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Thermodynamics Mar 28 2021 Designed by two MIT professors, this authoritative text transcends the limitations and ambiguities of traditional treatments to develop a deep understanding of the fundamentals of thermodynamics and its energy-related applications. Basic concepts and applications are discussed in complete detail, with attention to generality, rigorous definitions, and logical consistency. More than 300 solved problems span a wide range of realistic energy systems and processes.

Introduction to Thermal Systems Engineering Nov 16 2022 This survey of thermal systems engineering combines coverage of thermodynamics, fluid flow, and heat transfer in one volume. Developed by leading educators in the field, this book sets the standard for those interested in the thermal-fluids market. Drawing on the best of what works from market leading texts in thermodynamics (Moran), fluids (Munson) and heat transfer (Incropera), this book introduces thermal engineering using a systems focus, introduces structured problem-solving techniques, and provides applications of interest to all engineers.

Applied Technologies Feb 24 2021 This three-volume set CCIS 1755-1757 constitutes the refereed proceedings of the 4th International Conference on Applied Technologies, ICAT 2022, held in Quito, Ecuador, in November 2022. The 112 full papers included in this book were carefully reviewed and selected from 415 submissions. They were organized in topical sections as follows: human computing and information science, IT financial and business management.

Advanced Engineering Thermodynamics Feb 07 2022 An advanced, practical approach to the first and second laws of thermodynamics Advanced Engineering Thermodynamics bridges the gap between

engineering applications and the first and second laws of thermodynamics. Going beyond the basic coverage offered by most textbooks, this authoritative treatment delves into the advanced topics of energy and work as they relate to various engineering fields. This practical approach describes real-world applications of thermodynamics concepts, including solar energy, refrigeration, air conditioning, thermofluid design, chemical design, constructal design, and more. This new fourth edition has been updated and expanded to include current developments in energy storage, distributed energy systems, entropy minimization, and industrial applications, linking new technologies in sustainability to fundamental thermodynamics concepts. Worked problems have been added to help students follow the thought processes behind various applications, and additional homework problems give them the opportunity to gauge their knowledge. The growing demand for sustainability and energy efficiency has shined a spotlight on the real-world applications of thermodynamics. This book helps future engineers make the fundamental connections, and develop a clear understanding of this complex subject. Delve deeper into the engineering applications of thermodynamics Work problems directly applicable to engineering fields Integrate thermodynamics concepts into sustainability design and policy Understand the thermodynamics of emerging energy technologies Condensed introductory chapters allow students to quickly review the fundamentals before diving right into practical applications. Designed expressly for engineering students, this book offers a clear, targeted treatment of thermodynamics topics with detailed discussion and authoritative guidance toward even the most complex concepts. Advanced Engineering Thermodynamics is the definitive modern treatment of energy and work for today's newest engineers.

Introduction to the Thermodynamics of Materials, Fifth Edition Mar 08 2022 "The CD contains data and descriptive material for making detailed thermodynamic calculations involving materials

processing"--Preface.

Nonequilibrium Thermodynamics May 18 2020 Natural phenomena consist of simultaneously occurring transport processes and chemical reactions. These processes may interact with each other and lead to instabilities, fluctuations, and evolutionary systems. This book explores the unifying role of thermodynamics in natural phenomena. Nonequilibrium Thermodynamics, Second Edition analyzes the transport processes of energy, mass, and momentum transfer processes, as well as chemical reactions. It considers various processes occurring simultaneously, and provides students with more realistic analysis and modeling by accounting possible interactions between them. This second edition updates and expands on the first edition by focusing on the balance equations of mass, momentum, energy, and entropy together with the Gibbs equation for coupled processes of physical, chemical, and biological systems. Every chapter contains examples and practical problems to be solved. This book will be effective in senior and graduate education in chemical, mechanical, systems, biomedical, tissue, biological, and biological systems engineering, as well as physical, biophysical, biological, chemical, and biochemical sciences. Will help readers in understanding and modelling some of the coupled and complex systems, such as coupled transport and chemical reaction cycles in biological systems Presents a unified approach for interacting processes - combines analysis of transport and rate processes Introduces the theory of nonequilibrium thermodynamics and its use in simultaneously occurring transport processes and chemical reactions of physical, chemical, and biological systems A useful text for students taking advanced thermodynamics courses

