COURSE OVERVIEW NE0267-3D
Energy Efficiency and Environmental Impact

Course Title
Energy Efficiency and Environmental Impact

Course Date/Venue
Please refer to page 3

Course Reference
NE0267-3D

Course Duration/Credits
Three days/1.8 CEUs/18 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 on Energy Efficiency and Environmental Impact. It covers the importance of energy efficiency, global energy demand and supply trends, energy intensity, benchmarking metrics and sectoral energy use in industries and buildings; the environmental impacts of energy use, energy and climate change nexus and types of energy audits; the key performance indicators (KPIs), regulatory and policy frameworks and electrical system efficiency; the thermal system optimization, HVAC and building energy systems and water and utility management; and the renewable energy integration, environmental monitoring and compliance and environmental management systems (EMS).

During this interactive course, participants will learn the carbon footprinting and reduction; the life cycle analysis (LCA) comprising of LCA methodology and phases, cradle-to-grave versus cradle-to-cradle approaches, environmental product declarations (EPDs) and LCA in product design and procurement; the cost-benefit analysis, investment planning and behavioral and organizational change; and the strategic energy and environmental planning by setting goals and KPIs for energy/environment, developing an energy efficiency action plan and roadmap for continuous improvement.

Course Objectives

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

- Apply and gain a comprehensive knowledge on energy efficiency and environmental impact
- Discuss the importance of energy efficiency including global energy demand and supply trends, energy intensity, benchmarking metrics and sectoral energy use in industries and buildings
- Recognize environmental impacts of energy use, energy and climate change nexus and types of energy audits
- Explain key performance indicators (KPIs), regulatory and policy frameworks and electrical system efficiency
- Carryout thermal system optimization, HVAC and building energy systems and water and utility management
- Apply renewable energy integration, environmental monitoring and compliance and environmental management systems (EMS)
- Employ carbon footprinting and reduction covering carbon footprint calculation tools and carbon offsetting and neutrality strategies
- Illustrate life cycle analysis (LCA) comprising of LCA methodology and phases, cradle-to-grave versus cradle-to-cradle approaches, environmental product declarations (EPDs) and LCA in product design and procurement
- Implement cost-benefit analysis, investment planning and behavioral and organizational change
- Apply strategic energy and environmental planning by setting goals and KPIs for energy/environment, developing an energy efficiency action plan and roadmap for continuous improvement

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 energy efficiency and environmental impact for energy managers, energy auditors, environmental engineers, sustainability officers, environmental compliance officers, plant engineers, facilities managers, maintenance supervisors, utility engineers, HSE managers, HSE advisors, environmental health and safety engineers, risk assessment personnel, process engineers, mechanical engineers, electrical engineers, project managers (sustainability projects), building services engineers, HVAC engineers, QA/QC inspectors, ISO 14001 / ISO 50001 coordinators, environmental compliance auditors, CSR professionals, ESG analysts, sustainability consultants, policy makers, regulators (energy/environment), environmental inspectors and other technical staff.

Course Date/Venue

Session(s)	Date	Venue
1	June 16-18, 2025	Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
2	July 27-29, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE
3	September 15-17, 2025	Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
4	November 23-25, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE

