
Gas Turbine Theory Saravanamuttoo 6th Edition

Principles of Solar Gas Turbines for Electricity Generation
 Fundamentals of Aircraft and Rocket Propulsion
 Industrial Gas Turbines
 Finite Element Method
 EBOOK: Fluid Mechanics (SI units)
 Gas Turbine Combined Cycle Power Plants
 Aircraft Propulsion and Gas Turbine Engines
 Gas Turbine Engineering Handbook
 Approaches for Clean Combustion in Gas Turbines
 Advanced Thermodynamics for Engineers
 The Craft of Scientific Presentations
 Gas Turbine Performance
 Oxyfuel Combustion for Clean Energy Applications
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 The Design of High-Efficiency Turbomachinery and Gas Turbines, second edition, with a new preface
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 Gas Turbine Theory
 Fundamentals of Gas Turbines
 Everything the Light Touches
 Basic Concepts in Turbomachinery
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 Gas Turbine Theory
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 Principles of Turbomachinery
 Applied Thermodynamics for Engineering Technologists
 Introduction to Aircraft Flight Mechanics
 Rotors: Stress Analysis and Design

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6th Edition*

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Principles of Solar Gas Turbines for Electricity Generation
 Cambridge University Press
 Modern gas turbine power plants represent one of the most efficient and economic conventional power generation technologies suitable for large-scale and smaller scale applications. Alongside this, gas turbine systems operate with low emissions and are more flexible in their operational characteristics than other large-scale generation units such as steam cycle plants. Gas turbines are unrivalled in their superior power density (power-to-weight) and are thus the prime choice for industrial applications where size and weight matter the most. Developments in the field look to improve on this performance, aiming at higher efficiency generation, lower emission systems and more fuel-flexible operation to utilise lower-grade gases, liquid fuels, and gasified solid fuels/biomass. Modern gas turbine systems provides a comprehensive review of gas turbine science and engineering. The first part of the book provides an overview of gas turbine types, applications and cycles. Part two moves on

to explore major components of modern gas turbine systems including compressors, combustors and turbogenerators. Finally, the operation and maintenance of modern gas turbine systems is discussed in part three. The section includes chapters on performance issues and modelling, the maintenance and repair of components and fuel flexibility. Modern gas turbine systems is a technical resource for power plant operators, industrial engineers working with gas turbine power plants and researchers, scientists and students interested in the field. - Provides a comprehensive review of gas turbine systems and fundamentals of a cycle - Examines the major components of modern systems, including compressors, combustors and turbines - Discusses the operation and maintenance of component parts
Fundamentals of Aircraft and Rocket Propulsion Elsevier
 Everything you wanted to know about industrial gas turbines for electric power generation in one source with hard-to-find, hands-on technical information.
Industrial Gas Turbines Gas Turbine Theory
 "Wise, funny, touching, wide-ranging, deep-delving; whip-smart dialogue and graceful, paced sentences, thousands upon thousands of them. Written by a novelist with the eye of a poet, and a poet with the narrative powers of a novelist, this is a book

that needed to be written, that tells true things, and is entirely its own being.”—Robert Macfarlane, author of *The Lost Words* and *Underland* One of the most acclaimed and revered writers of her generation returns with her most ambitious novel yet—an elegant, multi-layered work, rich in imagination and exquisitely told, that interweaves a quartet of journeys across continents and centuries. As emotionally resonant as Kiran Desai’s *The Inheritance of Loss*, as inspired as Anthony Doerr’s *Cloud Cuckoo Land*, as inventive as Louisa Hall’s *Speak*, and as visionary as David Mitchell’s *Cloud Atlas*, *Everything the Light Touches* is Janice Pariat’s magnificent epic of travelers, of discovery, of time, of science, of human connection, and of the impermanent nature of the universe and life itself—a bold and brilliant saga that unfolds through the adventures and experiences of four intriguing characters. Shai is a young woman in modern India. Lost and drifting, she travels to her country’s Northeast and rediscovers, through her encounters with indigenous communities, ways of being that realign and renew her. Evelyn is a student of science in Edwardian England. Inspired by Goethe’s botanical writings, she leaves Cambridge on a quest to wander the sacred forests of the Lower Himalayas. Linnaeus, a botanist and taxonomist who famously declared “God creates; Linnaeus organizes,” sets off on an expedition to an unfamiliar world, the far reaches of Lapland in 1732. Goethe is a philosopher, writer, and one of the greatest minds of his age. While traveling through Italy in the 1780s, he formulates his ideas for “*The Metamorphosis of Plants*,” a little-known, revelatory text that challenges humankind’s propensity to reduce plants—and the world—into immutable parts. Drawn richly from scientific and botanical ideas, *Everything the Light Touches* is a swirl of ever-expanding themes: the contrasts between modern India and its colonial past, urban and rural life, capitalism and centuries-old traditions of generosity and gratitude, script and “song and stone.” Pulsating at its center is the dichotomy between different ways of seeing, those that fix and categorize and those that free and unify. Pariat questions the imposition of fixity—of our obsession to place permanence on plants, people, stories, knowledge, land—where there is only movement, fluidity, and constant transformation. “To be still,” says a character in the book, “is to be without life.” *Everything the Light Touches* brings together, with startling and playful novelty, people and places that seem, at first, removed from each other in time and place. Yet as it artfully reveals, all is resonance; all is connection.

