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N.S. Amos

Religious Freedom at Risk
The EU, French Schools, and Why the Veil was Banned
This book examines matters of religious freedom in Europe, considers the work of the European Court of Human Rights in this area, explores issues of multiculturalism and secularism in France, of women in Islam, and of Muslims in the West. The work presents legal analysis and ethnographic fieldwork, focusing on concepts such as laïcité, submission, equality and the role of the state in public education, amongst others. Through this book, the reader can visit inside a French public school located in a low-income neighborhoojd just south of Paris and learn about the complex dynamics that led up to the passing of the 2004 law banning Muslim headscarves. The chapters bring to light the[...]

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M. Adrian

Bucer, Ephesians and Biblical Humanism
The Exegete as Theologian
This book describes Martin Bucer (1491-1551) as a teacher of theology, focusing on his time as Regius Professor of Divinity at the University of Cambridge between 1549 and 1551. The book is centered on his 1550 Cambridge lectures on Ephesians, and investigates them in their historical context, exploring what sort of a theologian Bucer was. The lectures are exam-ined to find out how they represent Bucer’s method of teaching and “doing” theology, and shed light on the relationship between biblical exegesis and theological formulation as he understood it. Divided into two interconnected parts, the book first sets the histori-architecture in hot, arid climates. The authors explain how traditional incarnations of these structures provide significant decreases in energy consumption through their use of renewable wind resources to cool buildings and water storage facilities. Beginning with the underlying scientific principles, the design and operation of wind towers is explained in depth and suggestions for optimization are provided, supported by the authors’ findings from recent analytical studies.

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This book explains operation and scientific fundamentals of circulating fluidized bed (CFB) boilers, outlines practical issues in industrial use, teaches how to optimize design for maximum reliability and efficiency, and discusses operating and maintenance issues and how to troubleshoot them. This book provides practicing engineers and students with insight into the design and operation of circulating fluidized bed (CFB) boilers through a combination of theoretical concepts and practical experience. An emphasis on combustion, hydrodynamics, heat transfer, and material issues illustrates these concepts with numerous examples from actual operating plants.

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L.G. Beaman, S. Tomlins (Eds.)

The essays in this book not only examine the variety of atheist expression and experience in the Western context, they also explore how local, national, and international settings may contribute to the shaping of atheist identities. By addressing identity at these different levels, the book explores how individuals construct their own atheist—or non-religious—identity, how they construct community and how identity factors into atheist interaction at the social or institutional levels. The book offers an interdisciplinary comparative approach to the analysis of issues relating to atheism, such as demography, community engagement, gender politics, stigmatism and legal action.

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Wind Turbines in Cold Climates: Icing Impacts and Mitigation Systems
L. Battisti

This book addresses the key concerns regarding the operation of wind turbines in cold climates and focuses in particular on the analysis of icing and methods for its mitigation. Topics covered include the implications of cold climates for wind turbine design and operation, the relevance of icing for wind turbines, the icing process itself, ice prevention systems and thermal anti-icing system design. In each chapter, care is taken to build systematically on the basic knowledge, providing the reader with the level of detail required for a thorough understanding. An important feature is the inclusion of several original analytical and numerical models for ready computation of icing.[...]

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D. Beeton, G. Meyer (Eds.)

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This book provides an overview of state-of-the-art technologies for energy conversion from waste, as well as a much-needed guide to new and advanced strategies to increase Waste-to-Energy (WTE) plant efficiency. Beginning with an overview of municipal solid waste production and disposal, basic concepts related to Waste-To-Energy conversion processes are described, highlighting the most relevant aspects impacting the thermodynamic efficiency of WTE power plants. The pervasive influences of main steam cycle parameters and plant configurations on WTE efficiency are detailed and quantified. Advanced hybrid technology applications, particularly the Hybrid Combined Cycle concept, are[...]