Introduction to CHEMICAL ENGINEERING THERMODYNAMICS Dec 05 2021 This book, now in its second edition, continues to provide a comprehensive introduction to the principles of chemical engineering thermodynamics and also introduces the student to the application of principles to various practical areas. The book emphasizes the role of the fundamental principles of

thermodynamics in the derivation of significant relationships between the various thermodynamic properties. The initial chapter provides an overview of the basic concepts and processes, and discusses the important units and dimensions involved. The ensuing chapters, in a logical presentation, thoroughly cover the first and second laws of thermodynamics, the heat effects, the thermodynamic properties and their relations, refrigeration and liquefaction processes, and the equilibria between phases and in chemical reactions. The book is suitably illustrated with a large number of visuals. In the second edition, new sections on Quasi-Static Process and Entropy Change in Reversible and Irreversible Processes are included. Besides, new Solved Model Question Paper and several new Multiple Choice Questions are also added that help develop the students' ability and confidence in the application of the underlying concepts. Primarily intended for the undergraduate students of chemical engineering and other related engineering disciplines such as polymer, petroleum and pharmaceutical engineering, the book will also be useful for the postgraduate students of the subject as well as professionals in the relevant fields.

Absorption Chillers and Heat Pumps Jul 20 2020 Significantly revised and updated since its first publication in 1996, Absorption Chillers and Heat Pumps, Second Edition discusses the fundamental physics and major applications of absorption chillers. While the popularity of absorption chillers began to dwindle in the United States in the late 1990's, a shift towards sustainability, green buildings and the use of renewable energy has brought about a renewed interest in absorption heat pump technology. In contrast, absorption chillers captured a large market share in Asia in the same time frame due to relative costs of gas and electricity. In addition to providing an in-depth discussion of fundamental concepts related to absorption refrigeration technology, this book provides detailed modeling of a broad range of simple and advanced cycles as well as a discussion of applications. New to the Second Edition: Offers details on the groundbreaking Vapor Surfactant theory of mass transfer enhancement

Presents extensively revised computer examples based on the latest version of EES (Engineering Equation Solver) software, including enhanced consistency and internal documentation Contains new LiBr/H₂O property routines covering a broad range of temperature and the full range of concentration Utilizes new NH₃/H₂O helper functions in EES which significantly enhance ease of use Adds a new chapter on absorption technology applications Offers updated absorption fluid transport property information Absorption Chillers and Heat Pumps, Second Edition provides an updated and thorough discussion of the physics and applications of absorption chillers and heat pumps. An in-depth guide to evaluating and simulating absorption systems, this revised edition provides significantly increased consistency and clarity in both the text and the worked examples. The introduction of the vapor surfactant theory is a major new component of the book. This definitive work serves as a resource for both the newcomer and seasoned professional in the field.

Fundamentals of Chemical Engineering Thermodynamics, SI Edition

Apr 09 2022 A brand new book, FUNDAMENTALS OF CHEMICAL ENGINEERING THERMODYNAMICS makes the abstract subject of chemical engineering thermodynamics more accessible to undergraduate students. The subject is presented through a problem-solving inductive (from specific to general) learning approach, written in a conversational and approachable manner. Suitable for either a one-semester course or two-semester sequence in the subject, this book covers thermodynamics in a complete and mathematically rigorous manner, with an emphasis on solving practical engineering problems. The approach taken stresses problem-solving, and draws from best practice engineering teaching strategies. FUNDAMENTALS OF CHEMICAL ENGINEERING THERMODYNAMICS uses examples to frame the importance of the material. Each topic begins with a motivational example that is investigated in context to that topic. This framing of the material is helpful to all readers, particularly to global learners who require big picture insights, and hands-on learners who struggle with

abstractions. Each worked example is fully annotated with sketches and comments on the thought process behind the solved problems. Common errors are presented and explained. Extensive margin notes add to the book accessibility as well as presenting opportunities for investigation. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Gravitation and Spacetime May 30 2021 This text provides a quantitative introduction to general relativity for advanced undergraduate and graduate students.

