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Responding to concerns about global warming, carbon dioxide emissions, and the political instability that threatens the US supply, this book enables management, system analysts, and performance engineers to develop and apply an operating strategy for the on-line optimization and control of energy systems in industrial plants. It provides proven techniques for analysis that can guide equipment selection and

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flowsheet adjustments to reduce plant energy consumption without affecting the productive capacity of the plant. Originating in the 1970s and 1980s when high energy costs and the OPEC crises fostered energy conservation, these techniques have been applied successfully in many industries in the United States, as well as in several industrialized countries in the Middle and Far East.

Organic Rankine Cycle (ORC) Power Systems: Technologies and Applications provides a systematic and detailed description of organic Rankine cycle technologies and the way they are

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increasingly of interest for cost-effective sustainable energy generation. Popular applications include cogeneration from biomass and electricity generation from geothermal reservoirs and concentrating solar power installations, as well as waste heat recovery from gas turbines, internal combustion engines and medium- and low-temperature industrial processes. With hundreds of ORC power systems already in operation and the market growing at a fast pace, this is an active and engaging area of scientific research and technical development. The book is structured in three main parts: (i)

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Introduction to ORC Power Systems, Design and Optimization, (ii) ORC Plant Components, and (iii) Fields of Application. Provides a thorough introduction to ORC power systems Contains detailed chapters on ORC plant components Includes a section focusing on ORC design and optimization Reviews key applications of ORC technologies, including cogeneration from biomass, electricity generation from geothermal reservoirs and concentrating solar power installations, waste heat recovery from gas turbines, internal combustion engines and medium- and low-temperature industrial

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processes Various chapters are authored by well-known specialists from Academia and ORC manufacturers

Power Plant Instrumentation and Control Handbook, Second Edition, provides a contemporary resource on the practical monitoring of power plant operation, with a focus on efficiency, reliability, accuracy, cost and safety. It includes comprehensive listings of operating values and ranges of parameters for temperature, pressure, flow and levels of both conventional thermal power plant and combined/cogen plants, supercritical plants and

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once-through boilers. It is updated to include tables, charts and figures from advanced plants in operation or pilot stage. Practicing engineers, freshers, advanced students and researchers will benefit from discussions on advanced instrumentation with specific reference to thermal power generation and operations. New topics in this updated edition include plant safety lifecycles and safety integrity levels, advanced ultra-supercritical plants with advanced firing systems and associated auxiliaries, integrated gasification combined cycle (IGCC) and integrated gasification fuel cells (IGFC),

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advanced control systems, and safety lifecycle and safety integrated systems. Covers systems in use in a wide range of power plants: conventional thermal power plants, combined/cogen plants, supercritical plants, and once through boilers Presents practical design aspects and current trends in instrumentation Discusses why and how to change control strategies when systems are updated/changed Provides instrumentation selection techniques based on operating parameters. Spec sheets are included for each type of instrument Consistent with current professional practice in North

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America, Europe, and India All-new coverage of Plant safety lifecycles and Safety Integrity Levels Discusses control and instrumentation systems deployed for the next generation of A-USC and IGCC plants

Design and Optimization of a Condenser for a Steam Powered Car

Fundamentals of Heat and Mass Transfer

Clean Coal, Oil and Gas Development

Organic Rankine Cycle (ORC) Power Systems

Basic Principles, Performance Monitoring, and Maintenance

Combined Heating, Cooling & Power Handbook

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The Exergy Method of Thermal Plant Analysis aims to discuss the history, related concepts, applications, and development of the Exergy Method - analysis technique that uses the Second Law of Thermodynamics as the basis of evaluation of thermodynamic loss. The book, after an introduction to thermodynamics and its related concepts, covers concepts related to exergy, such as physical and chemical exergy, exergy concepts for a control

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method and a closed-system analysis, the exergy analysis of simple processes, and the thermocentric applications of exergy. A seven-part appendix is also included. Appendices A-D covers miscellaneous information on exergy, and Appendix E features charts of thermodynamic properties. Appendix F is a glossary of terms, and Appendix G contains the list of references. The text is recommended for physicists who would like to know more about the

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Exergy Method, its underlying principles, and its applications not only in thermal plant analysis but also in certain areas.

