COURSE OVERVIEW NE0014
Wind Power

Course Title
Wind Power

Course Date/Venue
Session 1: May 19-23, 2025/Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
Session 2: September 22-26, 2025/Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Course Reference
NE0014

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 Renewable Energy - Wind. It covers the renewable energy sources, basics of wind energy and wind energy principles; the types and components of wind turbines and the key terms and concept in wind energy; the wind resource assessment techniques, wind data and site selection criteria; the wind resource mapping, environmental impact assessment and regulatory and permitting process; and the aerodynamics of wind turbines, wind turbine control systems, wind turbine foundations and offshore wind energy.

During this interactive course, participants will learn the wind farm design and layout; the wind energy storage solutions and wind farm development process; the cost estimation and financial modeling, wind farm construction and operation and maintenance of wind farms; the data acquisition and performance analysis; the techniques for optimizing wind farm performance; the safety regulations and best practices including risk assessment and management; the advancements in wind turbine technology and hybrid renewable energy systems; the strategies for grid integration and stability; and the policy and market trends in wind energy covering government policies, incentives and market dynamics.

Course Objectives

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

- Apply and gain an in-depth knowledge on renewable energy – wind
- Discuss the renewable energy sources, basics of wind energy and wind energy principles
- Identify the types and components of wind turbines and define the key terms and concept in wind energy
- Carryout wind resource assessment techniques, analyze wind data and apply site selection criteria
- Illustrate wind resource mapping, environmental impact assessment and regulatory and permitting process
- Recognize aerodynamics of wind turbines, wind turbine control systems, wind turbine foundations and offshore wind energy
- Illustrate wind farm design and layout, wind energy storage solutions and wind farm development process
- Apply cost estimation and financial modeling, wind farm construction and operation and maintenance of wind farms
- Carryout data acquisition and performance analysis as well as techniques for optimizing wind farm performance
- Implement safety regulations and best practices including risk assessment and management
- Discuss the advancements in wind turbine technology and hybrid renewable energy systems
- Apply strategies for grid integration and stability as well as discuss the policy and market trends in wind energy covering government policies, incentives and market dynamics

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 wind energy for energy managers, engineers, environmental engineers (operators and supervisors) and other technical staff who are involved in the renewable energy sector.

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 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:

Mr. Mostafa Amin is a **Senior Electrical Engineer** with over **25 years** of extensive Onshore & Offshore experience within the **Oil & Gas**, **Petrochemical and Power** industries. He is an expert in **Renewal Energy**, **Solar Energy**, **Energy Storage Methods**, **Overhead Power Line Maintenance Patrolling & Washing**, **Energy Transmission & Distribution**, **Transmission Line** Structures, Insulators & Accessories, **Transmission Line Construction & Maintenance**, **Insulated Power Cables**, High Voltage Applications, **Transmission Line Parameters**, Sag & Tension of Conductor, Geomagnetic Disturbances, Reactive Power Compensation, **Overhead Line Troubleshooting**, **Electrical Equipments & Control Systems**, **Electric Distribution System Equipment**, **Electrical Power Generation**, **Electric Substation & Distribution, Protection Relays** Maintenance & Application, **Power Transformers** Operation & Maintenance, **Power Transformers** Protection, **Power System** Protection & Coordination, **Power Management** Systems, Protection System Tuning & Configurations, **Distribution System** Operation & Maintenance, **Earthing System**, **HV/LV Motors** Maintenance & Protection, **Circuit Breakers**, Lighting Systems, Underground Cables and Uninterruptible Power Supplies (**UPS**). Further, he is also well-versed in Maintenance & Troubleshooting of UPS Systems & Battery Power Supplies, DC Power Plant, Electric Power System Troubleshooting, Electric Motor Testing, Practical Troubleshooting of Electrical Equipments & Control Circuits, Motors & Variable Speed Drives, Diesel Generators, Analogy/Digital Field Instruments, Direct Current Panels, Gas Turbines, Fire & Gas Detection, Hazardous Area Classification & Intrinsic Safety, Permit to Work & Risk Assessment, Sequence Programming and Programmable Logic Controllers (**PLC**). He is currently the **General Manager** of **Petrobel** wherein he manages the overall company operation and developing strategic plans.

During his career life, Mr. Mostafa has gained his expertise and thorough practical experience through handling challenging positions such as being the **Assistant General Manager**, **Department Manager**, **Section Head**, **Instructor/Trainer** and **Electrical Engineer**.

