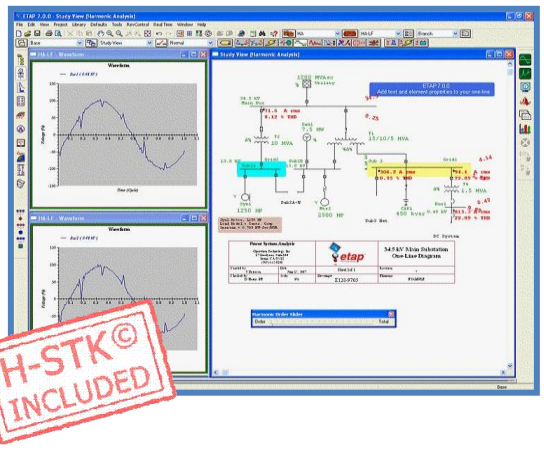
COURSE OVERVIEW EE0835
ETAP

Course Title
ETAP

Course Date/Venue
July 20-24, 2025/Crowne Meeting Room, Crowne Plaza Al Khobar, an IHG Hotel, Al Khobar, KSA

Course Reference
EE0835

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 Electrical Transient Analysis Programme (ETAP) and provides the full capabilities of the application to solve more complex power system problems. It covers a variety of power system solutions for generation plants, transmission, and industrial facilities. It considers the balanced/unbalanced power flow concept along with open phase faults in such networks, details of stability phenomena & dynamics in power systems, and arc flash hazards assessment & mitigation techniques utilizing auto evaluation of device coordination tools.

The course will also discuss the star systems, underground raceway systems (UGS), ground grid systems; panel systems, cable pulling systems and real-time systems (PSMS); the database, project management and configuration status; the one-line diagram GUI and AC elements; the instrumentation elements, AC-DC elements and DC elements; the protective devices and short-circuit; the star device coordination analysis, arch flash and load flow; and the transformer MVA sizing and dynamic models.

Course Objectives

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

- Apply and gain an in-depth knowledge on Electrical Transient Analysis Programme (ETAP)
- Discuss star systems, underground raceway systems (UGS), ground grid systems, panel systems, cable pulling systems and real-time systems (PSMS)
- Explain database and project management as well as configuration status
- Illustrate one-line diagram GUI and AC Elements
- Review instrumentation elements, ac-dc elements and dc elements
- Describe protective devices and short-circuit
- Define star device coordination analysis and identify arch flash and load flow
- Analyze transformer MVA sizing and dynamic models

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 electrical transient analysis for engineers, planners, supervisors and other technical staff interested in ETAP application.

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 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

Haward's 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**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). 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:

Dr. Ahmed El-Sayed, PhD, MSc, BSc, is a **Senior Electrical & Instrumentation Engineer** with over **30 years** of extensive experience in the **Power**, **Petroleum**, **Petrochemical** and **Utilities**. He specializes in **HV/LV Equipment**, **High Voltage Electrical Safety**, **LV & HV Electrical System**, **HV Equipments Inspection & Maintenance**, **HV Switchgear Operation & Maintenance**, **LV Distribution Switchgear & Equipment**, **HV Switchgear Maintenance**, **HV/LV Electrical** Authorisation, **Hazardous Area Classification, Power Quality**, **Disturbance Analysis**, **Blackout**, **Power Network**, **Power Distribution**, **Power Systems Control**, **Power Systems Security**, Power **Electronics**, **ETAP**, Electrical **Substations**, Tariff Design & Structure Analysis, **Engineering Drawings, Codes & Standards**, **P&ID Reading, Interpretation & Developing**, **PLC**, **SCADA**, **DCS**, **Process Control**, **Instrumentation**, **Automation**, Power **Generation**, **Process Control Instrumentation**, **SIS**, **SIL**, **ESD**, **Alarm Management Systems**, **Fieldbus Systems** and **Fiber Optics** as well as the service pricing of these. 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 and also in 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 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 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** & **Bachelor** degrees in **Electrical** and **Instrumentation Engineering** from the **University of Wisconsin Madison**, **USA**. Further, he has numerous 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.

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: ***Sunday, 20th of July 2025***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0900	***ETAP Description & Overview***
0900 – 0915	***Star Systems***
0915 – 0930	***Underground Raceway Systems (UGS)***
0930 – 0945	***Ground Grid Systems***
0945 – 1000	*Break*
1000 – 1030	***Panel Systems***
1030 – 1100	***Cable Pulling Systems***
1100 – 1130	***Real-Time Systems (PSMS)***
1130 – 1200	***Advisory & Supervisory Control***
1200 – 1215	*Break*
1215 – 1315	***Database & Project Management***
1315 – 1330	***Configuration Status***
1330 – 1400	***One-Line Diagram GUI*** *Edit A One-Line Diagram ● Display Options ● Default Display Options ● Annotation Font ● Result Annotation*
1400 – 1420	***AC Elements*** *Bus ● Transformer ● Cable ● Transmission Line ● Impedance ● Power Grid ● Generator ● Induction Machine ● Synchronous Motor ● Capacitor ● Power Panel ● Harmonic Filter ● Fuse ● Contactor ● High Voltage Circuit Breaker ● Low Voltage Circuit Breaker ● Ground Grid*
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2: ***Monday, 21st of July 2025***