Fundamentals of Nuclear Engineering Apr 16 2020 Fundamental of Nuclear Engineering is derived from over 25 years of teaching undergraduate and graduate courses on nuclear engineering. The material has been extensively class tested and provides the most comprehensive textbook and reference on the fundamentals of nuclear engineering. It includes a broad range of important areas in the nuclear engineering field; nuclear and atomic theory; nuclear reactor physics, design, control/dynamics, safety and thermal-hydraulics; nuclear fuel engineering; and health physics/radiation protection. It also includes the latest information that is missing in traditional texts, such as space radiation. The aim of the book is to provide a source for upper level undergraduate and graduate students studying nuclear engineering.

Borgnakke's Fundamentals of Thermodynamics Oct 23 2020 This new edition of Borgnakke's Fundamentals of Thermodynamics continues to offer a comprehensive and rigorous treatment of classical thermodynamics, while retaining an engineering perspective. With concise, applications-oriented discussion of topics and self-test problems, this text encourages students to monitor their own learning. This classic text provides a solid foundation for subsequent studies in fields such as fluid mechanics, heat transfer and statistical thermodynamics, and prepares students to effectively apply thermodynamics in the practice of engineering.

Fundamentals of Engineering Thermodynamics Feb 19 2023 This

leading text in the field maintains its engaging, readable style while presenting a broader range of applications that motivate engineers to learn the core thermodynamics concepts. Two new coauthors help update the material and integrate engaging, new problems. Throughout the chapters, they focus on the relevance of thermodynamics to modern engineering problems. Many relevant engineering based situations are also presented to help engineers model and solve these problems.

Fundamentals of Thermodynamics Jun 11 2022

Conventional and Alternative Power Generation May 10 2022 A much-needed, up-to-date guide on conventional and alternative power generation This book goes beyond the traditional methods of power generation. It introduces the many recent innovations on the production of electricity and the way they play a major role in combating global warming and improving the efficiency of generation. It contains a strong analytical approach to underpin the theory of power plants—for those using conventional fuels, as well as those using renewable fuels—and looks at the problems from a unique environmental engineering perspective. The book also includes numerous worked examples and case studies to demonstrate the working principles of these systems. Conventional and Alternative Power Generation: Thermodynamics, Mitigation and Sustainability is divided into 8 chapters that comprehensively cover: thermodynamic systems; vapor power cycles, gas power cycles, combustion; control of particulates; carbon capture and storage; air pollution dispersal; and renewable energy and power plants. Features an abundance of worked examples and tutorials Examines the problems of generating power from an environmental engineering perspective Includes all of the latest information, technology, theories, and principles on power generation Conventional and Alternative Power Generation: Thermodynamics, Mitigation and Sustainability is an ideal text for courses on mechanical, chemical, and electrical engineering.

Gas Turbines for Electric Power Generation Jan 26 2021 Everything

you wanted to know about industrial gas turbines for electric power generation in one source with hard-to-find, hands-on technical information.