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 Fee

US$ 3,750 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

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 **1.8 CEUs** (Continuing Education Units) or **18 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. Manuel Dalas MSc, BSc, is a **Senior Mechanical & Maintenance Engineer** with over **25 years** of industrial experience in **Oil**, **Gas**, **Refinery**, **Petrochemical**, **Power** and **Nuclear** industries. His wide expertise includes **Environmental Impacts of Energy Use, Energy & Climate Change Nexus, Energy Audit Basics, Thermal System Optimization, Renewable Energy Integration, Environmental Management Systems (EMS), Carbon Offsetting & Neutrality Strategies, Gas Turbines & Compressors** Troubleshooting, **Gas Turbines** Performance, Maintenance & Testing, **Gas Turbine Performance** and Optimization, **Gas Turbine Control** Systems, **Advanced Gas Turbine**, **Gas Turbine Design** and **Analysis**, **Air Compressor** & **Gas Turbines** Selection and Design, **Material Cataloguing**, **Maintenance Planning & Scheduling**, Reliability Centered Maintenance (**RCM**), **Reliability Maintenance**, **Condition Based Maintenance & Condition Monitoring**, **Asset & Risk** Management, **Vibration Condition Monitoring & Diagnostics** of Machines, **Vibration & Predictive** Maintenance, Reliability Improvement & Vibration Analysis for Rotating Machinery, Effective Maintenance **Shutdown & Turnaround** Management, **Engineering Codes & Standards**, **Rotating Equipment** Maintenance, **Mechanical** Troubleshooting, **Static Mechanical Equipment** Maintenance, **Machinery** Failure Analysis, **Machinery Diagnostics & Root Cause Failure** Analysis, **Plant Reliability & Maintenance** Strategies, **Boiler** Operation & Water Treatment, **Pumps** Maintenance & Troubleshooting, **Fans**, **Blowers & Compressors**, **Process Control Valves**, Piping Systems & Process Equipment, Advanced **Valve** Technology, **Pressure Vessel** Design & Analysis, **Steam & Gas Turbine**, **High Pressure Boiler** Operation, **FRP Pipe** Maintenance & Repair, **Centrifugal & Positive Displacement Pump** Technology Troubleshooting & Maintenance, **Rotating Machinery** Best Practices, **PD Compressor & Gas Engine** Operation & Troubleshooting, **Hydraulic Tools & Fitting**, **Mass & Material Balance**, **Water Distribution & Pump Station**, **Tank Farm & Tank Termina**l Safety & Integrity Management, **Process Piping** Design, Construction & **Mechanical Integrity**, **Stack & Noise** Monitoring, **HVAC & Refrigeration** Systems, BPV Code, Section VIII, Division 2, **Facility Planning & Energy** Management, Hoist - Remote & Basic **Rigging & Slinging**, **Mobile Equipment** Operation & Inspection, **Heat Exchanger**, **Safety Relief Valve**, **PRV & POPRV/PORV**, **Bearing & Lubrication**, **Voith Coupling** Overhaul, **Pump & Valve** Technology, **Lubrication** Inspection, **Process Plant** Optimization, Rehabilitation, Revamping & Debottlenecking, Engineering Problem Solving and **Process Plant** Performance & Efficiency. Currently, he is the **Technical Consultant** of the **Association of Local Authorities of Greater Thessaloniki** where he is in charge of the mechanical engineering services for piping, pressure vessels fabrications and ironwork.

During his career life, Mr. Dalas has gained his practical and field experience through his various significant positions and dedication as the **Technical Manager**, **Project Engineer**, **Safety Engineer**, **Deputy Officer**, **Instructor**, **Construction Manager**, **Construction Engineer**, **Consultant Engineer** and **Mechanical Engineer** for numerous multi-billion companies including the **Biological Recycling Unit** and the **Department of Supplies** of **Greece**, **Alpha Bank Group**, **EMKE S.A**, **ASTE LLC** and **Polytechnic College of Evosmos**.

