



COURSE OVERVIEW EE0608
Generation Technologies

Course Title

Generation Technologies

Course Date/Venue

- Option 1: September 09-13, 2024/AI Dhafra Meeting Room, Royal Rose Hotel, Abu Dhabi, UAE
- Option 2: December 09-13, 2024/AI Dhafra Meeting Room, Royal Rose Hotel, Abu Dhabi, UAE



Course Reference

EE0608



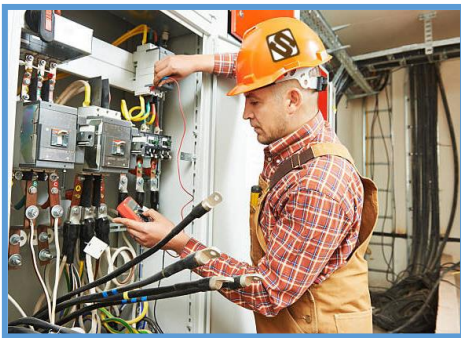
Course Duration/Credits

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 Generation Technologies. It covers the power generation, fossil fuel power plants and nuclear power plants; the renewable energy sources, hydropower plants, combined cycle power plants, gas turbines and steam turbines; the efficiency and operational principles of power generation; the types of boilers, heat transfers and types of turbines comprising of steam, gas and wind; the generator operation and efficiency; and the basic control system components.



During this interactive course, participants will learn the SCADA and DCS; the types of cooling systems and the importance of cooling in power plants; the electrical systems and equipment, transformers and switchgears; the protection and safety systems and fuel handling and storage; the environmental impact of power generation; the emission control technologies, safety protocols and waste management in power plants; the noise and vibration control in power plants; and the energy efficiency and conservation.





Course Objectives

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

- Apply and gain an in-depth knowledge on generation technologies
- Discuss power generation, fossil fuel power plants and nuclear power plants
- Identify renewable energy sources, hydropower plants, combined cycle power plants, gas turbines and steam turbines
- Explain the efficiency and operational principles of power generation and identify the types of boilers, heat transfers and types of turbines comprising of steam, gas and wind
- Discuss generator operation and efficiency including basic control system components
- Explain SCADA and DCS as well as recognize the types of cooling systems and the importance of cooling in power plants
- Recognize electrical systems and equipment as well as transformers and switchgears
- Evaluate protection and safety systems and apply fuel handling and storage
- Discuss the environmental impact of power generation
- Apply emission control technologies, safety protocols and waste management in power plants
- Carryout noise and vibration control in power plants including energy efficiency and conservation

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, sample video clips of the instructor’s actual lectures & practical sessions during the course conveniently saved in a **Tablet PC**.

Who Should Attend

This course is essential for all technical staff who are working in power generation, utilities, process and other heavy industries. This includes fresh-graduate engineers, under-development engineers and engineers who have limited experience in power generation. Further, this course is suitable for all experienced technical personnel in power generation field who have no engineering degrees or formal training in engineering. Managers and engineers of different disciplines might find this course very useful as an awareness course in power generation.

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. In addition to the Course Manual, participants will receive an e-books “Power Generation Technologies”, published by Newnes




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: -

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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.

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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.

Accommodation

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





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. Mike Tay, PhD, MSc, BSc, is a **Senior Electrical, Instrumentation & Communications Engineer & IT Specialist** with over **35 years** of extensive experience. His expertise widely covers in **Protective Devices** Troubleshooting, **Protective Devices** Testing & Maintenance, **Uninterruptible Power Supply (UPS)** Design, **Industrial UPS Systems & Battery Power Supplies** Maintenance & Troubleshooting, **UPS & Battery System, Battery & Battery Charger & UPS** and **Measurement Devices, UPS System & Battery Chargers** Maintenance & Troubleshooting, **UPS & Battery** Design, Operation, Maintenance & Troubleshooting, **UPS Operation & Alarm Panel** Reading, **Circuit Breaker, HV Switchgear Operation & Maintenance, HV/LV Equipment, High Voltage Electrical Safety, LV & HV Electrical System, HV Equipments Inspection & Maintenance, LV Distribution Switchgear & Equipment, Protection Relay Maintenance, Application & Testing, System Analysis, Power System Faults, Protection Scheme Components, Current & Voltage Transformers, Power System Neutral Grounding, Feeder Overcurrent Protection, Electrical Protection Systems, Bus Protection, Motor Protection, Starting & Control, Transformer Protection, Generator Protection, Capacitor Protection, Numerical Relays, Power System, Power Supply Design Management, Basic Electronics & Transformers, Diesel Generator, Electric Motors, Electrical Fundamentals, Basic Electricity & Electrical Codes SCADA Security, Process Control Instrumentation, Process Instrumentation & Control, Process Control, Instrumentation, Troubleshooting & Problem Solving, Instrumentation Engineering, Process Control (PCI) & Safeguarding, Instrument Calibration & Maintenance, Instrumented Safety Systems, High Integrity Protection Systems (HIPS), Process Controller, Control Loop & Valve Tuning, Compressor Control & Protection, Control Systems, Programmable Logic Controllers (PLC), SCADA System, PLC & SCADA - Automation & Process Control, PLC & SCADA Systems Application, Technical DCS/SCADA, PLC-SIMATIC S7 300/400: Configuration, Programming and Troubleshooting, PLC, Telemetry and SCADA Technologies, Cyber Security of Industrial Control System (PLC, DCS, SCADA & IED), Basics of Instrumentation Control System, DCS, Distributed Control System - Operations & Techniques, Distributed Control System (DCS) Principles, ESD System Analysis & Control, Electrical & Instrumentation, Installation & Inspection, Custody Measurement, Loss Control for Petroleum Products, Process Control & Instrumentation, Process Control & Automation, Protective Devices Testing & Process Control System, Advanced Process Control (APC) Technology, Process Control & Loop Tuning, Fiber Optics Access Network Planning, Safety Instrumented System (SIS), Safety Integrity Level (SIL), PLC Design, IT Service Management, IT Service Management Strategy, Information Technology Architectures, E-Communication & Collaboration Skills, Virtual Communication, Social Networking, Business Intelligence Tools, IT Disaster Recovery & Planning, IT Risk Management Concepts, IT Risk Management Standard Approaches, IT Risk Management Planning, IT Risk Identification and IT Risk Monitoring & Control.**

