Low-Speed Aerodynamics (Cambridge Aerospace Series)

By Joseph Katz, Allen Plotkin

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Low-speed aerodynamics is important in the design and operation of aircraft flying at low Mach number, and ground and marine vehicles. This text offers a modern treatment of both the theory of inviscid, incompressible, and irrotational aerodynamics, and the computational techniques now available to solve complex problems. A unique feature is that the computational approach--from a single vortex element to a three-dimensional panel formulation--is interwoven throughout. This second edition features a new chapter on the laminar boundary layer (emphasis on the viscous-inviscid coupling), the latest versions of computational techniques, and additional coverage of interaction problems. The authors include a systematic treatment of two-dimensional panel methods and a detailed presentation of computational techniques for three-dimensional and unsteady flows.

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Editorial Review

Review
"Explanations and theoretical material have been put forward in a succinct systematic manner with numerous clear line diagrams....The reviewer particularly appreciated the material...on enhancement of the potential flow model. The assessment is realistic and offers scope for practical extensions....recommended to practicing aerodynamicists." The Aeronautical Journal of the Royal Aeronautical Society

"This is a thoroughly modern and up-to-date high level academic textbook ... highly recommended." The Aeronautica Journal

"This book is a significant contribution to the aerodynamic literature. Several of my students have been able to begin their research careers in aerodynamics by reading and digesting this book." Journal of Fluids Engineering, A. T. Conlisk, Ohio State University

About the Author
Dr Joseph Katz is Professor of Aerospace Engineering and EngDr Joseph Katz is Professor of Aerospace Engineering and Engineering Mechanics at San Diego State University. His rich aineering Mechanics at San Diego State University. His rich and diverse academic and engineering background covers typicand diverse academic and engineering background covers typical aerospace and automotive disciplines such as computationall aerospace and automotive disciplines such as computational and experimental aerodynamics, vehicle dynamics, race car a and experimental aerodynamics, vehicle dynamics, race car aerodynamics, and engine cooling. As a race car designer for erodynamics, and engine cooling. As a race car designer for the past 25 years, Dr Katz has participated in a large numbethe past 25 years, Dr Katz has participated in a large number of projects involving open wheel (F1 and Indy), prototype r of projects involving open wheel (F1 and Indy), prototype (IMSA), hill-climb, and NASCAR. His fluid mechanics research(IMSA), hill-climb, and NASCAR. His fluid mechanics research interests include unsteady aerodynamics and incompressible interests include unsteady aerodynamics and incompressible flow with a strong emphasis on developing numerical techniquflow with a strong emphasis on developing numerical techniques. Prior to his academic position, he spent four years at tes. Prior to his academic position, he spent four years at the NASA Ames research center full-scale wind tunnel facilityhe NASA Ames research center full-scale wind tunnel facility. For his work in developing the PMARC computational tool, h. For his work in developing the PMARC computational tool, he and his team received the 1997 NASA Space Act Award. In ree and his team received the 1997 NASA Space Act Award. In recent years, he has been active in the aerodynamic developmencent years, he has been active in the aerodynamic development of unmanned aerial vehicles (Global Hawk, E-Hunter), whicht of unmanned aerial vehicles (Global Hawk, E-Hunter), which now operate successfully throughout the world. Dr Katz rece now operate successfully throughout the world. Dr Katz received numerous awards for being the most influential teacher ived numerous awards for being the most influential teacher and outstanding educator (AIAA), and he is the author of sevand outstanding educator (AIAA), and he is the author of several books and more than 100 other publications. His book oneral books and more than 100 other publications. His book on race car aerodynamics can be found on the desks of most rac race car aerodynamics can be found on the desks of most race car designers around the world. e car designers around the world.

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