Mr. Dalas has a **Master's** degree in **Energy System** from the **International Hellenic University, School of Science & Technology** and a **Bachelor's** degree in **Mechanical Engineering** from the **Mechanical Engineering Technical University of Greece** along with a **Diploma** in **Management & Production Engineering** from the **Technical University of Crete**. Further, he is a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership and Management** (**ILM**), a **Certified Project Manager Professional** (**PMI-PMP**), a **Certified Instructor/Trainer**, a **Certified Energy Auditor** for **Buildings**, **Heating & Climate Systems**, a **Member** of the **Hellenic Valuation Institute** and the **Association of Greek Valuers** and a **Licensed Expert Valuer Consultant** of the **Ministry of Development and Competitiveness**. He has further delivered numerous trainings, courses, seminars, conferences and workshops internationally.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the workshop 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	***Introduction to Energy Efficiency*** *Definition and Importance of Energy Efficiency • Global Energy Demand and Supply Trends • Energy Intensity and Benchmarking Metrics • Sectoral Energy Use in Industries and Buildings*
0930 – 0945	*Break*
0945 – 1030	***Environmental Impacts of Energy Use*** *Air Pollution (GHG, NOx, SOx, PM) • Water and Land Impacts from Energy Production • Ecosystem Disruption and Biodiversity Loss • Waste Generation and Heat Discharge*
1030 – 1130	***Energy & Climate Change Nexus*** *Role of Fossil Fuels in Global Warming • Greenhouse Gas Emissions and Targets • IPCC and International Climate Goals • Link Between Carbon Footprint and Energy Consumption*
1130 – 1215	***Energy Audit Basics*** *Types of Energy Audits (Preliminary, Detailed) • Audit Methodology and Scope • Energy Audit Instrumentation and Data Logging •Typical Audit Outcomes and Reporting*
1215 – 1230	*Break*
1230 – 1330	***Key Performance Indicators (KPIs)*** *Specific Energy Consumption (SEC) • Energy use Intensity (EUI) • Baseline Setting and Performance Tracking • Continuous Monitoring Systems*
1330 – 1420	***Regulatory & Policy Frameworks*** *International Protocols (Kyoto, Paris Agreement) • National Policies and Standards (e.g., ISO 50001) • Environmental Impact Assessments (EIA) • Energy Labeling and Green Certifications*
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 One*

Day 2

0730 – 0830	***Electrical System Efficiency*** *High-Efficiency Motors and Variable Speed Drives • Power factor Correction and Demand Control • Energy-Efficient Lighting (LEDs, Controls) • Harmonic Reduction and Energy Losses*
0830 – 0930	***Thermal System Optimization*** *Boiler Efficiency and Maintenance •Steam Trap Testing and Condensate Recovery • Insulation and Heat Loss Prevention • Waste Heat Recovery Methods*
0930 – 0945	*Break*
0945 – 1100	***HVAC & Building Energy Systems*** *Optimizing HVAC Operations • Smart Thermostats and Zoning • Building Envelope Improvements • Building Energy Management Systems (BEMS)*