0730 – 0900	***Instrumentation Elements*** *Current Transformer ● Potential Transformer ● Voltmeter*
0900 – 0915	*Break*
0915 – 1100	***Instrumentation Elements (cont'd)*** *Ammeter ● Protective Relay ● MV Solid State Trip Relay*
1100 – 1230	***AC-DC Elements*** *UPS (Uninterruptible Power Supply) ● VFD (Variable Frequency Drive)*
1230 – 1245	*Break*
1245 – 1420	***DC Elements*** *DC Bus ● DC Cable ● DC Impedance ● DC Motor*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3:	Tuesday, 22nd of July 2025
0730 – 0930	***Protective Devices*** *Coordination & Selectivity ● AC & DC Coordination ● Graphically Adjustable Device Settings ● Extensive Device Library (Verified & Validated) ● Embedded Short Circuit Analysis ● Embedded Motor Acceleration Analysis ● Integrated with One-Line Diagram*
0930 - 0945	*Break*
0945 – 1100	***Protective Devices (cont'd)*** *Multi-Axis Time Current Curves ● Comprehensive Plot Options ● Adjustable Magnifying-Glass Zoom View ● Time Difference Calculator ● Multi-Function/Level Relays ● Device Setting Reports*
1100 – 1230	***Short-Circuit*** *ANSI Short-Circuit Toolbar ● IEC Short-Circuit Toolbar ● Study Case Editor*
1230 – 1245	*Break*
1245 – 1420	***Short-Circuit (cont'd)*** *ANSI/IEEE Calculation Methods ● IEC Calculation Methods ● AC-DC Converter Models*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Three*

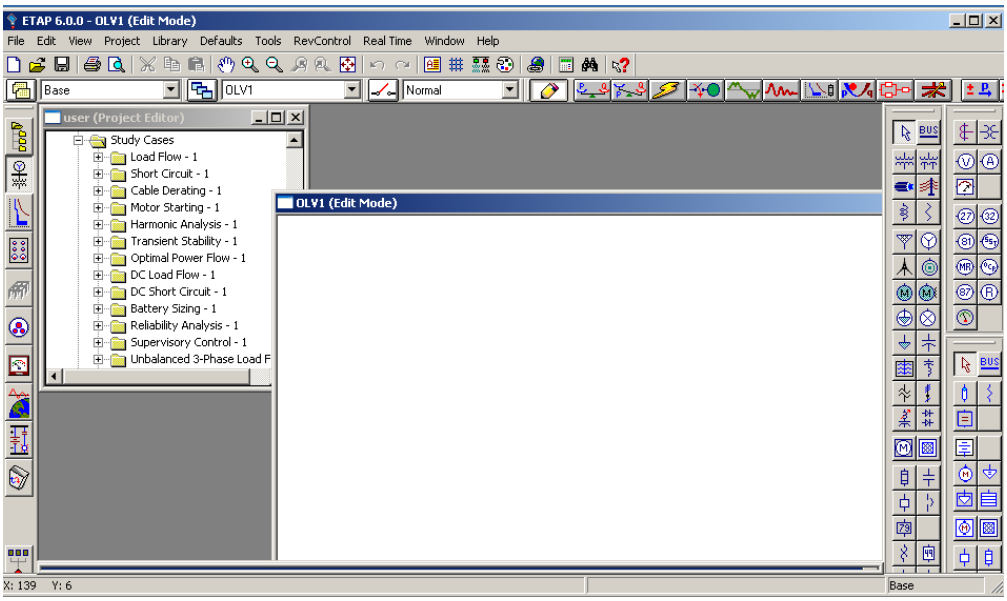
Day 4:	Wednesday, 23rd of July 2025
0730 – 0930	***Star Device Coordination Analysis***
0930 – 0945	*Break*
0945 – 1100	***Arc Flash*** *Short-Circuit Study Case ● Arc Flash Alert ● Running Arc Flash Analysis ● Calculation Methodology ● Arc Flash Reports*
1100 – 1230	***Load Flow*** *Calculation Methods ● Panel System Load Flow Calculation ● Load Flow Result Analyzer*
1230 – 1245	*Break*
1245 – 1420	***Transient Stability*** *Calculation Methods ● Output Reports ● One-Line Diagram Displayed Results*
1420 - 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5:	Thursday, 24th of July 2025
0730 – 0930	***Transformer MVA Sizing*** *Winding Transformer MVA Sizing*
0930 – 0945	*Break*
0945 – 1100	***Transformer MVA Sizing (cont'd)*** *Calculation Method*
1100 – 1230	***Dynamic Models*** *Induction Machine ● Synchronous Machine ● Power Grid ● Excitation System*

1215 – 1230	*Break*
1230 – 1345	***Dynamic Models (cont'd)*** *Governor-Turbine ● Power System Stabilizer (PSS) ● Mechanical Load ● Static Var Compensator Models*
1345 – 1400	***Course Conclusion***
1400 – 1415	***POST TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Simulators (Hands-on Practical Sessions)

Practical session 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 the simulator ETAP Software.



ETAP Software Simulator

Course Coordinator

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