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The Sustainability of Renewable Energy in Europe
This book demonstrates that the much-needed global shift in energy production and use must happen at a territorial level in order to be truly successful and sustainable. This book enables regional implementation efforts by connecting broad EU environmental policies with plans for action at the territorial level, analysing efficient resource allocation and cost effectiveness to achieve national objectives. Each EU Member State is considered in depth, in order to identify the opportunities and challenges of this regional approach. The regional dimension of the authors’ analysis refers to the territorial level NUTS 1 (Nomenclature of Territorial Units for Statistics) that, starting from[...]

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The Changing World Religion Map
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C. Cranganu, H. Luchian, M.E. Breaban (Eds.)

Artificial Intelligent Approaches in Petroleum Geosciences

This book presents several intelligent approaches for tackling and solving challenging practical problems facing those in the petroleum geosciences and petroleum industry. Written by experienced academics, this book offers state-of-the-art working examples and provides the reader with exposure to the latest developments in the field of intelligent methods applied to oil and gas research, exploration and production. It also analyzes the strengths and weaknesses of each method presented using benchmarking, whilst also emphasizing essential parameters such as robustness, accuracy, speed of convergence, computer time, overlearning and the role of normalization. The intelligent approaches[...]

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F. Cucchiella, L. Koh (Eds.)

Sustainable Future Energy Technology and Supply Chains
A Multi-perspective Analysis

This book provides a valuable resource for anyone who wishes to understand how sustainable use of energy can lead to increased efficiency of industrial supply chains and improved financial profitability. The book is organized around real examples and case studies that can be applied to real-world problems. Furthermore, insight is provided by an international panel of contributors, and the book provides comprehensive coverage of current practice and future developments in the evolution of sustainable supply chains and energy consumption. The text underlines how organizations are now looking seriously at supply chain assets in order to help their suppliers retool and focus on renewable[...]

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K. Day

Religious Resistance to Neoliberalism
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This text argues that engaging black feminist and womanist religious perspectives with Jewish and Christian discourses offers more robust religious critiques of alienating modes generated and exacerbated by a neoliberal economy. More on www.springer.com/978-1-137-56942-4

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Improving Energy Decisions
Towards Better Scientific Policy Advice for a Safe and Secure Future Energy System

Managing a successful transition of the current energy supply system to less carbon emitting options, ensuring a safe and secure supply during the whole process and in the long term, is one of the largest challenges of our time. Various approaches and first implemen-
These topics are important for the development and long-term sustainability of the bioenergy industry. The increasing interest in bioenergy has been motivated by its potential to become a key future energy source. The opportunities and challenges that this industry has been facing have been the motivation for a number of optimization-related works on bioenergy. Practitioners and academicians agree that the two major barriers of further investments in this industry are biomass supply uncertainty and costs. The goal of this handbook[...]

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J.-P. Ducrotoy, M. Elliott
A.Y. ORAL, Z.B. BAHSI ORAL, M. OZER (Eds.)


The proceedings of the 2nd International Congress on Energy Efficiency and Energy Related Materials include 73 peer-reviewed technical papers, submitted by leading academic and research institutions from over 20 countries and representing some of the most cutting-edge research available. The 73 papers are grouped into the following sections:- General Issues- Wind Energy- Solar Energy- Nuclear Energy- Biofuels and Bioenergy- Fossil Energy- Hydropower- Energy Storage, Conservation and Efficiency- Environmental Issues- Carbon Capture and Storage-Bio-Assessment and Toxicology- Air[...]

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S.D. Eksioglu, S. Rebennack, P. Pardalos (Eds.)

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Bioenergy Supply Chain - Models and Applications

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Indoor Thermal Comfort Perception
A Questionnaire Approach Focusing on Children

Providing a methodology for evaluating indoor thermal comfort with a focus on children, this book presents an in-depth examination of children’s perceptions of comfort. Divided into two sections, it first presents a history of thermal comfort, the human body and environmental parameters, common thermal comfort indexes, and guidelines for creating questionnaires to assess children’s perceptions of indoor thermal comfort. It then describes their understanding of the concepts of comfort and energy, and the factors that influence that perception. In this context, it takes into account the psychological and pedagogical aspects of thermal comfort judgment, as well as architectural and[...]

