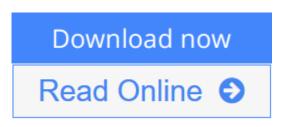# Acoustic Analyses Using Matlab® and Ansys®

By Carl Q. Howard, Benjamin S. Cazzolato

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Techniques and Tools for Solving Acoustics Problems

This is the first book of its kind that describes the use of ANSYS® finite element analysis (FEA) software, and MATLAB® engineering programming software to solve acoustic problems. It covers simple text book problems, such as determining the natural frequencies of a duct, to progressively more complex problems that can only be solved using FEA software, such as acoustic absorption and fluid-structure-interaction. It also presents benchmark cases that can be used as starting points for analysis. There are practical hints too for using ANSYS software. The material describes how to solve numerous problems theoretically, and how to obtain solutions from the theory using MATLAB engineering software, as well as analyzing the same problem using ANSYS Workbench and ANSYS Mechanical APDL.

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Acoustic Analyses Using MATLAB® and ANSYS® can be used as a textbook for graduate students in acoustics, vibration, and related areas in engineering; undergraduates in mechanical and electrical engineering; and as an authoritative reference for industry professionals.

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Editorial Review

Review

"… my students have found the book invaluable for learning how to use ANSYS Workbench for solving vibro-acoustics problems. The examples are numerous, detailed, well-chosen and complete with theoretical solutions. For these reasons and others, I believe ANSYS users will keep a copy of the book nearby and refer to it often."
?Noise Control Engineering Journal, July-August 2015

"A tour de force of quintessential theoretical acoustical topics with an exceptionally coherent crash course in finite element analysis (FEA) software."
?Journal of the Audio Engineering Society

"This book is a must for those wanting to explore and investigate the world of computational engineering acoustics. …Its comprehensive instructional framework supports a conversational, down-to-earth narrative style."
?Andrew Peplow, Noise and vibration specialist, Atlas Copco Rock Drills, Sweden

"These guys know their stuff!! …I thoroughly recommend this book to anyone who is involved in acoustic modelling – it forms the perfect basis for acoustic course work as well as being useful for research and industrial modelling of acoustic devices."
?Ian Bedwell, Thales Australia, Underwater Systems, Technical Consultant

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