Thermal Cycles of Heat Recovery Power Plants presents information about thermal power plant cycles suitable for waste heat recovery (WHR) in modern power plants. The author covers five thermal power cycles: organic Rankine cycle (ORC), organic flash cycle (OFC), Kalina cycle (KC), steam Rankine cycle

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(SRC) and steam flash cycle (SFC) with the working fluids of R123, R124, R134a, R245fa, R717 and R407C. The handbook helps the reader to understand the latest power plant technologies suitable for utilizing the waste heat generated by thermal industrial processes. Key Features: - Comprehensive modeling, simulation, analysis and optimization of 5 power cycle types with different working fluids - Clear information about the

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processes and solutions of thermal power cycles to augment the power generation with improved energy conversion. - Simple, reader friendly presentation - bibliographic references after each chapter for further reading This handbook is suitable for engineering students in degree courses and professionals in training programs who require resources on advanced thermal power plant operation and optimal waste heat recovery processes,

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respectively. It is also a handy reference for energy conversion efficiency in heat recovery power plants. The book is also of interest to any researchers interested in industrial applications of thermodynamic processes.

Thermodynamic Analysis and Optimization of Geothermal Power Plants guides researchers and engineers on the analysis and optimization of geothermal power plants through conventional and

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innovative methods. Coverage encompasses the fundamentals, thermodynamic analysis, and optimization of geothermal power plants. Advanced thermodynamic analysis tools such as exergy analysis, thermoeconomic analysis, and several thermodynamic optimization methods are covered in-depth for different configurations of geothermal power plants through case studies. Interdisciplinary research with

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relevant economic and environmental dimensions are addressed in many of the studies, along with optimization studies aimed at better efficiency, lower cost and lower environmental impact. Addresses the complexities of thermodynamic assessment in almost all operational plant configurations, including solar-geothermal and multi-generation power plants Includes an exemplary range of case studies, from basic to integrated Provides modern

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optimization methods, including entropy-based, exergoeconomic, artificial neural networks and multi-objective particle swarm Covers environmental impact considerations and integration with renewable energy systems
System Optimization of a High Efficiency Steam Engine
Training Manual on Steam Turbines & Auxiliaries (Non Reheat Type)
Comprehensive guide to all aspects of steam turbines

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Hearing Before the Select Committee on Energy Independence and Global Warming, House of Representatives, One Hundred Tenth Congress, First Session, September 6, 2007

Advances in Steam Turbines for Modern Power Plants

Application of Exergy

The Handbook of Reliability, Maintenance, and System Safety through Mathematical Modeling discusses the many factors affect reliability and performance, including engineering

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design, materials, manufacturing, operations, maintenance, and many more. Reliability is one of the fundamental criteria in engineering systems design, with maintenance serving as a way to support reliability throughout a system's life. Addressing these issues requires information, modeling, analysis and testing. Different techniques are proposed and implemented to help readers analyze various behavior measures (in terms of the functioning and performance) of systems. Enables mathematicians to convert any process or system into a model that can be analyzed through a specific technique

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Examines reliability and mathematical modeling in a variety of disciplines, unlike competitors which typically examine only one Includes a table of contents with simple to complex examples, starting with basic models and then refining modeling approaches step-by-step

This textbook fosters information exchange and discussion on all aspects of introductory matters of modern mechanical engineering from a number of perspectives including: mechanical engineering as a profession, materials and manufacturing processes, machining and machine tools, tribology and

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surface engineering, solid mechanics, applied and computational mechanics, mechanical design, mechatronics and robotics, fluid mechanics and heat transfer, renewable energies, biomechanics, nanoengineering and nanomechanics. At the end of each chapter, a list of 10 questions (and answers) is provided.