Finite Element Method MIT Press

Stress and strain analysis of rotors subjected to surface and body loads, as well as to thermal loads deriving from temperature variation along the radius, constitutes a classic subject of machine design. Nevertheless attention is limited to rotor profiles for which governing equations are solvable in closed form. Furthermore very few actual engineering issues may relate to structures for which stress and strain analysis in the linear elastic field and, even more, under non-linear conditions (i.e. plastic or viscoelastic conditions) produces equations to be solved in closed form. Moreover, when a product is still in its design stage, an analytical formulation with closed-form solution is of course simpler and more versatile than numerical methods, and it allows to quickly define a general configuration, which may then be fine-tuned using such numerical methods. In this view, all subjects are based on analytical-methodological approach, and some new solutions in closed form are presented. The analytical formulation of problems is always carried out considering actual engineering applications. Moreover, in order to make the use of analytical models even more friendly at the product design stage, a function is introduced whereby it is possible to define a fourfold infinity of disk profiles, solid or annular, concave or convex, converging or diverging. Such subjects, even derived from

scientific authors’ contributions, are always aimed at designing rotors at the concept stage, i.e. in what precedes detailed design. Among the many contributions, a special mention is due for the following: linear elastic analysis of conical disks and disks with variable profile along its radius according to a power of a linear function, also subjected to thermal load and with variable density; analysis of a variable-profile disk subjected to centrifugal load beyond the material’s yield point, introducing the completely general law expressed by a an n-grade polynomial; linear elastic analysis of hyperbolic disk, subjected to thermal load along its radius; linear elastic analysis of a variable-thickness disk according to a power of a linear function, subjected to angular acceleration; etc.

EBOOK: Fluid Mechanics (SI units) Cambridge University Press

This book aims to be the reference book in the area of oxyfuel combustion, covering the fundamentals, design considerations and current challenges in the field. Its first part provides an overview of the greenhouse gas emission problem and the current carbon capture and sequestration technologies. The second part introduces oxy-fuel combustion technologies with emphasis on system efficiency, combustion and emission characteristics, applications and related challenges. The third part focuses on the recent developments in ion transport membranes and their performance in both oxygen separation units and oxygen transport reactors (OTRs). The fourth part presents novel approaches for clean combustion in gas turbines and boilers. Computational modelling and optimization of combustion in gas turbine combustors and boiler furnaces are presented in the fifth part with some numerical results and detailed analyses.

Gas Turbine Combined Cycle Power Plants Pearson Higher Ed

This is the first book dedicated to solar gas turbines, providing fundamental knowledge and state-of-the-art developments in the field. A gas turbine is a heat engine in which a mixture of fuel and air is burned in a chamber that is an integral part of the flow circuit of the working fluid. The burnt gas mixture expands and turns the turbine, which can be connected to a generator for electricity production. Solar gas turbines offer an important alternative to conventional gas turbines driven by non-renewable, polluting fossil fuels such as diesel or natural gas. The book provides a comprehensive overview of the topic as well as numerous illustrations.

