



# Wind Turbine Noise

*By R. Bowdler and G. Leventhall*

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## **Wind Turbine Noise** By R. Bowdler and G. Leventhall

Noise from wind turbines is a major constraining factor in the location of turbines. A recent survey in the Netherlands showed that sound was the aspect of wind turbines which led to most complaints. Investigation, understanding and reduction of noise from wind turbines is a necessary progression in the development of this sector of renewable energy. This book, authored by an international group of experts, reviews current knowledge, providing an objective and accurate assessment of all aspects of wind turbine noise. While the primary audience for this book is the scientific regulatory and planning community, it will also be of great value to those in the wind power industry itself, the broader power supply industry, to environmental organisations, academics and others with an interest in renewable energy

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## **Wind Turbine Noise** By R. Bowdler and G. Leventhall Bibliography

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## **Editorial Review**

### **Review**

The book provides a single stop reference on the topic. ....an excellent overview of wind turbine noise --  
Acoustics Australia Vol 40 No 1 2012 p84

Wind Turbine Noise Dick Bowdler and Geoff Leventhall Multi-SciencePublishing Co.,Ltd.,2011.  
215pp.ISBN: 978-1-907132-30-8 This book presents the current state of understanding of wind turbine noise generation, measurement, and evaluation, principally from the point of view of consultants with extensive experience in the field. The chapter listing provides a good idea of the contents and author s expertise: chapter1,Basic Acoustics by Geoff Leventhall, UK (consultant); chapter2, Primary Noise Sources by Stefan Oerlemans (Netherlands), National Aerospace Laboratory, NLR; chapter 3, Sound Propagation from Wind Turbines, Andrew Bullmore (UK) and Andrew Peplow (UK), Hoare Lea Acoustics; chapter 4, Wind Turbine Noise at the Receiver, Bo Søndergard (Denmark), Grontmij Acoustica; chapter 5, Amplitude Modulation, Frits van den Berg (Netherlands) and Dick Bowdler (UK); chapter 6, Effects of Sound on People, Frits and den Berg (Netherlands), GGD Amsterdam Public Health Service; chapter 7, Measuring and Analyzing Wind Turbine Noise, David Hessler (USA), Hessler Associates, Inc.; chapter 8, Criteria, Mark Bastasch (USA), CH2M Hill. In addition there are two appendixes: Appendix 1 addresses the Detection of Sound Sources Using Phased Microphone Arrays and Appendix 2 addresses Background Noise Wind Shear and Shelter. Taken as a whole, the book is a very good introduction to the unique problems presented by the noise analysis of wind turbine farms. The measurement of the wind turbine noise is complicated by the fact that the turbines only operate when the wind is blowing, so that wind noise contributes to the background noise levels. Social surveys show that the wind turbine noise is more annoying at the same level than most other noise sources. The book argues convincingly that the amplitude modulation of the wind turbine signals contributes to the additional annoyance and that the low frequency components are not a significant contributor. I found chapter 2 on the noise sources and their directivities particularly interesting. chapter 3 on Sound Propagation from Wind Turbines relies heavily on its references and has little specific analysis of the relevant geometric situation. The discussion in chapter 4 on hearing thresholds and best practices seems unaware that there are standard hearing thresholds for 1/3 octave band measurements and that the narrow band hearing threshold curves are not the only data available. The sections on wind noise in chapter 7, Measuring and Analyzing Wind Turbine Noise, assume that the wind noise measured in a laminar flow by a wind screen is the wind noise one would measure outdoors in a turbulent atmosphere. Measurements in the literature show that the wind noise measured outdoors is much stronger than would be predicted from laminar flow measurements at the same wind speed. G. P. van den Berg s doctoral thesis, The sounds of high winds, is recommended as a supplement to this book for anyone interested in learning more about wind turbine noise. The thesis provides a more limited but also more scholarly investigation of wind turbine noise and impacts and has references to current research literature sound propagation and wind noise generationandredution. Wind Turbine Noise is fascinating and demonstrates the need for much more research on all aspects of the noise measurement and analysis of wind turbines as wind turbines assume a greater role in providing the world's energy needs. This book should stimulate more research in improved methods of prediction and measurement, as well as further studies of annoyance. Richard Raspet University of Mississippi --Journal of the Acoustical Society of America, 132, 2 August 2012 p 1233

### **About the Author**

Dick Bowdler has been a UK noise consultant for over 40 years. For the last 10 years he has specialised in wind farm noise, representing both local authorities and objector groups in planning procedures. Geoff Leventhall is an internationally known consultant in noise, vibration and acoustics. He has been an academic

- Reader in Acoustics at Chelsea College University of London, and Professor of Environmental Engineering at London South Bank University - and a commercial consultant. He has published widely, sits on a number of technical committees and organises two series of conferences, on Low Frequency Noise and on Wind Turbine Noise.

## **Users Review**

### **From reader reviews:**

#### **Colleen Holden:**

Have you spare time to get a day? What do you do when you have much more or little spare time? That's why, you can choose the suitable activity intended for spend your time. Any person spent their very own spare time to take a stroll, shopping, or went to typically the Mall. How about open or read a book allowed Wind Turbine Noise? Maybe it is to get best activity for you. You realize beside you can spend your time with the favorite's book, you can better than before. Do you agree with it has the opinion or you have various other opinion?

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