Mr. Mostafa has a **Bachelor's** degree in **Electrical Power & Machines Engineering**. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**) and has delivered numerous trainings, courses, workshops, conferences and seminars internationally.

Accommodation

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

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 – 0830	***Overview of Renewable Energy Sources*** *Comparison of Renewable Energy Sources • Benefits & Challenges of Renewable Energy*
0830 - 0930	***Basics of Wind Energy*** *Understanding Wind Energy & Its Potential • History & Evolution of Wind Energy*
0930 – 0945	*Break*
0945 - 1100	***Wind Energy Principles*** *Wind Formation & Patterns • Wind Speed & Power Relationship*
1100 - 1200	***Types of Wind Turbines*** *Horizontal-Axis Vs. Vertical-Axis Wind Turbines • Small-Scale Vs. Large-Scale Wind Turbines*
1200 - 1215	*Break*
1215 - 1315	***Components of Wind Turbines*** *Nacelle, Rotor Blades, Gearbox, Generator, & Tower • Function of Each Component*
1315 - 1420	***Wind Energy Terminology*** *Key Terms & Concepts in Wind Energy*
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	***Wind Resource Assessment Techniques*** *Measuring Wind Speed & Direction • Tools & Technologies for Wind Assessment*
0830 - 0930	***Analyzing Wind Data*** *Statistical Analysis of Wind Data • Wind Rose Diagrams & Weibull Distribution*
0930 – 0945	*Break*
0945 - 1100	***Site Selection Criteria*** *Factors Influencing Site Selection • Environmental, Technical, & Economic Considerations*
1100 - 1200	***Wind Resource Mapping*** *GIS & Wind Resource Maps • Identifying Potential Wind Farm Sites*
1200 – 1215	*Break*
1215 – 1315	***Environmental Impact Assessment*** *Assessing the Environmental Impact of Wind Farms • Mitigation Strategies for Environmental Impacts*
1315 - 1420	***Regulatory & Permitting Processes*** *Navigating Regulatory Requirements • Securing Permits & Approvals*
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	***Aerodynamics of Wind Turbines*** *Principles of Lift & Drag • Blade Design & Optimization*
0830 - 0930	***Wind Turbine Control Systems*** *Pitch & Yaw Control • Power Electronics & Control Strategies*
0930 – 0945	*Break*
0945 - 1100	***Wind Turbine Foundations*** *Types of Foundations for Onshore & Offshore Turbines • Design & Installation Considerations*
1100 - 1200	***Offshore Wind Energy*** *Differences Between Onshore & Offshore Wind Farms • Challenges & Opportunities in Offshore Wind Energy*
1200 – 1215	*Break*
1215 – 1315	***Wind Farm Design & Layout*** *Turbine Spacing & Layout Optimization • Wake Effects & Their Impact on Performance*
1315 - 1420	***Wind Energy Storage Solutions*** *Energy Storage Technologies • Integrating Storage with Wind Energy Systems*
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

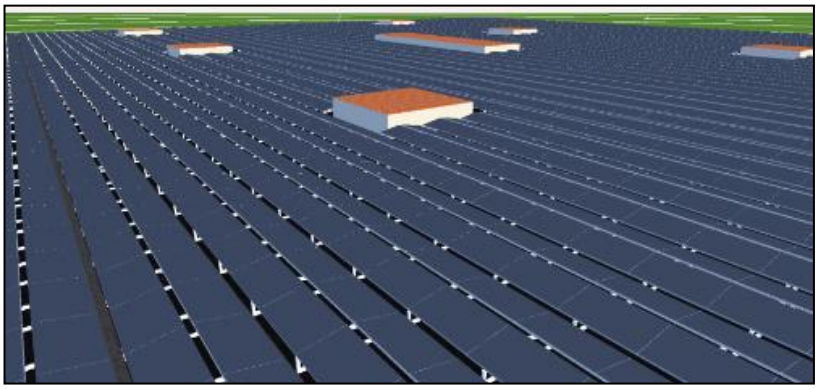
0730 – 0830	***Wind Farm Development Process*** *Stages of Wind Farm Development • Project Planning & Management*
0830 - 0930	***Financing Wind Energy Projects*** *Cost Estimation & Financial Modeling • Funding Sources & Financial Incentives*
0930 – 0945	*Break*
0945 - 1100	***Wind Farm Construction*** *Construction Planning & Logistics • Installation & Commissioning of Wind Turbines*
1100 - 1200	***Operation & Maintenance of Wind Farms*** *Maintenance Strategies & Practices • Condition Monitoring & Predictive Maintenance*
1200 – 1215	*Break*
1215 – 1315	***Performance Monitoring & Optimization*** *Data Acquisition & Performance Analysis • Techniques for Optimizing Wind Farm Performance*
1315 - 1420	***Health & Safety in Wind Energy*** *Safety Regulations & Best Practices • Risk Assessment & Management*
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*