Aircraft Propulsion and Gas Turbine Engines Pearson Education India

The second edition of a comprehensive textbook that introduces turbomachinery and gas turbines through design methods and examples. This comprehensive textbook is unique in its design-focused approach to turbomachinery and gas turbines. It offers students and practicing engineers methods for configuring these machines to perform with the highest possible efficiency. Examples and problems are based on the actual design of turbomachinery and turbines. After an introductory chapter that outlines the goals of the book and provides definitions of terms and parts, the book offers a brief review of the basic principles of thermodynamics and efficiency definitions. The rest of the book is devoted to the analysis and design of real turbomachinery configurations and gas turbines, based on a consistent application of thermodynamic theory and a more empirical treatment of fluid dynamics that relies on the extensive use of design charts. Topics include turbine power cycles, diffusion and diffusers, the analysis and design of three-dimensional free-stream flow, and combustion systems and combustion calculations. The second edition updates every chapter, adding material on subjects that include flow correlations, energy

transfer in turbomachines, and three-dimensional design. A solutions manual is available for instructors. This new MIT Press edition makes a popular text available again, with corrections and some updates, to a wide audience of students, professors, and professionals.

Gas Turbine Engineering Handbook John Wiley & Sons
Fossil-fuel power plants account for the majority of worldwide power generation. Increasing global energy demands, coupled with issues of ageing and inefficient power plants, have led to new power plant construction programmes. As cheaper fossil fuel resources are exhausted and emissions criteria are tightened, utilities are turning to power plants designed with performance in mind to satisfy requirements for improved capacity, efficiency, and environmental characteristics. Advanced power plant materials, design and technology provides a comprehensive reference on the state of the art of gas-fired and coal-fired power plants, their major components and performance improvement options. Part one critically reviews advanced power plant designs which target both higher efficiency and flexible operation, including reviews of combined cycle technology and materials performance issues. Part two reviews major plant components for improved operation, including advanced membrane technology for both hydrogen (H₂) and carbon dioxide (CO₂) separation, as well as flue gas handling technologies for improved emissions control of sulphur oxides (SO_x), nitrogen oxides (NO_x), mercury, ash and particulates. The section concludes with coverage of high-temperature sensors, and monitoring and control technology that are essential to power plant operation and performance optimisation. Part three begins with coverage of low-rank coal upgrading and biomass resource utilisation for improved power plant fuel flexibility. Routes to improve the environmental impact are also reviewed, with chapters detailing the integration of underground coal gasification and the application of carbon dioxide (CO₂) capture and storage. Finally, improved generation performance is reviewed with coverage of syngas and hydrogen (H₂) production from fossil-fuel feedstocks. With its distinguished international team of contributors, *Advanced power plant materials, design and technology* is a standard reference for all power plant engineers and operators, as well as to academics and researchers in this field. - Provides a comprehensive reference on the state-of-the-art gas-fired and coal-fired power plants, their major components and performance improvement options - Examines major plant components for improved operation as well as flue gas handling technologies for improved emissions control - Routes to improve environmental impact are discussed with chapters detailing the integration of underground coal gasification

Approaches for Clean Combustion in Gas Turbines John Wiley & Sons

This handbook surveys the range of methods and fuel types used in generating energy for industry, transportation, and heating and cooling of buildings. Solar, wind, biomass, nuclear, geothermal, ocean and fossil fuels are discussed and compared, and the thermodynamics of energy conversion is explained. Appendices are provided with fully updated data. Thoroughly revised, this second edition surveys the latest advances in energy conversion from a wide variety of currently available energy sources. It describes energy sources such as fossil fuels, biomass (including refuse-derived biomass fuels), nuclear, solar radiation, wind, geothermal, and ocean, then provides the terminology and units used for each energy resource and their equivalence. It includes an overview of the steam power cycles, gas turbines, internal combustion engines, hydraulic turbines, Stirling engines, advanced fossil fuel power systems, and combined-cycle power plants. It outlines the development, current use, and future of

nuclear power.

Advanced Thermodynamics for Engineers Pearson Higher Ed
An introduction to the theory and engineering practice that underpins the component design and analysis of radial flow turbocompressors. Drawing upon an extensive theoretical background and years of practical experience, the authors provide descriptions of applications, concepts, component design, analysis tools, performance maps, flow stability, and structural integrity, with illustrative examples. Features wide coverage of all types of radial compressor over many applications unified by the consistent use of dimensional analysis. Discusses the methods needed to analyse the performance, flow, and mechanical integrity that underpin the design of efficient centrifugal compressors with good flow range and stability. Includes explanation of the design of all radial compressor components, including inlet guide vanes, impellers, diffusers, volutes, return channels, de-swirl vanes and side-streams. Suitable as a reference for advanced students of turbomachinery, and a perfect tool for practising mechanical and aerospace engineers already within the field and those just entering it.