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K. Fabbri

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Z. Hu, J. Zhang, N. Zhang

China’s Economic Gene Mutations
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H. Huang, J. Huang (Eds.)

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The Lithium Air Battery
Fundamentals

Lithium air rechargeable batteries are the best candidate for a power source for electric vehicles, because of their high specific energy density. In this book, the history, scientific background, status and prospects of the lithium air system are introduced by specialists in the field. This book will contain the basics, current statuses, and prospects for new technologies. This
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This volume provides the technical information required for the production of biofuels and chemicals from lignocellulosic biomass. It starts with a brief overview of the importance, applications, and production processes of different lignocellulosic products. Further chapters review the perspectives of waste-based biofuels and biochemicals; the pretreatment of lignocellulosic biomass for biofuel production; cellulosic enzymes systems for the hydrolysis of lignocelluloses; and basic and applied aspects of the production of bioethanol, biogas, biohydrogen, and biobutanol from lignocelluloses. This book is recommended for researchers and engineers and particularly students taking biofuel[...]

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**Reliability Modeling and Analysis of Smart Power Systems**

The volume presents the research work in understanding, modeling and quantifying the risks associated with different ways of implementing smart grid technology in power systems in order to plan and operate a modern power system with an acceptable level of reliability. Power systems throughout the world are undergoing significant changes creating new challenges to system planning and operation in order to provide reliable and efficient use of electrical energy. The appropriate use of smart grid technology is an important drive in mitigating these problems and requires considerable research activities, some of which (by researchers from academia and industry) are included in this[...]

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Neutron Applications in Materials for Energy

Neutron Applications in Materials for Energy collects results and conclusions of recent neutron-based investigations of materials that are important in the development of sustainable energy. Chapters are authored by leading scientists with hands-on experience in the field, providing overviews, recent highlights, and case-studies to illustrate the applicability of one or more neutron-based techniques of analysis. The theme follows energy production, storage, and use, but each chapter, or section, can also be read independently, with basic theory and instrumentation for neutron scattering being outlined in the introductory chapter. Whilst neutron scattering is extensively used to [...] More on www.springer.com/978-3-319-06655-4

Design, Modeling and Evaluation of Protective Relays for Power Systems

This book is a practical guide to digital protective relays in power systems. It explains the theory of how the protective relays work in power systems, provides the engineering knowledge and tools to successfully design them and offers expert advice on how they behave in practical circumstances. This book helps readers gain technical mastery of how the relays function, how they are designed and how they perform. This text not only features in-depth coverage of the theory and principles behind protective relays, but also includes a manual supplemented with software that offers numerous hands-on examples in MATLAB. A great resource for protective relaying labs and self-learners, its [...] More on www.springer.com/978-3-319-20918-0

The Risks of Nuclear Energy Technology

Safety Concepts of Light Water Reactors

The book analyses the risks of nuclear power stations. The security concept of reactors is explained. Measures against the spread of radioactivity after a severe accident, accidents of core melting and a possible crash of an air plane on reactor containment are discussed. The book covers three scientific subjects of the safety concepts of Light Water Reactors: – A first part describes the basic safety design concepts of operating German Pressurized Water Reactors and Boiling Water Reactors including accident management measures introduced after the reactor accidents of Three Mile Island and Chernobyl. These safety concepts are also compared with the experiences of the Fukushima[...]