Fundamentals of Engineering Thermodynamics, 9e WileyPLUS LMS Student Package Jan 06 2022

Solutions Manual to Accompany Fundamentals of Engineering Thermodynamics Jan 18 2023

Engineering Thermodynamics Oct 11 2019 Here is a comprehensive and comprehensible treatment of engineering thermodynamics from its theoretical foundations to its applications in real situations. The thermodynamics presented will prepare students for later courses in fluid mechanics and heat transfer, and practicing engineers will find the applications helpful in their professional work. The book is appropriate for an introductory undergraduate course in thermodynamics and for a subsequent course in thermodynamic applications. The chapters dealing with steam power plants, internal combustion engines, and HVAC are unmatched. The introductory chapter on turbomachinery is also unique. A thorough development of the second law of thermodynamics is provided in chapters 7-9. The ramifications of the second law receive thorough discussion; the student not only performs calculations, but understands the implications of the calculated results. Computer models created in TK Solver accompany each chapter and are particularly useful in the application areas. The TK Solver files provided with the book can be used as written or modified and merged into models developed to analyze new problems. The book has two particularly important strengths: its readability and the depth of its treatment of applications. The readability will make the content understandable to the average students; the depth in applications will make the book suitable for applied upper-level courses as well.

Heat Pumps in Chemical Process Industry Nov 23 2020 As the chemical process industry is among the most energy demanding sectors, chemical engineers are endeavoring to contribute towards sustainable future. Due to the limitation of fossil fuels, the need for

energy independence, as well as the environmental problem of the greenhouse gas effect, there is a large increasing interest in the research and development of chemical processes that require less capital investment and reduced operating costs and lead to high efficiency. The use of heat pumps is a hot topic due to many advantages, such as low energy requirements as well as an increasing number of industrial applications. Therefore, in the current book, authors are focusing on use of heat pumps in the chemical industry, providing an overview of heat pump technology as applied in the chemical process industry, covering both theoretical and practical aspects: working principle, applied thermodynamics, theoretical background, numerical examples and case studies, as well as practical applications. The worked-out examples have been included to instruct students, engineers and process designers about how to design various heat pumps used in the industry. Reader friendly resources namely relevant equations, diagrams, figures and references that reflect the current and upcoming heat pump technologies, will be of great help to all readers from the chemical and petrochemical industry, biorefineries and other related areas.

FUNDAMENTALS OF ENGINEERING THERMODYNAMICS, 6TH ED Feb 13 2020 Market_Desc: Engineers Special Features: · Provides a broader range of applications in emerging technologies such as energy and the environment, bioengineering, and horizons.· Emphasizes modeling to support engineering decision-making involving thermodynamics concepts.· Develops problem-solving skills in three modes: conceptual, skill building, and design.· Encourages critical thinking and conceptual understanding with the help of exercises and Skills Developed checklists.· Contains Interactive Thermodynamics software that links realistic images with their related engineering model. About The Book: In the new sixth edition, readers will learn how to solve thermodynamics problems with the help of a structured methodology, examples and challenging problems. The book's sound problem-solving approach introduces them to concepts, which are then applied to relevant

engineering-based situations. The material is presented in an engaging that includes over 200 worked examples, over 1,700 end-of-chapter problems, and numerous illustrations and graphs.

Conventional and Alternative Power Generation Sep 14 2022 A much-needed, up-to-date guide on conventional and alternative power generation This book goes beyond the traditional methods of power generation. It introduces the many recent innovations on the production of electricity and the way they play a major role in combating global warming and improving the efficiency of generation. It contains a strong analytical approach to underpin the theory of power plants—for those using conventional fuels, as well as those using renewable fuels—and looks at the problems from a unique environmental engineering perspective. The book also includes numerous worked examples and case studies to demonstrate the working principles of these systems. **Conventional and Alternative Power Generation: Thermodynamics, Mitigation and Sustainability** is divided into 8 chapters that comprehensively cover: thermodynamic systems; vapor power cycles, gas power cycles, combustion; control of particulates; carbon capture and storage; air pollution dispersal; and renewable energy and power plants. Features an abundance of worked examples and tutorials Examines the problems of generating power from an environmental engineering perspective Includes all of the latest information, technology, theories, and principles on power generation **Conventional and Alternative Power Generation: Thermodynamics, Mitigation and Sustainability** is an ideal text for courses on mechanical, chemical, and electrical engineering.