The Craft of Scientific Presentations John Wiley & Sons

In a clear and concise manner, this book explains how to apply concepts in chemical reaction engineering and transport phenomena to the design of catalytic combustion systems. Although there are many textbooks on the subject of chemical reaction engineering, catalytic combustion is mentioned either only briefly or not at all. The authors have chosen three examples where catalytic combustion is utilized as a primary combustion process and natural gas is used as a fuel - stationary gas turbines, process fluid heaters, and radiant heaters; these cover much of the area where research is currently most active. In each of these there are clear environmental benefits to be gained illustrating catalytic combustion as a "cleaner primary combustion process". The dominant heat transfer processes in each of the applications are different, as are the support systems, flow geometrics and operating conditions.

Gas Turbine Performance AIAA

This book focuses on the development of novel combustion approaches and burner designs for clean power generation in gas turbines. It shows the reader how to control the release of pollutants to the environment in an effort to reduce global warming. After an introduction to global warming issues and clean power production for gas turbine applications, subsequent chapters address premixed combustion, burner designs for clean power generation, gas turbine performance, and insights on gas turbine operability. Given its scope, the book can be used as a textbook for graduate-level courses on clean combustion, or as a reference book to accompany compact courses for mechanical engineers and young researchers around the world.

Oxyfuel Combustion for Clean Energy Applications Springer

This timely and hugely practical work provides a score of examples from contemporary and historical scientific presentations to show clearly what makes an oral presentation effective. It considers presentations made to persuade an audience to adopt some course of action (such as funding a proposal) as well as presentations made to communicate information, and it considers these from four perspectives: speech, structure, visual aids, and delivery. It also discusses computer-based projections and slide shows as well as overhead projections. In particular, it looks at ways of organizing graphics and text in projected images and of using layout and design to present the information efficiently and effectively.

Gas Turbine Theory Pearson Education India

Presents the fundamentals of the gas turbine engine, including cycles, components, component matching, and environmental

considerations.

Gas Turbine Theory Butterworth-Heinemann

Industrial Gas Turbines: Performance and Operability explains important aspects of gas turbine performance such as performance deterioration, service life and engine emissions. Traditionally, gas turbine performance has been taught from a design perspective with insufficient attention paid to the operational issues of a specific site. Operators are not always sufficiently familiar with engine performance issues to resolve operational problems and optimise performance. Industrial Gas Turbines: Performance and Operability discusses the key factors determining the performance of compressors, turbines, combustion and engine controls. An accompanying engine simulator CD illustrates gas turbine performance from the perspective of the operator, building on the concepts discussed in the text. The simulator is effectively a virtual engine and can be subjected to operating conditions that would be dangerous and damaging to an engine in real-life conditions. It also deals with issues of engine deterioration, emissions and turbine life. The combined use of text and simulators is designed to allow the reader to better understand and optimise gas turbine operation. - Discusses the key factors in determining the performance of compressors, turbines, combustion and engine controls - Explains important aspects of gas and turbine performance such as service life and engine emissions - Accompanied by CD illustrating gas turbine performance, building on the concepts discussed in the text

The Design of High-Efficiency Turbomachinery and Gas Turbines, second edition, with a new preface CRC Press

This is the second edition of Cumpsty's excellent self-contained introduction to the aerodynamic and thermodynamic design of modern civil and military jet engines. Through two engine design projects, first for a new large passenger aircraft, and second for a new fighter aircraft, the text introduces, illustrates and explains the important facets of modern engine design. Individual sections cover aircraft requirements and aerodynamics, principles of gas turbines and jet engines, elementary compressible fluid mechanics, bypass ratio selection, scaling and dimensional analysis, turbine and compressor design and characteristics, design optimization, and off-design performance. The book emphasises principles and ideas, with simplification and approximation used where this helps understanding. This edition has been thoroughly updated and revised, and includes a new appendix on noise control and an expanded treatment of combustion emissions. Suitable for student courses in aircraft propulsion, but also an invaluable reference for engineers in the engine and airframe industry.

Advanced Power Plant Materials, Design and Technology Springer

New edition of the successful textbook updated to include new material on UAVs, design guidelines in aircraft engine component systems and additional end of chapter problems Aircraft Propulsion, Second Edition follows the successful first edition textbook with comprehensive treatment of the subjects in airbreathing propulsion, from the basic principles to more advanced treatments in engine components and system integration. This new edition has been extensively updated to include a number of new and important topics. A chapter is now included on General Aviation and Uninhabited Aerial Vehicle (UAV) Propulsion Systems that includes a discussion on electric and hybrid propulsion. Propeller theory is added to the presentation of turboprop engines. A new section in cycle analysis treats Ultra-High Bypass (UHB) and Geared Turbofan engines. New material on drop-in biofuels and design for sustainability is added to reflect the FAA's 2025 Vision. In addition, the design guidelines in aircraft engine components are

expanded to make the book user friendly for engine designers.