Energy-Efficient HVAC Design

An Essential Guide for Sustainable Building

This book provides readers with essential knowledge enabling the successful design of today’s new energy efficient HVAC systems. The author introduces important concepts such as Knowledge Categorization, Performance Based Design Standards, and Quantification of Uncertainty in Energy Modeling for Buildings. Pivotal topics that all HVAC and architectural engineers must master in order to navigate the green building renaissance are given focused attention, including the role of renewables, air quality, automatic controls, and thermal comfort. Relevant ASHRAE standards, as well as sustainability scoring
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Frontiers in Fusion Research II
Introduction to Modern Tokamak Physics
This book reviews recent progress in our understanding of tokamak physics related to steady state operation, and addresses the scientific feasibility of a steady state tokamak fusion power system. It covers the physical principles behind continuous tokamak operation and details the challenges remaining and new lines of research towards the realization of such a system. Following a short introduction to tokamak physics and the fundamentals of steady state operation, later chapters cover parallel and perpendicular transport in tokamaks, MHD instabilities in advanced tokamak regimes, control issues, and SOL and divertor plasmas. A final chapter reviews key enabling technologies for[...]
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Magnetocaloric Energy Conversion
From Theory to Applications
This book provides the latest research on a new alternative form of technology, the magnetocaloric energy conversion. This area of research concerns magnetic refrigeration and cooling, magnetic heat pumping and magnetic power generation. The book’s systematic approach offers the theoretical basis of magnetocaloric energy conversion and its various subdomains and this is supported with the practical examples. Besides these fundamentals, the book also introduces potential solutions to engineering problems in magnetocalorics and to alternative technologies of solid state energy conversion. The aim of the book is therefore to provide engineers with the most up-to-date information and[...]
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Contemporary Slovenian Timber Architecture for Sustainability
The book presents Slovenia’s contemporary timber architecture. Thanks to its abundant forests, Slovenia has preserved the tradition of wood construction. As much as 60% of its surface is covered by forests. Slovenia is also the third most forested country in Europe. The high share of forest-covered surface allows for a sustainable production of high-quality wood. In the past, wood was used primarily in the construction of farm buildings, but now timber architecture is used for everything from residences and office buildings to public buildings such as community centres and schools. Timber construction is becoming increasingly popular. Apart from larger companies taking this approach,[...]
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PCM-Enhanced Building Components
An Application of Phase Change Materials in Building Envelopes and Internal Structures
Presenting an overview of the use of Phase Change Materials (PCMs) within buildings, this book discusses the performance of PCM-enhanced building envelopes. It reviews the most common PCMs suitable for building applications, and discusses PCM encapsulation and packaging methods. In addition to this, it examines a range of PCM-enhanced building products in the process of development as well as examples of whole-building-scale field demonstrations. Further chapters discuss experimental and theoretical analyses (including available software) to determine dynamic thermal and energy performance characteristics of building enclosure components containing PCMs, and present different[...]
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E-Mobility in Europe
Trends and Good Practice

Focusing on technical, policy and social/societal practices and innovations for electrified transport for personal, public and freight purposes, this book provides a state-of-the-art overview of developments in e-mobility in Europe and the West Coast of the USA. It serves as a learning base for further implementing and commercially developing this field for the benefit of society, the environment and public health, as well as for economic development and private industry. A fast-growing, interdisciplinary sector, electric mobility links engineering, infrastructure, environment, transport and sustainable development. But despite the relevance of the topic, few publications have ever... More on www.springer.com/978-3-319-13193-1

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Power-to-Gas: Technology and Business Models

Increased production of energy from renewable sources leads to a need for both new and enhanced capacities for energy transmission and intermediate storage. The book first compares different available storage options and then introduces the power-to-gas concept in a comprehensive overview of the technology. The state of the art, advancements, and future requirements for both water electrolysis and methanation are described. The integration of renewable hydrogen and methane into the gas grid is discussed in terms of the necessary technological measures to be taken. Because the power-to-gas system is very flexi-

Adaptive Control of Solar Energy Collector Systems

This book describes methods for adaptive control of distributed-collector solar fields: plants that collect solar energy and deliver it in thermal form. Controller design methods are presented that can overcome difficulties found in these type of plants: they are distributed-parameter systems, i.e., systems with dynamics that depend on space as well as time; their dynamics is nonlinear, with a bilinear structure; there is a significant level of uncertainty in plant knowledge. Adaptive methods form the focus of the text because of the degree of uncertainty in the knowledge of plant dynamics. Parts of the text are devoted to design methods that assume only a very limited knowledge about the... More on www.springer.com/978-3-319-06852-7

