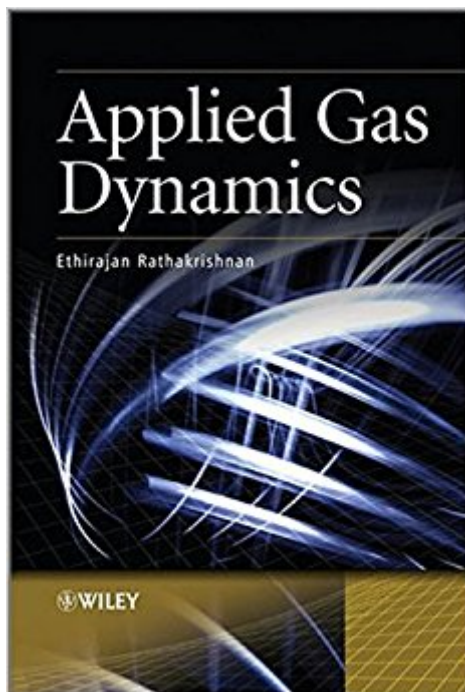


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# Applied Gas Dynamics



## Synopsis

In Applied Gas Dynamics, Professor Ethirajan Rathakrishnan introduces the high-tech science of gas dynamics, from a definition of the subject to the three essential processes of this science, namely, the isentropic process, shock and expansion process, and Fanno and Rayleigh flows. The material is presented in such a manner that beginners can follow the subject comfortably.

Rathakrishnan also covers the theoretical and application aspects of high-speed flows in which enthalpy change becomes significant. Covers both theory and applications Explains involved aspects of flow processes in detail Provides a large number of worked through examples in all chapters Reinforces learning with concise summaries at the end of every chapter Contains a liberal number of exercise problems with answers Discusses ram jet and jet theory -- unique topics of use to all working in the field Classroom tested at introductory and advanced levels Solutions manual and lecture slides available for instructors Applied Gas Dynamics is aimed at graduate students and advanced undergraduates in Aerospace Engineering and Mechanical Engineering who are taking courses such as Gas Dynamics, Compressible Flows, High-Speed Aerodynamics, Applied Gas Dynamics, Experimental Aerodynamics and High-Enthalpy Flows. Practicing engineers and researchers working with high speed flows will also find this book helpful. Lecture materials for instructors available at <http://www.wiley.com/go/gasdyn>

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## Customer Reviews

"He begins this single-authored text with basic facts: definitions, supersonic flow, speed of flow,

temperature rise, Mach angle, thermodynamics of fluid flow, and so on. Subsequent chapters address steady one-dimensional flow, normal shock waves, oblique shock and expansion waves, compressible flow equations, similarity rule, and two-dimensional compressible flows, among other topics, ending with chapters on ramjet, and jets. Each chapter concludes with a summary and exercise problems." (SciTech Book News, December 2010)

In *Applied Gas Dynamics*, Professor Ethirajan Rathakrishnan introduces the high-tech science of gas dynamics, from a definition of the subject to the three essential processes of this science, namely, the isentropic process, shock and expansion process, and Fanno and Rayleigh flows. The material is presented in such a manner that beginners can follow the subject comfortably. Rathakrishnan also covers the theoretical and application aspects of high-speed flows in which enthalpy change becomes significant. Covers both theory and applications Explains involved aspects of flow processes in detail Provides a large number of worked through examples in all chapters Reinforces learning with concise summaries at the end of every chapter Contains a liberal number of exercise problems with answers Discusses ram jet and jet theory -- unique topics of use to all working in the field Classroom tested at introductory and advanced levels Solutions manual and lecture slides available for instructors *Applied Gas Dynamics* is aimed at graduate students and advanced undergraduates in Aerospace Engineering and Mechanical Engineering who are taking courses such as Gas Dynamics, Compressible Flows, High-Speed Aerodynamics, *Applied Gas Dynamics*, Experimental Aerodynamics and High-Enthalpy Flows. Practicing engineers and researchers working with high speed flows will also find this book helpful. Lecture materials for instructors available at <http://www.wiley.com/go/gasdyn>

*Applied Gas Dynamics* by E. Rathakrishnan covers all the fundamental concepts of gas dynamics and high-speed flows. This book has been very helpful as an effective text during the course on gas dynamics. Also, I find this as a great reference for my research on high-speed jet. Indeed, this is the only book having a devoted chapter on Jets. The book covers a wide range of topics structured in a reader friendly way. The concepts explained are easily understandable. Starting from the basic governing equations the author develops a clear explanation of concepts to explain the basic concepts like steady-one dimensional flow, normal shock waves, oblique shocks and expansion waves, compressible flow equations, similarity rule, two-dimensional compressible flows, flow with friction and heat transfer, method of characteristics and measurements in compressible flow. All the derivations were kept simple with straight forward explanations. The key notable feature of this book

is its chapters on ramjets and jets, which are very well explained using the author's 40 years of experience and knowledge. To be specific, this is the book, which begins with the definition of gas dynamics and proceeds to the involved zones of gas dynamics in a systematic manner.

Student at Ecole Centrale Lyon, I bought this book. The latter is very interesting. The several chapters are : basic facts, steady-one dimensional flow, normal shock waves, oblique shocks and expansion waves, compressible flow equations, similarity rule, two-dimensional compressible flows, flow with friction and heat transfer, method of characteristics and measurements in compressible flow. Moreover, there are two other chapters which are fabulous : ramjets (with a high level explanation of the supersonic combustion) and jets (with for instance the explanation of the Rathakrishnan Limit). At each end of chapter, there is a summary and many exercise problems with solutions. I strongly recommend this book to students who aim at strengthening their knowledges in these different topics, to engineers and finally to teachers who can use this book in their lessons. Furthermore, the book is very clear, with a nice organisation/presentation.

This book completely covers the theoretical, physical and applied aspects of Gas dynamics. The chapters on Jet theory and Ramjet are unique in this book and gives comprehensive understanding of subjects. This book helps me a lot during my experimental studies of high-speed flows as large number of worked example helps to gain insight of the concepts. The book is recommended to advanced undergraduate students as well as graduate students of aerospace and mechanical engineering. This book can also be helpful for the scientists and researchers working in the area of gas dynamics in industries or in research laboratories.

"Applied Gas Dynamics" is a life-long companion in the form of an excellent book by one of the most knowledgeable authors I have read till date. This book is worthy for a range of readers beginning from undergraduate and graduate students to aerospace engineers and professionals. Extremely precise language, collation of uncountable key technical facts, figures and illustrations and a comprehensive insight into the theoretical and application aspects of gas dynamics and high-speed flows, provides the reader a useful tool for self-study; as the textbook doesn't have a pre-requisite of any particular background. Well-organized, clearly written and easy-to-understand features with a detailed explanation using examples and citation of practical applications at appropriate places in the text, ensures that the reader follows the flow of ideas and concepts. The derivations have been kept straight to the point with a proper list of assumptions and/or different considerations. They are

aided with the step-by-step solved problems and numerous unsolved ones with answers (at the end of each chapter), in order to make the reader thorough with concepts. Novel chapters of Ramjet theory and Jet-theory, included in the book with author's remarkable research will be beneficial for practicing engineers in the high-speed aerodynamics. Each chapter ends with a concise summary of the studied concepts in the chapter with a compendium of the correlations, which proves to be convenient and helpful for solving the problems. It's a strongly recommended book as a reference for all the students and aerospace professionals. Thank you Professor Rathakrishnan for providing all the necessary information in ONLY One Book.

delivery on time receive it next day . for Tina , EVERYTHING IS GREAT. as description. Great product. Feels good in the hand.

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