Thermal power plants are one of the most important process industries for engineering professionals. Over the past decades, the power sector is facing a number of critical issues; however, the most fundamental challenge is meeting the growing power demand

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in sustainable and efficient ways. Practicing power plant engineers not only look after operation and maintenance of the plant, but, also look after range of activities including research and development, starting from power generation to environmental aspects of power plants. The book Thermal Power Plants - Advanced Applications introduces analysis of plant performance, energy efficiency, combustion, heat transfer, renewable power generation, catalytic reduction of dissolved oxygen and environmental aspects of combustion residues. This book addresses issues related to both coal fired and steam

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power plants. The book is suitable for both undergraduate and research higher degree students, and of course for practicing power plant engineers.

Energy Research Abstracts

Comprehensive Energy Systems

Advanced Applications

Industrial Energy Systems

Thermodynamic Analysis and Optimization of Geothermal Power Plants

Hearing Before the Subcommittee on Science, Technology, and Innovation of the Committee on Commerce, Science, and Transportation, United States Senate, One Hundred Tenth

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Congress, First Session, November 7, 2007

Comprehensive Energy Systems provides a unified source of information covering the entire spectrum of energy, one of the most significant issues humanity has to face. This comprehensive book describes traditional and novel energy systems, from single generation to multi-generation, also covering theory and applications. In addition, it also presents high-level coverage on energy policies, strategies, environmental impacts and sustainable development. No other published work

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covers such breadth of topics in similar depth. High-level sections include Energy Fundamentals, Energy Materials, Energy Production, Energy Conversion, and Energy Management. Offers the most comprehensive resource available on the topic of energy systems Presents an authoritative resource authored and edited by leading experts in the field Consolidates information currently scattered in publications from different research fields (engineering as well as physics, chemistry, environmental sciences and economics), thus ensuring a

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common standard and language
Sustainable Power Generation: Current Status, Future Challenges, and Perspectives addresses emerging problems faced by the transition to sustainable electricity generation and combines perspectives of engineering and economics to provide a well-rounded overview. This book features an in-depth discussion of the main aspects of sustainable energy and the infrastructure of existing technologies. It goes on to evaluate natural resources that are sustainable and

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convenient forms of energy, and finishes with an investigation of the environmental effects of energy systems and power generating systems of the future. Other sections tackle fundamental topics such as thermal power, nuclear energy, bioenergy, hydropower, challenges and risks to sustainable options, and emerging technologies that support global power trends. Sustainable Power Generation explores the future of sustainable electricity generation, highlighting topics such as energy justice, emerging

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competences, and major transitions that need to be navigated. This is an ideal reference for researchers, engineers, and other technical specialists working in the energy sector, as well as environmental specialists and policy makers. Provides a multidisciplinary, structured approach to electricity generation, focusing on the key areas of technology, business, project management, and sustainability Includes analytics and discussions of sustainability metrics, underlying issues, and challenges Presents business cases,

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offering a mix of academic depth and practicality on energy options
This book presents a wide-ranging review of the latest research and development directions in thermal systems optimization using population-based metaheuristic methods. It helps readers to identify the best methods for their own systems, providing details of mathematical models and algorithms suitable for implementation. To reduce mathematical complexity, the authors focus on optimization of individual components

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rather than taking on systems as a whole. They employ numerous case studies: heat exchangers; cooling towers; power generators; refrigeration systems; and others. The importance of these subsystems to real-world situations from internal combustion to air-conditioning is made clear. The thermal systems under discussion are analysed using various metaheuristic techniques, with comparative results for different systems. The inclusion of detailed MATLAB® codes in the text will assist readers—researchers,

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practitioners or students—to assess these techniques for different real-world systems. Thermal System Optimization is a useful tool for thermal design researchers and engineers in academia and industry, wishing to perform thermal system identification with properly optimized parameters. It will be of interest for researchers, practitioners and graduate students with backgrounds in mechanical, chemical and power engineering.