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Low-cost Nanomaterials

Toward Greener and More Efficient Energy Applications

This book will cover the most recent progress on the use of low-cost nanomaterials and development of low-cost/large scale processing techniques for greener and more efficient energy related applications, including but not limited to solar cells, energy storage, fuel cells, hydrogen generation, biofuels, etc. Leading researchers will be invited to author chapters in the field with their expertise. Each chapter will provide general introduction to a specific topic, current status of research and development, research challenges and outlook for future direction of research. This book aims to benefit a broad readership, from undergraduate/graduate students to researchers working on... More on www.springer.com/978-3-319-08412-1

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Packaging of High Power Semiconductor Lasers

This book introduces high power semiconductor laser packaging design. The challenges of the design and various packaging and testing techniques are detailed by the authors. New technologies and current applications are described in detail.

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Photon Absorption Models in Nanostructured Semiconductor Solar Cells and Devices

This book is intended to be used by materials and device physicists and also solar cells researchers. It models the performance characteristics of nanostructured solar cells and resolves the dynamics of transitions between several levels of these devices. An outstanding insight into the physical behaviour of these devices is provided, which complements experimental work. This therefore allows a better understanding of the results, enabling the development of new experiments and optimization of new devices. It is intended to be accessible to researchers, but also to provide engineering tools which are often only accessible to quantum physicists.

Control and Optimization of Distributed Generation Systems

This text is an introduction to the use of control in distributed power generation. It shows the reader how reliable control can be achieved so as to realize the potential of small networks of diverse energy sources, either singly or in coordination, for meeting concerns of energy cost, energy security and environmental protection. The book demonstrates how such microgrids, interconnecting groups of generating units and loads within a local area, can be an effective means of balancing electrical supply and demand. It takes advantage of the ability to connect and disconnect microgrids from the main body of the power grid to give flexibility in response to special events, planned or...

Smart Grid Applications and Developments

Meeting today’s energy and climate challenges require not only technological advancement but also a good understanding of stakeholders’ perceptions, political sensitivity, well-informed policy analyses and innovative interdisciplinary solutions. This book will fill this gap. This is an interdisciplinary informative book to provide a holistic and integrated understanding of the technology–stakeholder–policy interactions of smart grid technologies. The unique features of the book include the following: (a) interdisciplinary approach – by bringing in the policy dimensions to smart grid technologies; (b) global and Asian perspective and (c) learning from national case studies. This book...
Natural Gas Engineering and Safety Challenges
Downstream Process, Analysis, Utilization and Safety
Providing a critical and extensive compilation of the downstream processes of natural gas that involve the principle of gas processing, transmission and distribution, gas flow and network analysis, instrumentation and measurement systems and its utilisation, this book also serves to enrich readers understanding of the business and management aspects of natural gas and highlights some of the recent research and inventions in the field. Featuring extensive coverage of the design and pipeline failures and safety challenges in terms of fire and explosions relating to the downstream of natural gas technology, the book covers the needs of practising engineers from different disciplines,[...]
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G.G. Nasr, N.E. Connor

Supercritical-Pressure Light Water Cooled Reactors
This book focuses on the latest reactor concepts, single pass core and experimental findings in thermal hydraulics, materials, corrosion, and water chemistry. It highlights research on supercritical-pressure light water cooled reactors (SCWRs), one of the Generation IV reactors that are studied around the world. This book includes cladding material development and experimental findings on heat transfer, corrosion and water chemistry. The work presented here will help readers to understand the fundamental elements of reactor design and analysis methods, thermal hydraulics, materials and water chemistry of supercritical water used as a coolant in nuclear power reactors. It will also help[...]
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Y. Oka, H. Mori (Eds.)