Extensive review material and derivations are included to help the reader navigate through the subject with ease. Key features: General Aviation and UAV Propulsion Systems are presented in a new chapter Discusses Ultra-High Bypass and Geared Turbofan engines Presents alternative drop-in jet fuels Expands on engine components' design guidelines The end-of-chapter problem sets have been increased by nearly 50% and solutions are available on a companion website Presents a new section on engine performance testing and instrumentation Includes a new 10-Minute Quiz appendix (with 45 quizzes) that can be used as a continuous assessment and improvement tool in teaching/learning propulsion principles and concepts Includes a new appendix on Rules of Thumb and Trends in aircraft propulsion Aircraft Propulsion, Second Edition is a must-have textbook for graduate and undergraduate students, and is also an excellent source of information for researchers and practitioners in the aerospace and power industry.

Gas Turbines for Electric Power Generation CRC Press

The Finite Element Method (FEM) has become an indispensable technology for the modelling and simulation of engineering systems. Written for engineers and students alike, the aim of the book is to provide the necessary theories and techniques of the FEM for readers to be able to use a commercial FEM package to solve primarily linear problems in mechanical and civil engineering with the main focus on structural mechanics and heat transfer. Fundamental theories are introduced in a straightforward way, and state-of-the-art techniques for designing and analyzing engineering systems, including microstructural systems are explained in detail. Case studies are used to demonstrate these theories, methods, techniques and practical applications, and numerous diagrams and tables are used throughout. The case studies and examples use the commercial software package ABAQUS, but the techniques explained are equally applicable for readers using other applications including NASTRAN, ANSYS, MARC, etc. - A practical and accessible guide to this complex, yet important subject - Covers modeling techniques that predict how components will operate and tolerate loads, stresses and strains in reality

Gas Turbine Theory Bookboon

Aerospace Propulsion Systems is a unique book focusing on each type of propulsion system commonly used in aerospace vehicles today: rockets, piston aero engines, gas turbine engines, ramjets, and scramjets. Dr. Thomas A. Ward introduces each system in detail, imparting an understanding of basic engineering principles, describing key functionality mechanisms used in past and modern designs, and provides guidelines for student design projects. With a balance of theory, fundamental performance analysis, and design, the book is specifically targeted to students or professionals who are new to the field and is arranged in an intuitive, systematic format to enhance learning. Covers all engine types, including piston aero engines Design principles presented in historical order for progressive understanding Focuses on major elements to avoid overwhelming or confusing readers Presents example systems from the US, the UK, Germany, Russia, Europe, China, Japan, and India Richly illustrated with detailed photographs Cartoon panels present the subject in an interesting, easy-to-understand way Contains carefully constructed problems (with a solution manual available to the educator) Lecture slides and additional problem sets for instructor use Advanced undergraduate students, graduate students and engineering professionals new to the area of propulsion will find Aerospace Propulsion Systems a highly accessible guide to grasping the key essentials. Field experts will also find that the book is a very useful resource for explaining

propulsion issues or technology to engineers, technicians, businessmen, or policy makers. Post-graduates involved in multi-disciplinary research or anybody interested in learning more about spacecraft, aircraft, or engineering would find this book to be a helpful reference. Lecture materials for instructors available at www.wiley.com/go/wardaero

Fundamentals of Gas Turbines Wiley-Blackwell

When the First Edition of this book was written in 1951, the gas turbine was just becoming established as a powerplant for military aircraft. It took another decade before the gas turbine was introduced to civil aircraft, and this market developed so rapidly that the passenger liner was rendered obsolete. Other markets like naval propulsion, pipeline compression and electrical

power applications grew steadily. In recent years the gas turbine, in combination with the steam turbine, has played an ever-increasing role in power generation. Despite the rapid advances in both output and efficiency, the basic theory of the gas turbine has remained unchanged. The layout of this new edition is broadly similar to the original, but greatly expanded and updated, comprising an outline of the basic theory, aerodynamic design of individual components, and the prediction of off-design performance. The addition of a chapter devoted to the mechanical design of gas turbines greatly enhances the scope of the book. Descriptions of engine developments and current markets make this book useful to both students and practising engineers.

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