Technologies and Applications
Carbon Sequestration Technologies

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SUSE 2021

**Analysis, Optimization, and Control
Sustainable Power Generation
Power Plants with Air-cooled Condensing
Systems**

Many of the economic road blocks which have previously served to discourage the implementation of alternative power generation technologies can now be readily overcome through effective energy resource optimization. It is now a fact that solid financial returns can be achieved from combined heating, cooling and power generation projects by integrating energy and cost efficiency goals, and seeking a match between power

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production and heating/cooling requirements. This book is intended to serve as a road map to those seeking to realize optimum economic returns on such projects. The first section provides an introduction to basic heat and power thermodynamics, with an overview of heat and power generation technologies and equipment. The second section explores the infrastructure in which the project must be implemented, including environmental considerations, as well as utility rate structures. The third section provides detailed coverage of a broad range of technology types, and discusses how opportunities for their application can be identified and successfully exploited. The final section takes you through each step of project development, implementation and operation.

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Numerous examples are provided of actual field applications, with supporting documentation of system layouts and performance. The text is supplemented with more than one thousand graphics, including photos, cutaway drawings, layout schematics, performance curves, and data tables.

The main scope of this study is to emphasize exergy efficiency in all fields of industry. The chapters collected in the book are contributed by invited researchers with a long-standing experience in different research areas. I hope that the material presented here is understandable to a wide audience, not only energy engineers but also scientists from various disciplines. The book contains seven chapters in three sections: (1) "General

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Information about Exergy," (2) "Exergy Applications," and (3) "Thermoeconomic Analysis." This book provides detailed and up-to-date evaluations in different areas written by academics with experience in their fields. It is anticipated that this book will make a scientific contribution to exergy workers, researchers, academics, PhD students, and other scientists in both the present and the future.

With Wiley's Enhanced E-Text, you get all the benefits of a downloadable, reflowable eBook with added resources to make your study time more effective. Fundamentals of Heat and Mass Transfer 8th Edition has been the gold standard of heat transfer pedagogy for many decades, with a commitment to continuous improvement by four

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authors' with more than 150 years of combined experience in heat transfer education, research and practice. Applying the rigorous and systematic problem-solving methodology that this text pioneered an abundance of examples and problems reveal the richness and beauty of the discipline. This edition makes heat and mass transfer more approachable by giving additional emphasis to fundamental concepts, while highlighting the relevance of two of today's most critical issues: energy and the environment.

Technologies & Applications : an Integrated Approach to Energy Resource Optimization

Modeling, Control, and Efficiency Improvement

The Exergy Method of Thermal Plant Analysis

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**Thermal Cycles of Heat Recovery Power Plants
New Energy Opportunities Through Carbon Capture and Storage : Hearing Before a Subcommittee of the Committee on Appropriations, United States Senate, One Hundred Tenth Congress, First Session, Special Hearing, August 13, 2007, Bismarck, ND.**

Fossil Energy Update

Thermal Power Plants: Modeling, Control, and Efficiency Improvement explains how to solve highly complex industry problems regarding identification, control, and optimization through integrating

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conventional technologies, such as modern control technology, computational intelligence-based multiobjective identification and optimization, distributed computing, and cloud computing with computational fluid dynamics (CFD) technology. Introducing innovative methods utilized in industrial applications, explored in scientific research, and taught at leading academic universities, this book: Discusses thermal power plant

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processes and process modeling, energy conservation, performance audits, efficiency improvement modeling, and efficiency optimization supported by high-performance computing integrated with cloud computing Shows how to simulate fossil fuel power plant real-time processes, including boiler, turbine, and generator systems Provides downloadable source codes for use in CORBA C++, MATLAB®, Simulink®, VisSim, Comsol, ANSYS, and ANSYS Fluent

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modeling software Although the projects in the text focus on industry automation in electrical power engineering, the methods can be applied in other industries, such as concrete and steel production for real-time process identification, control, and optimization.

