COURSE OVERVIEW EE0697
Energy Efficiency Benchmarking

Course Title
Energy Efficiency Benchmarking

Course Date/Venue
Session 1: July 20-24, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE
Session 2: December 22-26, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Course Reference
EE0697

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 Energy Efficiency Benchmarking. It covers the importance of energy conservation and efficiency and its benefits for district cooling companies; the current energy consumption patterns and key components of an effective energy management systems (EnMS); the energy audits and assessments and common areas for energy savings; prioritizing energy conservation measures; and the key performance indicators for energy efficiency and methods for measuring and monitoring energy efficiency.

Further, the course will also discuss the best practices for HVAC system operation and how to improve chiller performance, pump and motor efficiency; the lighting systems, building envelope improvements and water conservation and efficiency; the renewable energy sources and solar energy and wind energy integration; the geothermal energy systems and combined heat and power (CHP) systems; the energy management plan, behavioral change and energy awareness; and the setting of energy performance targets.

During this interactive course, participants will learn the continuous monitoring techniques, demand side management (DSM), financial analysis and ROI; the government and utility incentives and funding opportunities for energy efficiency projects; the role of smart grids in energy management; the integration of IOT devices for enhanced efficiency; and the energy storage solutions, advanced data analytics for energy management and carbon footprint reduction.

Course Objectives

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

- Apply and gain an in-depth knowledge on energy efficiency benchmarking
- Discuss the importance of energy conservation and efficiency and its benefits for district cooling companies
- Explain the current energy consumption patterns and the key components of an effective energy management systems (ENMS)
- Conduct energy audits and assessments, identify common areas for energy savings and prioritize energy conservation measures
- Apply the key performance indicators for energy efficiency and methods for measuring and monitoring energy efficiency
- Employ best practices for HVAC system operation and improve chiller performance, pump and motor efficiency
- Recognize lighting systems, building envelope improvements and water conservation and efficiency
- Identify renewable energy sources and apply solar energy and wind energy integration
- Recognize geothermal energy systems and combined heat and power (CHP) systems
- Develop an energy management plan and apply behavioral change and energy awareness
- Set energy performance targets and apply continuous monitoring techniques, demand side management (DSM), financial analysis and ROI
- Discuss government and utility incentives and funding opportunities for energy efficiency projects
- Define the role of smart grids in energy management and apply integration of IOT devices for enhanced efficiency
- Apply energy storage solutions, advanced data analytics for energy management and carbon footprint reduction

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 benchmarking for energy managers, facility managers, sustainability officers, engineers, building operators, maintenance technicians, environmental consultants, students and trainers.

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)

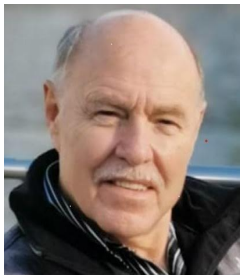
  Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** 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:



Mr. Fred Du Plessis is a **Senior Electrical Engineer** with over **30** years of extensive experience within the **Oil**, **Gas**, **Petrochemical**, **Refinery** & **Power** industries. His expertise widely covers in the areas of **Thermal Gas Power Generation**, **Power Station** Operations, **Power Generation Plant Outage** Management, **Power System** Analysis, **Power System** Generation & Distribution, **Electric Power System** Design, **Renewable Energy**, **Energy Storage** Technologies, Maintenance, Testing & Troubleshooting, **Transformer Protection**, **Transformer** Problem and Failure Investigations, **Power System Operation and Control**, Fault Analysis in **Power Systems**, **HV/MV Cable Splicing**, **High Voltage Electrical Safety**, **High Voltage Circuit Breaker** Inspection & Repair, **High Voltage Power** System, **HV Equipment** Inspection & Maintenance, **HV Switchgear** Operation & Maintenance, Resin / **Heat Shrink & Cold Shrink** Joints, **HV/LV Equipment**, ORHVS for Responsible and Authorized Person **High Voltage Regulation**, **Transformers** Maintenance, inspections & repairs, Commissioning of **LV & HV Equipment**, Oil Purification and **High Voltage Maintenance**, HT Switch Gear -Testing, Safe Operating, Maintenance, Inspection & Repairs on **LV & HT Cables** - Testing (Pulse & Megger), Line Patrol in **Low Voltage & Distribution**, **Transmission**, **Operating Principles up to 132KV**, Abnormal Conditions & Exceptions, Commissioning & Testing, **Transformer Inspections & Repairs**, **Live Line Work up to 33KV**, **Basic Power System Protection**, **High Voltage** Operating Preparedness Phasing (**110V to 132KV**), **HV Operating & Fault** Finding (up to 132KV), Maintenance & Construction Supervision, **VSD/VFD** Installations & Testing, **Electrical Panel Design**, **VSD/VFD Installations & Testing**, Instrument Installation and wiring, **AC/DC Supplies & Change Over Systems**, **AC & DC Winders** and VLF Testing, **Gas Turbines**, **Steam Turbine** with a **Station Generation**, **Project** Management & Project Controls, **Water Treatment & Reverse Osmosis** Plant Management and **Mechanical Maintenance** Management.