Energy Conversion and Management
Principles and Applications
This book provides an overall view of energy conversion and management in industry and in buildings by following the streams of energy from the site boundaries to the end users. Written for an audience of both practitioners and faculty/students, Energy Conversion and Management: Principles and Applications presents general principles of energy conversion and energy sources, both traditional and renewable, in a broad range of facilities such as electrical substations, boiler plants, heat and power plants, electrical networks, thermal fluid distributions lines and insulations, pumps and fans, air compressor systems, cooling plants, HVAC, lighting, and heat recovery plants. The book also[...]
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G. Petrecca

Fiber-Shaped Energy Harvesting and Storage Devices
This comprehensive book covers flexible fiber-shaped devices in the area of energy conversion and storage. The first part of the book introduces recently developed materials, particularly, various nanomaterials and composite materials based on nanostructured carbon such as carbon nanotubes and graphene, metals and polymers for the construction of fiber electrodes. The second part of the book focuses on two typical twisted and coaxial architectures of fiber-shaped devices for energy conversion and storage. The emphasis is placed on dye-sensitized solar cells, polymer solar cells, lithium-ion batteries, electro-
The aim of this book is to provide a comprehensive overview of the fundamentals and engineering of high concentrator photovoltaic (HCPV) technology and to elucidate how this complex and emerging technology is applied in power plants. It is the first of its kind to focus exclusively on HCPV technology and offers a valuable reference volume to readers. This book is the result of an international collaboration among experts and each chapter is written by a specialist in the field. The conversion of solar energy to electricity plays an important role in power generation and HCPV is signalled by many researchers and professionals as one of the most promising sources of solar power. [...] More on www.springer.com/978-3-319-15038-3

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S. Rajakaruna, F. Shahnia, A. Ghosh (Eds.)

Plug In Electric Vehicles in Smart Grids
Integration Techniques
This book focuses on the state of the art in worldwide research on applying optimization approaches to intelligently control charging and discharging of batteries of Plug-in Electric Vehicles (PEVs) in smart grids. Network constraints, cost considerations, the number and penetration level of PEVs, utilization of PEVs by their owners, ancillary services, load forecasting, risk analysis, etc. are all different criteria considered by the researchers in developing mathematical based equations which represent the presence of PEVs in electric networks. Different objective functions can be defined and different optimization methods can be utilized to coordinate the performance of [...] More on www.springer.com/978-978-287-298-2

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V. Rauland, P. Newman

Decarbonising Cities
Mainstreaming Low Carbon Urban Development
This book sets out some positive directions to move forward including government policy and regulatory options, an innovative GRID (Greening, Regenerative, Improvement Districts) scheme that can assist with funding and management, and the first steps towards an innovative carbon credit scheme for the built environment. Decarbonising cities is a global agenda with huge significance for the future of urban civilisation. Global demonstrations have shown that technology and design issues are largely solved. However, the mainstreaming of low carbon urban development, particularly at the precinct scale, currently lacks...
The Christian College and the Meaning of Academic Freedom
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The Christian College and the Meaning of Academic Freedom is a study of the past record and current practice of the Protestant colleges in America in the quest to achieve intellectual honesty within academic community.

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Analysis and Control of Oilwell Drilling Vibrations
A Time-Delay Systems Approach
This book reports the results of exhaustive research work on modeling and control of vertical oil well drilling systems. It is focused on the analysis of the system-dynamic response and the elimination of the most damaging drill string vibration modes affecting overall perforation performance: stick-slip (torsional vibration) and bit-bounce (axial vibration). The text is organized in three parts. The first part, Modeling, presents lumped- and distributed-parameter models that allow the dynamic behavior of the drill string to be characterized; a comprehensive mathematical model taking into account mechanical and electric components of the overall drilling system is also provided. The[...]

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Sustainable Indoor Lighting
Encompassing a thorough survey of the lighting techniques applied to internal illumination characterized by high efficiency, optimized color and architectural integration, a consolidated summary of the latest scientific, technical and architectural research is presented in order to give the reader an overview of the different themes with their interactions and mutual effects. This book describes light principles, methodologies and realisations for indoor illumination at low consumption. Power efficiency, color characteristics and architectural aspects are analyzed in terms of their practical application, with the interactions between scientific, technological and architectural[...]

