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Descrizione fisica	1 online resource (263 pages)
Disciplina	621.61
Soggetti	Fans (Machinery)
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Selection of a fan, characteristic curves, key figures -- Design operating variables, blade grid, kinematics, efficiencies -- Design of radial fans -- Design of axial fans -- Sound generation and propagation -- Noise calculation methods -- Psychoacoustic evaluation of fan noise -- Design noise reduction measures -- Numerical and experimental methods, simulation-based optimization -- Solutions to the exercise problems.
Sommario/riassunto	Fans In a unique approach, this textbook combines the design and construction of centrifugal and axial fans with the problem of their noise generation and its mitigation. Easily applicable methods of fan selection, aerodynamic fan design, and fan noise prediction are compiled, including most of the underlying physical principles. Other features of this book include introductions to numerical and experimental methods, simulation-based optimization techniques for fan design, and psychoacoustic methods for evaluating fan noise. Numerous practical problems illustrate and reinforce the ideas and concepts. Content Fan performance parameters, demand of a plant and fan selection, fan performance characteristics, model laws, flow kinematics, efficiencies – Design methods for centrifugal and axial fans – Mechanisms of fan sound generation, methods for fan sound prediction – Psychoacoustic evaluation of fan noise – Design features of noise reduced fans – Computational fluid dynamics, fan test rigs,

simulation-based optimization – Practice problems and solutions. Target group Students of mechanical engineering at colleges and universities Engineers in the industrial fan manufacturing industry, planning engineers for heating, ventilation air conditioning systems and in equipment and plant engineering Author Prof. Dr.-Ing. Thomas Carolus taught fluid mechanics at the Department of Mechanical Engineering at the University of Siegen, Germany, with a focus on fluid machinery. This book is a translation of the original German 4th edition Ventilatoren by Thomas Carolus, published by Springer Fachmedien Wiesbaden GmbH, part of Springer Nature in 2020. The translation was done with the help of artificial intelligence (machine translation by the service DeepL.com), but with a subsequent human revision in terms of content. Springer Nature works continuously to further develop tools for the production of books and on the related technologies to support the authors.