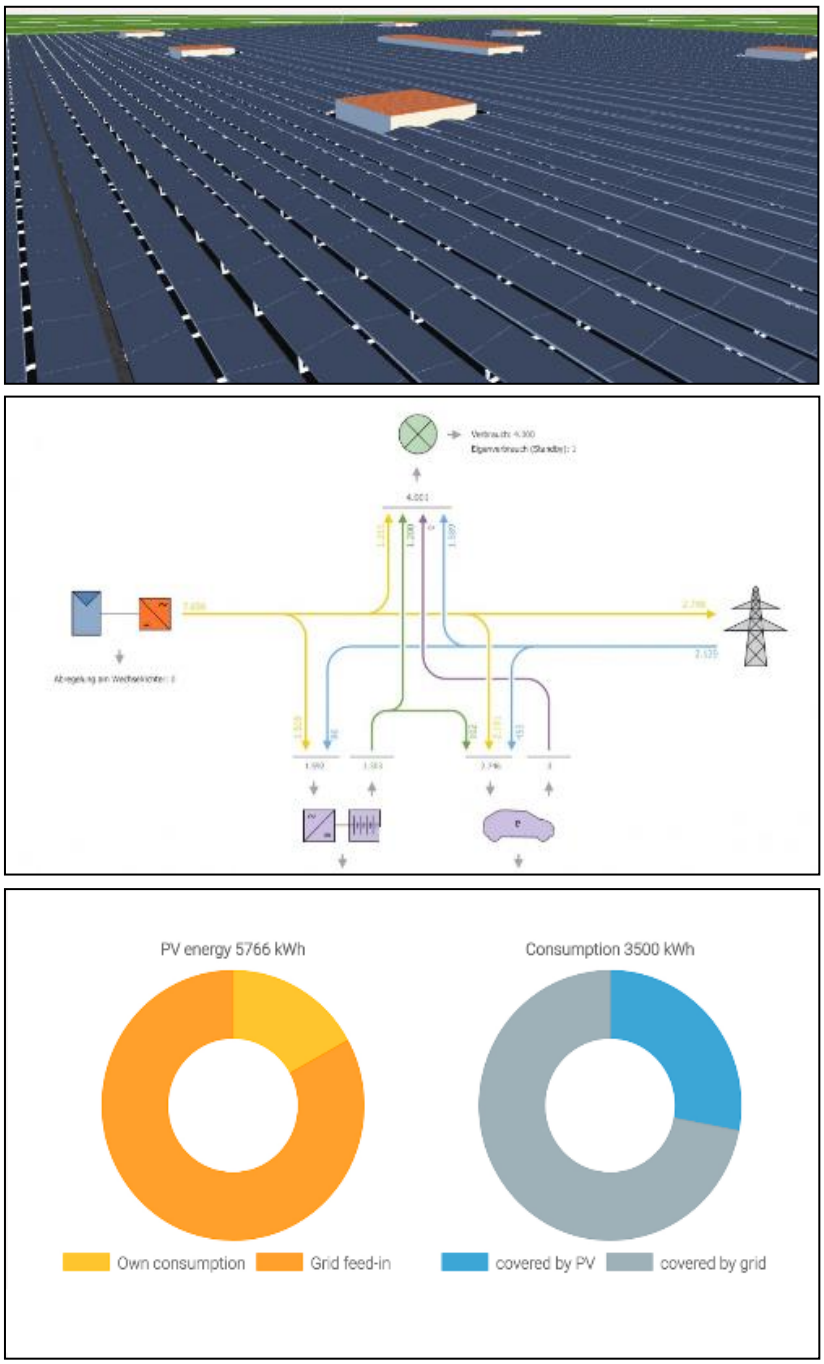
1100 – 1215	***Water & Utility Management*** *Energy in Water Pumping and Treatment • Reducing Water Heating Costs • Reuse and Recycling in Process Operations • Leak Detection and Flow Optimization*
1215 – 1230	*Break*
1230 – 1330	***Renewable Energy Integration*** *Types of Renewable Energy (Solar, Wind, Biomass) • Site Assessment and Feasibility • Grid-Connected versus off-Grid Systems •Hybrid System Optimization*
1330 – 1420	***Environmental Monitoring & Compliance*** *Stack Emission Monitoring • Effluent Discharge Control • Noise and Vibration Limits • Real-Time Environmental Dashboards*
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 Two*

Day 3

0730 – 0830	***Environmental Management Systems (EMS)*** *ISO 14001 Structure and Implementation • Policy, Planning, Implementation, and Review • Legal and Compliance Obligations • Internal Audit and Continual Improvement*
0830 – 0930	***Carbon Footprinting & Reduction*** *Scope 1, 2 and 3 Emissions • Carbon Footprint Calculation Tools • Carbon Offsetting and Neutrality Strategies • Case Studies in Emissions Reduction*
0930 – 0945	*Break*
0945 – 1100	***Life Cycle Analysis (LCA)*** *LCA Methodology and Phases • Cradle-to-Grave versus Cradle-to-Cradle Approaches • Environmental Product Declarations (EPDs) • LCA in Product Design and Procurement*
1100 – 1215	***Cost-Benefit Analysis & Investment Planning*** *Evaluating Energy Efficiency Investments • Payback Period, NPV and IRR • Hidden Costs and Non-Energy Benefits • Government Grants and Incentives*
1215 – 1230	*Break*
1230 – 1300	***Behavioral & Organizational Change*** *Role of Leadership in Sustainability • Employee Engagement Strategies • Training and Awareness Programs • Monitoring Behavioral KPIs*
1300 – 1345	***Strategic Energy & Environmental Planning*** *Setting Goals and KPIs for Energy/Environment •Developing an Energy Efficiency Action Plan • Roadmap for Continuous Improvement • Course Wrap-up, Review and Final Q&A*
1345– 1400	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Simulators (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 "PV*SOL Premium".



PV*SOL Premium

Course Coordinator

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