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Introduction to Wind Turbine Aerodynamics

Wind-Turbine Aerodynamics is a self-contained textbook which shows how to come from the basics of fluid mechanics to modern wind turbine blade design. It presents fundamentals of fluid dynamics and inflow conditions, and gives an extensive introduction into theories describing the aerodynamics of wind turbines. After introducing experiments the book applies the knowledge to explore the impact on blade design. The book is an introduction for professionals and students of very varying levels.

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Geothermal Energy
From Theoretical Models to Exploration and Development

The internal heat of the planet Earth represents an inexhaustible reservoir of thermal energy. This form of energy, known as geothermal energy has been utilized throughout human history in the form of hot water from hot springs. Modern utilization of geothermal energy includes direct use of the heat and its conversion to other forms of energy, mainly electricity. Geothermal energy is a form of renewable energy and its use is associated with very little or no CO2-emissions and its importance as an energy source has greatly increased as the effects of climate change become more prominent. Because of its inexhaustibility it is obvious that utilization of geothermal energy will become crucial.

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The Spiritual Dynamic in Modern Art

Art History Reconsidered, 1800 to the Present

This book demonstrates that numerous prominent artists in every period of the modern era were expressing spiritual interests when they created celebrated works of art. This magisterial overview insightfully reveals the centrality of an often denied and misunderstood element in the cultural history of modern art.

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Solar PV and Wind Energy Conversion Systems
An Introduction to Theory, Modeling with MATLAB/SIMULINK, and the Role of Soft Computing Techniques

This textbook starts with a review of the principles of operation, modeling and control of common solar energy and wind-power generation systems before moving on to discuss grid compatibility, power quality issues and hybrid models of Solar PV and Wind Energy Conversion Systems (WECS). MATLAB/SIMULINK models of fuel cell technology and associated converters are discussed in detail. The impact of soft computing techniques such as neural networks, fuzzy logic and genetic algorithms in the context of solar and wind energy is explained with practical implementation using MATLAB/SIMULINK models. This book is intended for final year undergraduate, post-graduate and research students.

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General Momentum Theory for Horizontal Axis Wind Turbines

This book reconsiders the basic approaches behind the BEM method and in particular assesses and validates the equations forming the general momentum theory. One part of the book concerns the validation, using numerical fluid mechanics (CFD), of the different terms in the equations forming the momentum theory. Other parts present new ideas for extending the theory and for enhancing the accuracy of the BEM approach. Besides a general introduction and explanation of the momentum theory, the book also deals with specialized topics, such as diffusor-augmented rotors, wind tunnel corrections, tip corrections, and combined momentum/vortex theory for design of wind turbine rotors.

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J. Tosun, S. Biesenbender, K. Schulze (Eds.)

Energy Policy Making in the EU
Building the Agenda

The book adopts an innovative analytical approach to agenda setting by not only presenting successful cases in which energy issues were addressed by means of public policy, but by also analyzing failed attempts to make issues part of the European policy agenda. Another outstanding feature of the book is its use of the latest empirical data on a broad range of energy issues. When are energy issues likely to find their way to the agenda of European policymakers? This is the key research question guiding this collection of empirical studies, which will shed light on both successful and unsuccessful attempts to include energy issues in the European agenda. The multi-level political system...[

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Jesuit Contribution to Science
A History

This book presents a comprehensive history of the many contributions the Jesuits made to science from their founding to the present. It also links the Jesuits dedication to science with their specific spirituality which tries to find God in all things. The book begins with Christopher Clavius, professor of mathematics in the Roman College between 1567 and 1595, the initiator of this tradition. It covers Jesuits scientific contributions in mathematics, astronomy, physics and cartography up until the suppression of the order by the Pope in 1773. Next, the book details the scientific work the Jesuits pursued after their restoration in 1814. It examines the establishment of a network off...[

