

## Wind Energy Handbook

Tony Burton, Nick Jenkins, David Sharpe, Ervin Bossanyi



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Wind Energy Handbook Tony Burton, Nick Jenkins, David Sharpe, Ervin Bossanyi Named as one of Choice's Outstanding Academic Titles of 2012

Every year, *Choice* subject editors recognise the most significant print and electronic works reviewed in *Choice* during the previous calendar year. Appearing annually in *Choice*'s January issue, this prestigious list of publications reflects the best in scholarly titles and attracts extraordinary attention from the academic library community.

## The authoritative reference on wind energy, now fully revised and updated to include offshore wind power

A decade on from its first release, the *Wind Energy Handbook*, Second Edition, reflects the advances in technology underpinning the continued expansion of the global wind power sector. Harnessing their collective industrial and academic expertise, the authors provide a comprehensive introduction to wind turbine design and wind farm planning for onshore and offshore wind-powered electricity generation.

The major change since the first edition is the addition of a new chapter on offshore wind turbines and offshore wind farm development. Opening with a survey of the present state of offshore wind farm development, the chapter goes on to consider resource assessment and array losses. Then wave loading on support structures is examined in depth, including wind and wave load combinations and descriptions of applicable wave theories. After sections covering optimum machine size and offshore turbine reliability, the different types of support structure deployed to date are described in turn, with emphasis on monopiles, including fatigue analysis in the frequency domain. Final sections examine the assessment of environmental impacts and the design of the power collection and transmission cable network.

#### New coverage features:

- turbulence models updated to reflect the latest design standards, including an introduction to the Mann turbulence model
- extended treatment of horizontal axis wind turbines aerodynamics, now including a survey of wind turbine aerofoils, dynamic stall and computational fluid dynamics
- developments in turbine design codes
- techniques for extrapolating extreme loads from simulation results
- an introduction to the NREL cost model
- comparison of options for variable speed operation
- in-depth treatment of individual blade pitch control
- grid code requirements and the principles governing the connection of large wind farms to transmission networks
- four pages of full-colour pictures that illustrate blade manufacture, turbine construction and offshore support structure installation

Firmly established as an essential reference, *Wind Energy Handbook*, Second Edition will prove a real asset to engineers, turbine designers and wind energy consultants both in industry and research. Advanced engineering students and new entrants to the wind energy sector will also find it an invaluable resource.

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