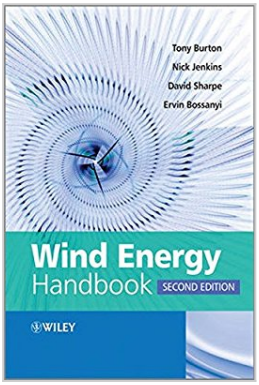

Wind Energy Handbook

By Tony Burton, Nick Jenkins, David Sharpe, Ervin Bossanyi

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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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Wind Energy Handbook By Tony Burton, Nick Jenkins, David Sharpe, Ervin Bossanyi Bibliography

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Editorial Review

Review
"I highly recommend the classic and definitive reference book Wind Energy Handbook, Second Edition by Tony Burton, Nick Jenkins, David Sharpe, and Ervin Bossanyi, to any engineering students in undergraduate or graduate studies, teaching academics, practicing engineers, business leaders in technology or electrical utilities, and government policy makers seeking a complete and authoritative overview of design, manufacturing, and installation of horizontal axis wind turbines. This book offers a complete survey of the field, and contains an important section on wind farms as well. Overall, this is a very important and essential addition to any study or practice in the field." (Blog Business World, 19 February 2012)

"If libraries wish to acquire just one book on wind energy, this title is a very good candidate. Summing Up: Highly recommended. Upper-division undergraduates, graduate students, two-year technical program students, researchers/faulty, technicians/professionals, and informed general readers." (Choice, 1 December 2011)

From the Back Cover
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.

An all-important new chapter on offshore wind power covers:

- resource assessment and array losses, optimal machine size and offshore turbine reliability
- wave loading on support structure, including wind and wave load combinations and descriptions of applicable wave theories
- the different types of support structure deployed to date, with emphasis on monopoles, including fatigue analysis in the frequency domain
- the assessment of environmental impacts and the design of the power collection and transmission cable network

Other 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, comparison of options for variable speed opertion, and in-depth treatment of individual blade pitch control

- techniques for extrapolating extreme loads from simulation results
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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.

About the Author

Tony Burton, Wind Energy Consultant, Carno, Powys: is a civil engineer, and worked as a construction manager for Wind Energy Group (WEG), a manufacturer of large wind turbines, where he coordinated the Phase IIB offshore wind energy assessment for the UK Department of Energy. Following this, he worked on the design, construction, commissioning and operation of both the 3 MW LS1 wind turbine on Orkney and the 24 300 kW WEG MS3 machines at Cemmaes wind farm in Wales. He is now a wind energy consultant, specializing in tower and foundation design.

David Sharpe: has a background in aerodynamics. He has now retired from his position with the Centre for Renewable Energy Systems Technology at Loughborough University.

Nick Jenkins, Joule Centre, University of Manchester: an electrical engineer, Nick Jenkins is now Professor of Energy Systems. His early career included 14 years industrial experience, where his final position was as Projects Director for WEG. While at the University he has developed teaching and research activities in both electrical power engineering and renewable energy. He is a Fellow of the IET, IEEE and Royal Academy of Engineering. He serves as the Director of the Joule Centre for Energy Research in England's North West and as the Chairman of the North West Energy Council.

Ervin Bossanyi, Garrad Hassan & Partners, Ltd, Bristol: a controls engineer, also had an early career at WEG, and continues to work in the wind energy industry.

Users Review

From reader reviews:

Thomas Fleischmann:

Spent a free time to be fun activity to complete! A lot of people spent their down time with their family, or their particular friends. Usually they performing activity like watching television, likely to beach, or picnic inside park. They actually doing same task every week. Do you feel it? Do you need to something different to fill your own free time/ holiday? Can be reading a book might be option to fill your free of charge time/ holiday. The first thing that you ask may be what kinds of e-book that you should read. If you want to try look for book, may be the book untitled Wind Energy Handbook can be excellent book to read. May be it could be best activity to you.

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