During Mr. Du Plessis's career life, he has gained his practical experience through several significant positions and dedication as the **Project Manager/Owner**, **Maintenance Manager**, **Project Excecution Manager**, **Commissioning & Operating Manager**, **Acting Operating Manager**, **Optimization/Commissioning Manager**, **Operating Support Manager**, **Operating Production/Shift Manager**, **Operations Lead Engineer**, **Electrical Engineer**, **Production/Maintenance Planner**, **Unit Shift Supervisor**, Principal **Plant Operator**, **Workshop & Maintenace Consultant**, Assistant **Electrical Supervisor**, Trainee **Motor Mechanic** and **Senior Instructor/Trainer** from various international **power station** companies like the Dunamis Energy, Peterhead Power Station, Lijaco Services, Eskom, Matla Power Station, Grootvlei Power Station, Ellisras Brick & Ceramic, Hlalisanani Mechanical Contractor, Matimba Power Station, Matimba Power Station, Eskom Kriel Power Station and Transvaal Provincial.

Mr. Du Plessis has a **Bachelor's** (with Honours) degree in **Operations Management**. Further, he holds certification in Red & Silver Seal Accreditation Power Generation – (ESETA), a SAMTRAC & NOSA **Auditor** – (NOSA), a **Certified Instructor/Trainer** and has further delivered various trainings, seminars, conferences, workshops and courses globally.

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 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 – 0900	***Overview of Energy Conservation & Efficiency*** *Definitions and Importance ● Benefits for District Cooling Companies*
0900 – 0930	***Global Energy Trends*** *Current Energy Consumption Patterns ● Future Projections and Challenges*
0930 – 0945	*Break*
0945 – 1130	***Energy Management Systems (EnMS)*** *Introduction to ISO 50001● Key Components of an Effective EnMS*
1130 - 1200	***Energy Audits & Assessments*** *Purpose and Types of Energy Audits ● Steps for Conducting an Energy Audit*
1200 - 1230	***Energy Audits & Benchmarking*** *Conducting Energy Audits ● Benchmarking Energy Performance*
1230 – 1245	*Break*
1245 – 1330	***Identifying Energy Conservation Opportunities*** *Common Areas for Energy Savings ● Prioritizing Energy Conservation Measures*
1330 - 1420	***Energy Efficiency Metrics & KPIs*** *Key Performance Indicators for Energy Efficiency ● Methods for Measuring and Monitoring Energy Efficiency*
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	***HVAC Systems Optimization*** *Energy Efficient HVAC Technologies ● Best Practices for HVAC System Operation*
0830 – 0930	***Chiller Efficiency*** *Improving Chiller Performance ● Maintenance Practices for Optimal Efficiency*
0930 – 0945	*Break*
0945 – 1130	***Pump & Motor Efficiency*** *Selecting and Maintaining Energy Efficient Pumps and Motors ● Variable Frequency Drives (VFDs) and Their Benefits*
1130 – 1230	***Lighting Systems*** *Energy Efficient Lighting Solutions ● Automation and Control of Lighting Systems*
1230 – 1245	*Break*
1245 – 1330	***Building Envelope Improvements*** *Insulation, Windows, and Doors ● Impact of Building Envelope on Energy Consumption*
1330 - 1420	***Water Conservation & Efficiency*** *Efficient Water Use in District Cooling ● Technologies and Practices for Water Savings*
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	***Overview of Renewable Energy Sources*** *Solar, Wind, Geothermal, and Biomass ● Relevance to District Cooling Systems*
0830 – 0930	***Solar Energy Integration*** *Solar Photovoltaic (PV) Systems ● Solar Thermal Systems for Heating and Cooling*
0930 – 0945	*Break*
0945 – 1130	***Wind Energy Integration*** *Small-Scale Wind Turbines ● Applications and Benefits in Urban Areas*
1130 – 1230	***Geothermal Energy Systems*** *Ground Source Heat Pumps (GSHP) ● Integration with District Cooling*
1230 – 1245	*Break*
1245 – 1330	***Combined Heat & Power (CHP) Systems*** *Basics of CHP and Trigeneration ● Benefits and Applications in District Cooling*
1330 - 1420	***Case Studies on Renewable Energy Integration*** *Real-World Examples ● Lessons Learned and Best Practices*
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

0730 – 0830	***Developing an Energy Management Plan*** *Steps to Create an Effective Plan ● Involving Stakeholders and Gaining Buy-In*
0830 – 0930	***Behavioral Change & Energy Awareness*** *Engaging Employees in Energy Conservation ● Training and Awareness Programs*
0930 – 0945	*Break*
0945 – 1130	***Energy Monitoring & Targeting*** *Setting Energy Performance Targets ● Techniques for Continuous Monitoring*
1130 – 1230	***Demand Side Management (DSM)*** *Techniques for Managing Energy Demand ● Peak Load Reduction Strategies*
1230 – 1245	*Break*
1245 – 1330	***Financial Analysis & ROI*** *Calculating Return on Investment for Energy Projects ● Life Cycle Cost Analysis*
1330 - 1420	***Incentives & Funding Opportunities*** *Government and Utility Incentives ● Funding Opportunities for Energy Efficiency Projects*
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 Four*

Day 5

0700 – 0830	***Smart Grid & IoT for Energy Efficiency*** *Role of Smart Grids in Energy Management ● Integration of IoT Devices for Enhanced Efficiency*
0830 – 0930	***Energy Storage Solutions*** *Technologies for Energy Storage ● Benefits and Applications in District Cooling*
0930 – 0945	*Break*
0945 – 1130	***Advanced Data Analytics for Energy Management*** *Using Big Data and Analytics ● Predictive Maintenance and Optimization*
1130 – 1230	***Sustainability & Environmental Impact*** *Reducing Carbon Footprint ● Role of Energy Efficiency in Sustainability*
1230 – 1245	*Break*
1245 – 1345	***Regulatory Compliance & Standards*** *Understanding Energy Efficiency Regulations ● Ensuring Compliance with Local and International Standards*
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*

Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-

Course Coordinator

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