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Nota di contenuto	1 Introduction -- 1.1 Current Situation of Wind Energy and Perspectives -- 1.2 Advantages of Wind Energy -- 1.3 Current Problems of Wind Energy -- 1.4 Road Map of the Book -- 2 Noise and its Effects -- 2.1 Sound and Noise -- 2.2 Definitions -- 2.3 Noise Regulations -- 3 Introduction to Aeroacoustics -- 3.1 Introduction -- 3.2 Definitions -- 3.3 The Linear Wave Equation -- 3.4 Elementary Solutions of the Wave Equation -- 3.5 Lighthill's Acoustic Analogy -- 3.6 The Influence of Boundaries -- 3.7 Application of Aeroacoustic Theory -- 3.8 Conclusions -- 4 Noise Mechanisms of Wind Turbines -- 4.1 Classification of Noise Mechanisms -- 4.2 Low-Frequency Noise -- 4.3 Inflow-Turbulence Noise -- 4.4 Airfoil Self-Noise -- 4.5 Summary -- 5 Noise Prediction -- 5.1 Introduction -- 5.2 Low-Frequency Noise -- 5.3 High-Frequency Noise -- 5.4 Summary -- 6 Noise Propagation -- 6.1 Introduction -- 6.2 Mechanisms -- 6.3 Prediction -- 6.4 Results -- 6.5 Summary -- 7 Measurement of Noise and Flow Field -- 7.1 Acoustic Measurement in the Wind Tunnel -- 7.2 Acoustic Measurements on Operating Turbines -- 7.3 Flow Visualization on Operating Turbines -- 8 Noise Reduction -- 8.1 Introduction -- 8.2 Reduction of Tip Speed and Angle of Attack -- 8.3 Reduction of Trailing-Edge Noise -- 8.4 Reduction of Tip Noise -- 8.5 Reduction of

	Inflow-Turbulence Noise -- 8.6 Reduction of Blunt-Trailing-Edge Noise -- 8.7 Conclusions -- 9 Future Work -- 10 References -- 10.1 Recommended References -- 10.2 List of References -- Annex: Description of Tip Planform Shapes.
Sommario/riassunto	Over the last five years an enormous number of wind turbines have been installed in Europe, bringing wind energy into public awareness. However, its further development is restricted mainly by public complaints caused by visual impact and noise. The European Commission has therefore funded a number of research projects in the field of wind turbine noise within the JOULE program. This book presents the most relevant results of these projects. The book addresses all relevant aspects of wind turbine noise, namely: noise reduction, noise propagation, noise measurement, and an introduction to aeroacoustics. It may serve as a first reference in the field of wind turbine noise for researchers, planners, and manufacturers. Fachgebiet: Environmental Engineering Zielgruppe: Research and Development.