Fundamentals of Combustion Engineering Oct 03 2021 This book is an introductory text on fundamental aspects of combustion including thermodynamics, heat and mass transfer and chemical kinetics which are used to systematically derive the basic concepts of combustion. Apart from the fundamental aspects, many of the emerging topics in the field like microscale combustion, combustion dynamics, oxy-fuel combustion and combustion diagnostics are also covered in the

book. This would help the beginners in the subject to get initiated to the state of the art topics. Key Features: Coverage of the essential aspects of combustion engineering suitable for both beginners and practicing professionals Topics like entropy generation, microscale combustion, combustion diagnostics, second law-based analysis exclusive to the title Balanced treatment of thermodynamics, transport phenomena and chemical kinetics Discussion on state of the art techniques in combustion diagnostics Illustrates combustion of gaseous, liquid and solid fuels along with emission of pollutants and greenhouse gases

Aircraft Propulsion and Gas Turbine Engines Sep 21 2020 Aircraft Propulsion and Gas Turbine Engines, Second Edition builds upon the success of the book 's first edition, with the addition of three major topic areas: Piston Engines with integrated propeller coverage; Pump Technologies; and Rocket Propulsion. The rocket propulsion section extends the text 's coverage so that both Aerospace and Aeronautical topics can be studied and compared. Numerous updates have been made to reflect the latest advances in turbine engines, fuels, and combustion. The text is now divided into three parts, the first two devoted to air breathing engines, and the third covering non-air breathing or rocket engines.

Fundamentals of Engineering Thermodynamics, 9th Edition EPUB Reg Card Loose-Leaf Print Companion Set Aug 13 2022

Introduction to Energy Analysis Dec 25 2020 The energy supply and demand system is of great importance for society, from economic, social, and ecological viewpoints. The last decade in particular has seen rapid changes in the world of energy systems, and it is therefore now an important area for study, academic research, and professional work. This textbook provides an introduction to energy analysis for those students who want to specialise in this challenging field. In comparison to other textbooks, this book provides a balanced treatment of complete energy systems, covering the demand side, the supply side, and the energy markets that connect these. The emphasis is very much on presenting a range of tools and

methodologies that will help students find their way in analysing real world problems in energy systems. Featuring learning objectives, further readings and practical exercises in each chapter, An Introduction to Energy Analysis will be essential reading for upper-level undergraduate and postgraduate students with a background in the natural sciences and engineering. This book may also be useful for professionals dealing with energy issues, as a first introduction into the field.

Essential Engineering Thermodynamics Apr 28 2021 Engineering Thermodynamics is a core course for students majoring in Mechanical and Aerospace Engineering. Before taking this course, students usually have learned *Engineering Mechanics*—Statics and Dynamics, and they are used to solving problems with calculus and differential equations. Unfortunately, these approaches do not apply for Thermodynamics. Instead, they have to rely on many data tables and graphs to solve problems. In addition, many concepts are hard to understand, such as entropy. Therefore, most students feel very frustrated while taking this course. The key concept in Engineering Thermodynamics is state-properties: If one knows two properties, the state can be determined, as well as the other four properties. Unlike most textbooks, the first two chapters of this book introduce thermodynamic properties and laws with the ideal gas model, where equations can be engaged. In this way, students can employ their familiar approaches, and thus can understand them much better. In order to help students understand entropy in depth, interpretation with statistical physics is introduced. Chapters 3 and 4 discuss control-mass and control-volume processes with general fluids, where the data tables are used to solve problems. Chapter 5 covers a few advanced topics, which can also help students understand the concepts in thermodynamics from a broader perspective.

Nuclear Energy for Hydrogen Generation through Intermediate Heat Exchangers Nov 11 2019 This book describes recent technological developments in next generation nuclear reactors that have created renewed interest in nuclear process heat for industrial applications.