During his career life, Dr. Tay worked with various companies such as the **KOC Sistem, Meteksan Sistem, Altek BT, Yasar University, Dokuz Eylul University, METU** and occupied significant positions like the **Aegean Region Manager, Group Leader, Technical Services Manager, Field Engineer, Senior Electrical Engineer, Instrumentation Engineer, Research Assistant, Instructor, Technical Advisor** and the **Dr. Instructor**.

Dr. Tay has **PhD, Master** and **Bachelor** degrees in **Electrical & Electronic Engineering** from the **Dokuz Eylul University** and the **Middle East Technical University (METU)** respectively. Further, he is a **Certified Instructor/Trainer, Technical Trainer (Australia), Trainer for Data-Communication System (England & Canada), a Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management (ILM)**, a **Certified CISCO (CCSP, CCDA, CCNP, CCNA, CCNP) Specialist, a Certified CISCO IP Telephony Design Specialist, CISCO Rich Media Communications Specialist, CISCO Security Solutions & Design Specialist** and **Information Systems Security (INFOSEC) Professional**. He has delivered and presented innumerable training courses 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 – 0930	Overview of Power Generation
0930 – 0945	Break
0945 – 1100	Fossil Fuel Power Plants
1100 - 1230	Nuclear Power Plants
1230 – 1245	Break
1245 – 1345	Renewable Energy Sources
1345 - 1420	Hydropower Plants
1420 – 1430	Recap
1430	Lunch & End of Day One

Day 2

0730 – 0830	Combined Cycle Power Plants
0830 - 0930	Gas Turbines & Steam Turbines
0930 – 0945	Break
0945 – 1100	Efficiency & Operational Principles
1100 - 1230	Types of Boilers
1230 – 1245	Break
1245 – 1345	Heat Transfers
1345 - 1420	Types of Turbines (Steam, Gas & Wind)
1420 - 1430	Recap
1430	Lunch & End of Day Two

Day 3

0730 – 0830	Generator Operation & Efficiency
0830 – 0930	Basic Control System Components
0930 - 0945	Break
0945 – 1100	Overview of SCADA & DCS





1100 - 1230	Types of Cooling Systems: Water, Air & Hybrid
1230 - 1245	Break
1245 - 1420	Importance of Cooling in Power Plants
1420 - 1430	Recap
1430	Lunch & End of Day Three

Day 4

0730 - 0830	Electrical Systems & Equipment
0830 - 0930	Transformers & Switchgears
0930 - 0945	Break
0945 - 1100	Protection & Safety Systems
1100 - 1230	Fuel Handling & Storage
1230 - 1245	Break
1245 - 1420	Environmental Impact of Power Generation
1420 - 1430	Recap
1430	Lunch & End of Day Four

Day 5

0730 - 0830	Emission Control Technologies
0830 - 0930	Safety Protocols in Power Plants
0930 - 0945	Break
0945 - 1045	Waste Management in Power Plants
1045 - 1230	Noise & Vibration Control in Power Plants
1230 - 1245	Break
1245 - 1345	Energy Efficiency & Conservation
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:-



Book(s)

As part of the course kit, the following e-book will be given to all participants:

	<p>Title : Power Generation Technologies ISBN : 978-0080983301 Author : Mr. Paul Breeze Publisher : Newnes</p>
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Course Coordinator

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