Gives a foundation to the four principle facets of thermal design: heat transfer analysis, materials performance, heating and cooling

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technology, and instrumentation and control. The focus is on providing practical thermal design and development guidance across the spectrum of problem analysis, material applications, equipment specification, and sensor and control selection.

Highly Recommended for : Power Plant Professionals seeking high growth in career Interview preparations for power plant jobs A comprehensive training manual on Steam Turbines & auxiliaries

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(Non Reheat Type) covering all aspects for thermal power plants. Its a 300 page Spiral bound manual must for every power plant professional. The manual contains text, images/drawings & illustrations. So far the books written on thermal plants describe mostly the reheat type units. These books are intended for technical personnel working in utility plants but, again, most of them deal predominantly with the theoretical aspects of turbines and

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their auxiliaries and lack in practical side of the subject. The aim is to give following benefits to the reader: To provide an in-depth knowledge of plant and equipment to the plant professionals associated with industrial boilers and turbines. It is to be noted that most of the industrial thermal units (like captive power plants attached to main technological units) are of non-reheat type. To cover the practical aspects of thermal power

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stations missing in most of the books available in the market. The book describes in details the constructional features of the plant and equipment, their operation and maintenance and overhauling procedures, performance monitoring as well as troubleshooting. To cover the theoretical aspects of a thermal unit necessary to be known to the professionals for thorough understanding of the systems involved. This knowledge would assist them: In

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selecting the plant and equipment suitable to their requirement In operating and maintaining the plant with best efficiency, availability and reliability The book is a must for those working professionals who aspire for a fast growth of their professional career. It will also be of immense help to the personnel preparing for boiler proficiency examinations. It contains following topics: Chapter – 1
Thermodynamics of a Steam Turbine

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Chapter – 2 Steam Turbine Fundamentals

Chapter – 3 Constructional features of steam turbines

Chapter – 4 The lubricating oil system

Chapter – 5 Steam turbine governing system

Chapter – 6 Steam turbine protection system

Chapter – 7 Turbovisory system

Chapter – 8 Turbine gland sealing system

Chapter – 9 Turbine system and cycles

Chapter – 10 Condensers, deaerators and closed feedwater heater

Chapter – 11 Main and auxiliary cooling water

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systems and cooling towers Chapter – 12

Turbine Plant Pumps Chapter – 13

Condensate and feed water treatment

Chapter – 14 Turbine Plant Operation

Chapter – 15 Turbine Plant Maintenance

Chapter – 16 Turbine performance and optimization

A Guide to Thermal Power Plants

Handbook of Clean Energy Systems, 6

Volume Set

The Handbook of Reliability,

Maintenance, and System Safety through

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Mathematical Modeling

Clean Coal Technology

Power Plant Instrumentation and Control Handbook

Optimization of Energy Systems

An essential resource for optimizing energy systems to enhance design capability, performance and sustainability Optimization of Energy Systems comprehensively describes the thermodynamic modelling, analysis and optimization of numerous types of energy systems in various applications. It provides a new understanding of the system and the process of defining proper objective functions for determination of

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the most suitable design parameters for achieving enhanced efficiency, cost effectiveness and sustainability. Beginning with a general summary of thermodynamics, optimization techniques and optimization methods for thermal components, the book goes on to describe how to determine the most appropriate design parameters for more complex energy systems using various optimization methods. The results of each chapter provide potential tools for design, analysis, performance improvement, and greenhouse gas emissions reduction. Key features: Comprehensive coverage of the modelling, analysis and optimization of many energy systems for a variety of applications. Examples, practical applications and case

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studies to put theory into practice. Study problems at the end of each chapter that foster critical thinking and skill development. Written in an easy-to-follow style, starting with simple systems and moving to advanced energy systems and their complexities. A unique resource for understanding cutting-edge research in the thermodynamic analysis and optimization of a wide range of energy systems, Optimization of Energy Systems is suitable for graduate and senior undergraduate students, researchers, engineers, practitioners, and scientists in the area of energy systems.