The author's discussion mirrors the industry's emerging focus on combined cycle Next Generation Nuclear Plants' (NGNP) seemingly natural fit in producing electricity and process heat for hydrogen production. To utilize this process heat, engineers must uncover a thermal device that can transfer the thermal energy from the NGNP to the hydrogen plant in the most performance efficient and cost effective way possible. This book is written around that vital quest, and the author describes the usefulness of the Intermediate Heat Exchanger (IHX) as a possible solution. The option to transfer heat and thermal energy via a single-phase forced convection loop where fluid is mechanically pumped between the heat exchangers at the nuclear and hydrogen plants is presented, and challenges associated with this tactic are discussed. As a second option, heat pipes and thermosyphons, with their ability to transport very large quantities of heat over relatively long distance with small temperature losses, are also examined.

Biorenewable Resources Dec 13 2019 Biorenewable Resources: Engineering New Products from Agriculture, 2nd Edition will provide comprehensive coverage of engineering systems that convert agricultural crops and residues into bioenergy and biobased products. This edition is thoroughly updated and revised to better serve the needs of the professional and research fields working with biorenewable resource development and production. Biorenewable resources is a rapidly growing field that forms at the interface between agricultural and plant sciences and process engineering. Biorenewable Resources will be an indispensable reference for anyone working in the production of biomass or biorenewable resources.

Liquid-Vapor Phase-Change Phenomena Sep 02 2021 Since the second edition of Liquid-Vapor Phase-Change Phenomena was written, research has substantially enhanced the understanding of the effects of nanostructured surfaces, effects of microchannel and nanochannel geometries, and effects of extreme wetting on liquid-vapor phase-change processes. To cover advances in these areas, the

new third edition includes significant new coverage of microchannels and nanostructures, and numerous other updates. More worked examples and numerous new problems have been added, and a complete solution manual and electronic figures for classroom projection will be available for qualified adopting professors.

Fundamentals of Gas Dynamics Jun 30 2021 Provides all necessary equations, tables, and charts as well as self tests. Included chapters cover reaction propulsion systems and real gas effects. Written and organized in a manner that makes it accessible for self learning.

Engineering and Chemical Thermodynamics Jul 12 2022 Chemical engineers face the challenge of learning the difficult concept and application of entropy and the 2nd Law of Thermodynamics. By following a visual approach and offering qualitative discussions of the role of molecular interactions, Koretsky helps them understand and visualize thermodynamics. Highlighted examples show how the material is applied in the real world. Expanded coverage includes biological content and examples, the Equation of State approach for both liquid and vapor phases in VLE, and the practical side of the 2nd Law. Engineers will then be able to use this resource as the basis for more advanced concepts.

Fundamentals of Thermodynamics 7th Edition for UMass Dartmouth with WPSA Set Oct 15 2022

Moran's Principles of Engineering Thermodynamics Dec 17 2022 Moran ' s Principles of Engineering Thermodynamics, SI Version, continues to offer a comprehensive and rigorous treatment of classical thermodynamics, while retaining an engineering perspective. With concise, applications-oriented discussion of topics and self-test problems, this book encourages students to monitor their own learning. This classic text provides a solid foundation for subsequent studies in fields such as fluid mechanics, heat transfer and statistical thermodynamics, and prepares students to effectively apply thermodynamics in the practice of engineering. This edition is revised with additional examples and end-of-chapter problems to increase student comprehension.