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F. Wagner

Renewables in Future Power Systems
Implications of Technological Learning and Uncertainty

The book examines the future deployment of renewable power from a normative point of view. It identifies properties characterizing the cost-optimal transition towards a renewable power system and analyzes the key drivers behind this transition. Among those drivers, particular attention is paid to technological cost reductions and the implications of uncertainty. From a methodological perspective, the main contributions of this book relate to the field of endogenous learning and uncertainty in optimizing energy system models. The primary objective here is closing the gap between the strand of literature covering renewable potential analyses on the one side and energy system modeling...[

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X. Wang, Z.M. Wang (Eds.)

Nanoscale Thermoelectrics

For the efficient utilization of energy resources and the minimization of environmental damage, thermoelectric materials can play an important role by converting waste heat into electricity directly. Nanosstructured thermoelectric materials have received much attention recently due to the potential for enhanced properties associated with size effects and quantum confinement. Nanoscale Thermoelectrics describes the theory underlying these phenomena, as well as various thermoelectric materials and nanostructures such as carbon nanotubes, SiGe nanowires, and graphene nanoribbons. Chapters written by leading scientists throughout the world are intended to create a fundamental bridge...[

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A. Watson

Geothermal Engineering
Fundamentals and Applications

This book explains the engineering required to bring geothermal resources into use. The book covers specifically engineering aspects that are unique to geothermal engineering, such as measurements in wells and their interpretation, transport of near-boiling water through long pipelines, turbines driven by fluids other than steam, and project economics. The explanations are reinforced by drawing comparisons with other energy industries.

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In the twenty-first century, the debate about life on other worlds is quickly changing from the realm of speculation to the domain of hard science. Within a few years, as a consequence of the rapid discovery by astronomers of planets around other stars, astronomers very likely will have discovered clear evidence of life beyond the Earth. Such a discovery of extraterrestrial life will change everything. Knowing the answer as to whether humanity has company in the universe will trigger one of the greatest intellectual revolutions in history, not the least of which will be a challenge for at least some terrestrial religions. Which religions will handle the discovery of extraterrestrial life?...
to write each chapter of the book. The book covers not only lithium-ion batteries but also other [...] More on www.springer.com/978-3-319-15457-2

Religion and Human Rights
An International Perspective
This book examines the relationship between human rights and religiosity. It discusses whether the impact of religiosity on human rights is liberational or suppressive, and sheds light on the direction in which the relationship between religion and human rights is expected to develop. The questions explored in this volume are: Which are the rights that are currently debated or under pressure? What is the position on human rights that churches and religious communities represent? Are there tensions between churches, religious communities and the state? Which rights are especially relevant for young people and which relate to adolescents life-world experiences? Covering 17 countries,[...] More on www.springer.com/978-3-319-09730-5

Dimensional Analysis and Self-Similarity Methods for Engineers and Scientists
This ground-breaking reference provides an overview of key concepts in dimensional analysis, and then pushes well beyond traditional applications in fluid mechanics to demonstrate how powerful this tool can be in solving complex problems across many diverse fields. Of particular interest is the book’s coverage of dimensional analysis and self-similarity methods in nuclear and energy engineering. Numerous practical examples of dimensional problems are presented throughout, allowing readers to link the book’s theoretical explanations and step-by-step mathematical solutions to practical implementations. More on www.springer.com/978-3-319-13475-8

Thermodynamics In Nuclear Power Plant Systems
This book covers the fundamentals of thermodynamics required to understand electrical power generation systems, honing in on the application of these principles to nuclear reactor powersystems. It includes all the necessary information regarding the fundamental laws to gain a complete understanding and apply them specifically to the challenges of operating nuclear plants. Beginning with definitions of thermodynamic variables such as temperature, pressure and specific volume, the book then explains the laws in detail, focusing on pivotal concepts such as enthalpy and entropy, irreversibility, availability, and Maxwell relations. Specific applications of the fundamentals to Brayton and[...] More on www.springer.com/978-3-319-13418-5
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