programming, Installation, Operation and Troubleshooting, **AC Drives** Theory, Application and Troubleshooting, Industrial Power Systems Analysis, AC & DC **Motors**, Electric Motor **Protection**, **DCS SCADA**, **Control** and Maintenance Techniques, Industrial Intelligent Control System, **Power Quality** Standards, Power Generators and Voltage Regulators, Circuit Breaker and Switchgear Application and Testing Techniques, **Transformer** and **Switchgear** Application, Grounding for Industrial and Commercial Assets, Power Quality and **Harmonics**, **Protective Relays** (O/C Protection, Line Differential, Bus Bar Protection and **Breaker Failure Relay**) and Project Management Basics (PMB).

Dr. Ahmed has **PhD**, **Master's** & **Bachelor's** degree in **Electrical Engineering** from the **University of Wisconsin Madison**, **USA** and **Ain Shams University**, respectively. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/ Assessor/Trainer** by the **Institute of Leadership and Management** (**ILM**), an active member of IEEE and ISA as well as numerous technical and scientific papers published internationally in the areas of Power Quality, Superconductive Magnetic Energy Storage, SMES role in Power Systems, Power System **Blackout** Analysis, and Intelligent Load Shedding Techniques for preventing Power System Blackouts, HV **Substation Automation** and Power System Stability. He has further delivered numerous trainings, seminars, courses, workshops and conferences internationally.

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 – 0830	***Introduction to ETAP & its Various Modules***
0830 - 0930	***Information of Various Capabilities & Toolbars***
0930 – 0945	*Break*
0945 – 1030	***Various Data Base Library***
1030 – 1115	***Preparation of Systematic Structure Project for Any Study***
1115 – 1200	***Preparation of Single Line Diagram & Grid System***
1200 – 1215	*Break*
1215 – 1300	***Grid System Design with Multiple Substations***
1300 – 1420	***Various IEC / ANSI Capability & Importance of Each***
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0815	***Data Required for Each Equipment and Importance of Each Data W.R.T Type of Study in Project***
0815 - 0930	***Data Selection & Entry in Prepared Single Line Diagram***
0930 – 0945	*Break*
0945 – 1030	***Importance of Load Flow Study in Power System & Various Types of Load Flow Methods***
1030 – 1115	***Load Flow Analysis by Various Types of Load & Optimizing the Size of Equipments*** *Transformers ● Cables ● Change Distribution of Loads*
1115 – 1200	***Effect of Switching On & Off of Breakers in Load Flow***
1200 – 1215	*Break*
1215 – 1300	***Insertion of New Data Base for Equipments Which are Not Available in Library***
1300 – 1420	***Short Circuit Study ANSI / IEC***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0815	***Types of Short Circuit & its Importance in Power System***
0815 - 0930	***Quality Analysis of Electric Power Systems***
0930 – 0945	*Break*
0945 – 1030	***System Study for Reduction of Short Circuit Study***
1030 – 1115	***Selection of Various Equipments Based on Short Circuit Study Result***
1115 – 1200	***Protection Device Selection***
1200 – 1215	*Break*

1215 – 1300	***Protection Device Coordination in Power System***
1300 – 1420	***Selection of Various Types of Protection Curves Depending Upon Requirement & Grading Between Protection Devices***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

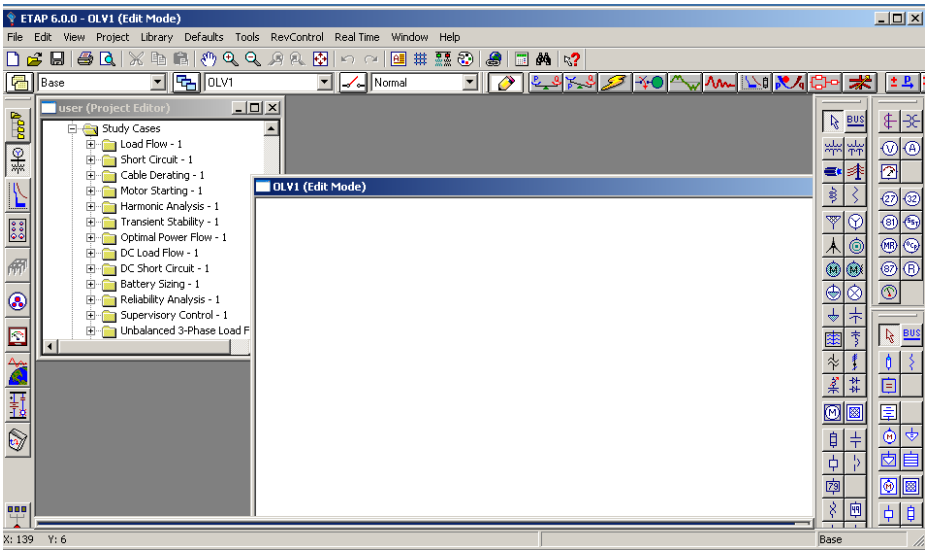
0730 – 0815	***Sequence of Operation & Selectivity of Protection Zone for Specified Fault in System***
0815 - 0930	***Various Curves Based on Protection Devices***
0930 – 0945	*Break*
0945 – 1030	***Insertion of New Curve in Library*** *Relays ● Fuse*
1030 – 1115	***Effect of Motor Load Study in Power System***
1115 – 1200	***Motor Dynamic & Static Acceleration Study***
1200 – 1215	*Break*
1215 – 1300	***Motor Starting with Various Types of Loads*** *Pumps ● Blowers ● Fans*
1300 – 1420	***Cable Selection Criteria***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 – 0800	***Cable Ampacity & Sizing for Various Loads***
0800 - 0830	***Transient Stability Study***
0830 – 0930	***Transformer Sizing by Changing Loads***
0930 – 0945	*Break*
0945 – 1030	***Basics & Requirement of Harmonic Load Flow, Filter Design & Sizing***
1030 – 1115	***Power Factor, Harmonics & Energy Conservation Improvement***
1115 – 1200	***Practical Problem Faced in Various Types of System Design By ETAP***
1200 – 1215	*Break*
1215 – 1300	***Pre-Prepared Examples of Each Learned Modules in First Four Days***
1300 – 1345	***Various Difficulties in Power System & its Solution through ETAP for Practical Problems***
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 simulator "ETAP Simulator".



ETAP SIMULATOR

Course Coordinator

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