Engineering Thermodynamics Solutions Manual Jan 14 2020

Stochastic Thermodynamics Mar 16 2020 The first comprehensive graduate-level introduction to stochastic thermodynamics Stochastic thermodynamics is a well-defined subfield of statistical physics that aims to interpret thermodynamic concepts for systems ranging in size from a few to hundreds of nanometers, the behavior of which is inherently random due to thermal fluctuations. This growing field therefore describes the nonequilibrium dynamics of small systems, such as artificial nanodevices and biological molecular machines, which are of increasing scientific and technological relevance. This textbook provides an up-to-date pedagogical introduction to stochastic thermodynamics, guiding readers from basic concepts in statistical physics, probability theory, and thermodynamics to the most recent developments in the field. Gradually building up to more advanced material, the authors consistently prioritize simplicity and clarity over exhaustiveness and focus on the development of readers' physical insight over mathematical formalism. This approach allows the reader to grow as the book proceeds, helping interested young scientists to enter the field with less effort and to contribute to its ongoing vibrant development. Chapters provide exercises to complement and reinforce learning. Appropriate for graduate students in physics and biophysics, as well as researchers, Stochastic Thermodynamics serves as an excellent initiation to this rapidly evolving field. Emphasizes a pedagogical approach to the subject Highlights connections with the thermodynamics of information Pays special attention to molecular biophysics applications Privileges physical intuition over mathematical formalism Solutions manual available on request for instructors adopting the book in a course

Gas Turbines Nov 04 2021 This physics-first, design-oriented textbook explains concepts of gas turbine secondary flows, reduced-order modeling methods, and 3-D CFD.

Renewable Energy Powered Desalination Handbook Aug 01 2021
Renewable Energy Powered Desalination Handbook: Applications

and Thermodynamics offers a practical handbook on the use of renewable technologies to produce freshwater using sustainable methods. Sections cover the different renewable technologies currently used in the field, including solar, wind, geothermal and nuclear desalination. This coverage is followed by an equally important clear and rigorous discussion of energy recovery and the thermodynamics of desalination processes. While seawater desalination can provide a climate-independent source of drinking water, the process is energy-intensive and environmentally damaging. This book provides readers with the latest methods, processes, and technologies available for utilizing renewable energy applications as a valuable technology. Desalination based on the use of renewable energy sources can provide a sustainable way to produce fresh water. It is expected to become economically attractive as the costs of renewable technologies continue to decline and the prices of fossil fuels continue to increase. Covers renewable energy sources, such as nuclear, geothermal, solar and wind powered desalination and energy storage and optimization Includes energy recovery schemes, optimization and process controls Elaborates on the principles of thermodynamics and second law efficiencies to improve process performance, including solar desalination Explains global applicability of solar, wind, geothermal and nuclear energy sources with case studies Discusses renewable energy-desalinated water optimization schemes for island communities

Thermodynamic Optimization of Complex Energy Systems Jun 18 2020 A comprehensive assessment of the methodologies of thermodynamic optimization, exergy analysis and thermoeconomics, and their application to the design of efficient and environmentally sound energy systems. The chapters are organized in a sequence that begins with pure thermodynamics and progresses towards the blending of thermodynamics with other disciplines, such as heat transfer and cost accounting. Three methods of analysis stand out: entropy generation minimization, exergy (or availability) analysis, and thermoeconomics. The book reviews current directions in a field

that is both extremely important and intellectually alive. Additionally, new directions for research on thermodynamics and optimization are revealed.

Design and Operation of Solid Oxide Fuel Cells Aug 21 2020 Design and Operation of Solid Oxide Fuel Cells: The Systems Engineering Vision for Industrial Application presents a comprehensive, critical and accessible review of the latest research in the field of solid oxide fuel cells (SOFCs). As well as discussing the theoretical aspects of the field, the book explores a diverse range of power applications, such as hybrid power plants, polygeneration, distributed electricity generation, energy storage and waste management—all with a focus on modeling and computational skills. Dr. Sharifzadeh presents the associated risks and limitations throughout the discussion, providing a very complete and thorough analysis of SOFCs and their control and operation in power plants. The first of its kind, this book will be of particular interest to energy engineers, industry experts and academic researchers in the energy, power and transportation industries, as well as those working and researching in the chemical, environmental and material sectors. Closes the gap between various power engineering disciplines by considering a diverse variety of applications and sectors Presents and reviews a variety of modeling techniques and considers regulations throughout Includes CFD modeling examples and process simulation and optimization programming guidance

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