The 29th European Symposium on Computer Aided Process Engineering, contains the papers presented at

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the 29th European Symposium of Computer Aided Process Engineering (ESCAPE) event held in Eindhoven, The Netherlands, from June 16-19, 2019. It is a valuable resource for chemical engineers, chemical process engineers, researchers in industry and academia, students, and consultants for chemical industries. Presents findings and discussions from the 29th European Symposium of Computer Aided Process Engineering (ESCAPE) event

This volume is a comprehensive presentation of analytical theory and real-world practical solutions. It clearly illustrates updated approaches that plant managers and performance engineers can use in judging condenser performance and in making

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maintenance decisions. The author examines current methods for modeling, diagnosing and improving condenser performance. He describes how to calculate heat transfer coefficients, provides details of the recent ASME Power Test Code PTC 12.2-1998, and explains the significance of heat transfer coefficients in measuring the overall performance of an operating condenser. Further discussion includes condenser cleaning schedules that save money and reduce CO₂ emissions, diagnostic methods that help unit operators pinpoint problem areas, monitoring techniques that help predict the onset of tube fouling and deposit accumulation, and proper methods of tube plugging. New topic areas are also explored: assigning a dollar

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amount and excess carbon emissions to condenser fouling; methods for estimating cooling water flow rate; and performance analysis for multicompartment condensers.

Design of Thermal Energy Systems
Preprints

The Role of Exergy in Energy and the Environment
Proceedings of the International Symposium on
Sustainable Energy and Power Engineering 2021
29th European Symposium on Computer Aided
Chemical Engineering

Selected Water Resources Abstracts

Good, No Highlights, No Markup, all pages are intact, Slight Shelfwear, may have the corners slightly dented, may have

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slight color changes/slightly damaged spine.

Geothermal Power Generation: Developments and Innovation provides an update to the advanced energy technologies that are urgently required to meet the challenges of economic development, climate change mitigation, and energy security. As geothermal resources are considered renewable and can be used to generate baseload electricity while producing very low levels of greenhouse gas emissions, they can play a key role in future energy needs. This book, edited by a highly respected expert, provides a comprehensive overview of the major aspects of geothermal power production. The chapters, contributed by specialists in their respective areas, cover resource discovery, resource characterization, energy conversion systems, and design and economic

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considerations. The final section provides a range of fascinating case studies from across the world, ranging from Larderello to Indonesia. Users will find this to be an essential text for research and development professionals and engineers in the geothermal energy industry, as well as postgraduate researchers in academia who are working on geothermal energy. Provides readers with a comprehensive and systematic overview of geothermal power generation Presents an update to the advanced energy technologies that are urgently required to meet the challenges of economic development, climate change mitigation, and energy security Edited by a world authority in the field, with chapters contributed by experts in their particular areas Includes comprehensive case studies from across the world, ranging

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from Larderello to Indonesia

The Handbook of Clean Energy Systems brings together an international team of experts to present a comprehensive overview of the latest research, developments and practical applications throughout all areas of clean energy systems. Consolidating information which is currently scattered across a wide variety of literature sources, the handbook covers a broad range of topics in this interdisciplinary research field including both fossil and renewable energy systems. The development of intelligent energy systems for efficient energy processes and mitigation technologies for the reduction of environmental pollutants is explored in depth, and environmental, social and economic impacts are also addressed. Topics covered include: Volume 1 - Renewable

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Energy: Biomass resources and biofuel production; Bioenergy Utilization; Solar Energy; Wind Energy; Geothermal Energy; Tidal Energy. Volume 2 - Clean Energy Conversion Technologies: Steam/Vapor Power Generation; Gas Turbines Power Generation; Reciprocating Engines; Fuel Cells; Cogeneration and Polygeneration. Volume 3 - Mitigation Technologies: Carbon Capture; Negative Emissions System; Carbon Transportation; Carbon Storage; Emission Mitigation Technologies; Efficiency Improvements and Waste Management; Waste to Energy. Volume 4 - Intelligent Energy Systems: Future Electricity Markets; Diagnostic and Control of Energy Systems; New Electric Transmission Systems; Smart Grid and Modern Electrical Systems; Energy Efficiency of Municipal Energy Systems; Energy Efficiency of Industrial

