

Wind Power “101”

A 1-day primer for non-engineers.

Course objectives

Whether you are new to the wind industry or simply want to refresh and update your knowledge, this one-day training course will ensure you are up-to-speed with the key, fundamental aspects of wind power. You will learn about the scale and availability and variability of wind energy resources, how wind turbines operate and their methods and limitations in harnessing the wind's energy, plus the factors which will decide the commercial success or failure of wind as a power source. Throughout the day, issues will be discussed within their business context, including reference to the wider power market and the practical, economic and regulatory factors affecting demand and supply.

Style

The course will be run in an informal manner which allows and encourages time for discussion and questions, ensuring that participants get the most out of their day. Although scientific and technical principles will be included, no prior knowledge is required, making this course ideal for those in non-engineering roles. (For example, previous events in our “101” series have benefitted a wide range of attendees, including those from investment, marketing, legal, management and other commercial roles and backgrounds).

Approximate Timing

Course begins: 09:00
Course ends: 17:00

(Timings are approximate and include lunch plus morning and afternoon refreshment breaks)

About Green Power Academy

Green Power Academy exists to provide the quality, impartial, informative and enjoyable training needed to increase and distribute knowledge and skills to green energy industry professionals.

Whether you are new to the industry, have recently changed jobs or simply wish to refresh your knowledge, our training should become a key part of your personal or company professional development programme.

Please visit www.greenpoweracademy.com to see all our upcoming courses.

Course Content

Wind Power and Energy:

- Introducing the key measures and concepts in energy and power.
- Standard wind formulas: how wind energy varies with speed, height and other factors.
- “Average” wind speed measurements and what these really mean:
 - Wind speed distributions, such as Rayleigh and Weibull

Wind Resources:

- Wind power maps and world resources.
- A market review: current wind power usage and growth trends.

Wind Turbines

- Wind turbine designs: HAWTS, VAWTS - the differences and similarities, pros and cons.
- How turbines collect wind energy.
- Wind turbine power curves and coefficients.
- Basics of operation and control, including constant power vs. RPM vs. torque.
- Other system components and elements that make up turbines and wind farms.
- New developments in turbine technology.

Wind Power Output and the Grid

- The fundamentals of Grid Power:
 - Sources and types of generation,
 - Variations in demand and methods of balancing supply.
- Wind Power Variability and solutions to integrate wind into the grid.
- Truths and myths about “backup” generation to cope with wind variability.

Wind Power Economics

- Key factors in the commercial viability of wind as a power resource:
 - Available energy and variability.
 - Land (or offshore) area requirements.
 - Capital and operating cost contributors and scales.
 - Environmental and planning concerns (truths and myths).
 - Regulatory incentives.
- An introduction to Levelised Costs of Electricity (LCE) & Grid Parity:
 - Illustrations of LCE calculations and how input variables alter the results.
- Comparing wind to other power sources, both fossil and renewable:
 - LCE and other factors