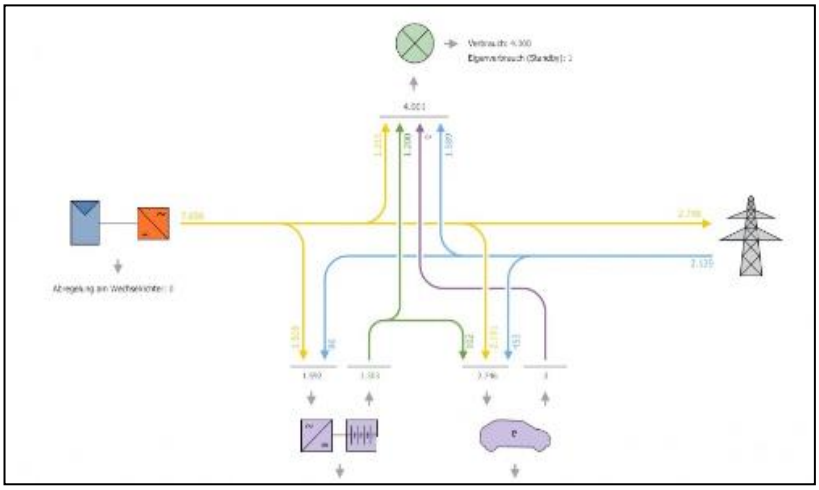
Day 5

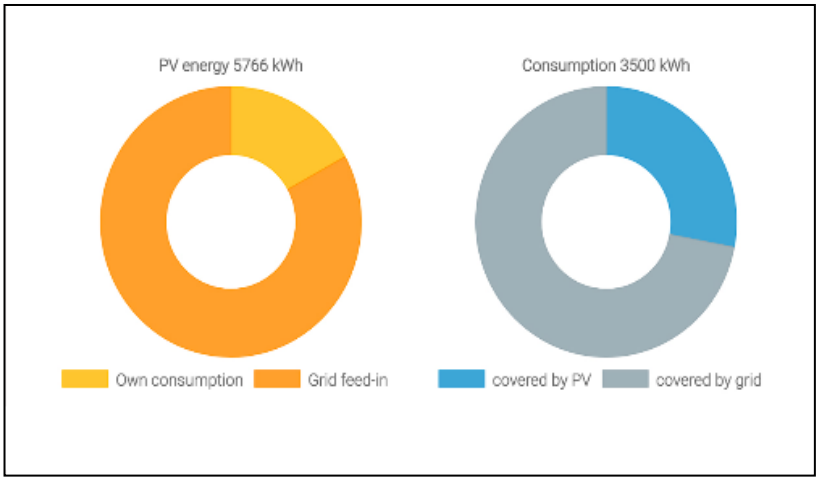
0730 – 0830	***Advancements in Wind Turbine Technology*** *Innovations in Turbine Design & Materials • Emerging Technologies in Wind Energy*
0830 - 0930	***Hybrid Renewable Energy Systems*** *Combining Wind Energy with Other Renewable Sources • Benefits & Challenges of Hybrid Systems*
0930 – 0945	*Break*
0945 – 1100	***Smart Grid & Wind Energy Integration*** *Role of Smart Grids in Wind Energy • Strategies for Grid Integration & Stability*
1100 – 1200	***Policy & Market Trends in Wind Energy*** *Government Policies & Incentives • Market Dynamics & Future Outlook*
1200 - 1215	*Break*
1215 - 1300	***Case Studies of Successful Wind Energy Projects*** *Analysis of Notable Wind Energy Projects • Lessons Learned & Best Practices*
1300 - 1345	***Group Exercise: Developing a Wind Energy Project*** *Collaborative Project Development Exercise • Presentation & Critique of Group Projects*
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

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