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Energy Systems; Consumer Behaviors; Load Control and Management; Electric Car and Hybrid Car; Energy Efficiency Improvement. Volume 5 - Energy Storage: Thermal Energy Storage; Chemical Storage; Mechanical Storage; Electrochemical Storage; Integrated Storage Systems. Volume 6 - Sustainability of Energy Systems: Sustainability Indicators, Evaluation Criteria, and Reporting; Regulation and Policy; Finance and Investment; Emission Trading; Modeling and Analysis of Energy Systems; Energy vs. Development; Low Carbon Economy; Energy Efficiencies and Emission Reduction. Key features: Comprising over 3,500 pages in 6 volumes, HCES presents a comprehensive overview of the latest research, developments and practical applications throughout all areas of clean energy systems, consolidating a

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wealth of information which is currently scattered across a wide variety of literature sources. In addition to renewable energy systems, HCES also covers processes for the efficient and clean conversion of traditional fuels such as coal, oil and gas, energy storage systems, mitigation technologies for the reduction of environmental pollutants, and the development of intelligent energy systems. Environmental, social and economic impacts of energy systems are also addressed in depth. Published in full colour throughout. Fully indexed with cross referencing within and between all six volumes. Edited by leading researchers from academia and industry who are internationally renowned and active in their respective fields. Published in print and online. The online version is a single publication (i.e. no updates), available for one-time purchase

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or through annual subscription.

The Future of Coal Under Carbon Cap and Trade

Geothermal Power Generation

Monthly Catalog of United States Government Publications,
Cumulative Index

Index to the Monthly Issues

Task 2 and Final Report

Handbook of Applied Thermal Design

Advances in Steam Turbines for Modern Power
Plants

Design of Thermal Energy Systems Pradip

Majumdar, Northern Illinois University, USA A
comprehensive introduction to the design and

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analysis of thermal energy systems Design of Thermal Energy Systems covers the fundamentals and applications in thermal energy systems and components, including conventional power generation and cooling systems, renewable energy systems, heat recovery systems, heat sinks and thermal management. Practical examples are used throughout and are drawn from solar energy systems, fuel cell and battery thermal management, electrical and electronics cooling, engine exhaust heat and emissions, and manufacturing processes. Recent research topics such as steady and unsteady

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state simulation and optimization methods are also included. Key features: Provides a comprehensive introduction to the design and analysis of thermal energy systems, covering fundamentals and applications. Includes a wide range of industrial application problems and worked out example problems. Applies thermal analysis techniques to generate design specification and ratings. Demonstrates how to design thermal systems and components to meet engineering specifications. Considers alternative options and allows for the estimation of cost and feasibility of thermal systems.

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Accompanied by a website including software for design and analysis, a solutions manual, and presentation files with PowerPoint slides. The book is essential reading for: practicing engineers in energy and power industries; consulting engineers in mechanical, electrical and chemical engineering; and senior undergraduate and graduate engineering students.

This book is devoted to the analysis and applications of energy, exergy, and environmental issues in all sectors of the economy, including industrial processes, transportation, buildings, and

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services. Energy sources and technologies considered are hydrocarbons, wind and solar energy, fuel cells, as well as thermal and electrical storage. This book provides theoretical insights, along with state-of-the-art case studies and examples and will appeal to the academic community, but also to energy and environmental professionals and decision makers.

Introduction to Mechanical Engineering

Steam Surface Condensers

Current Status, Future Challenges, and Perspectives

6th Ocean Thermal Energy Conversion (OTEC)

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Conference : "Ocean Thermal Energy for the 80's",
Washington, D.C., June 19-22, 1979, Shoreham-
Americana Hotel

A Population-Based Metaheuristic Approach
Thermal System Optimization