Methodology And Technology For Power System Grounding

This book presents basic and advanced concepts for energy harvesting and energy efficiency, as well as related technologies, methods, and their applications. The book provides up-to-date knowledge and discusses the state-of-the-art equipment and methods used for energy harvesting and energy efficiency, combining theory and practical applications. Containing over 200 illustrations and problems and solutions, the book begins with overview chapters on the status quo in this field. Subsequent chapters introduce readers to advanced concepts and methods. In turn, the final part of the book is dedicated to technical strategies, efficient methods and applications in the field of energy efficiency, which also makes it of interest to technicians in industry. The book tackles problems commonly encountered using basic methods of energy harvesting and energy efficiency, and proposes advanced methods to resolve these issues. All the methods proposed have been validated through simulation and experimental results. These “hot topics” will continue to be of interest to scientists and engineers in future decades and will provide challenges to researchers around

the globe as issues of climate change and changing energy policies become more pressing. Here, readers will find all the basic and advanced concepts they need. As such, it offers a valuable, comprehensive guide for all students and practicing engineers who wishing to learn about and work in these fields. Technologies such as renewable energy alternatives including wind, solar and biomass, storage technologies and electric engines are creating a different landscape for the electricity industry. Using sources and ideas from technologies such as renewable energy alternatives, Research and Technology Management in the Electricity Industry explores a different landscape for this industry and applies it to the electric industry supported by real industry cases. Divided into three sections, Research and Technology Management in the Electricity Industry introduces a range of methods and tools including technology assessment, forecasting, roadmapping, research and development portfolio management and technology transfer. These tools are the applied to emerging technologies in this industry with case studies including data from various organizations including Bonneville Power Administration and Energy Trust of Oregon, from sectors including lighting and wind energy. The final section considers innovation through these technologies. A product result of a collaboration between Bonneville Power Administration and Portland State University, Research and Technology

Management in the Electricity Industry is a comprehensive collection of methods, tools, examples and pathways for future innovation in the electricity industry. This second edition of Concentrating Solar Power Technology edited by Keith Lovegrove and Wes Stein presents a fully updated comprehensive review of the latest technologies and knowledge, from the fundamental science to systems design, development, and applications. Part one introduces the fundamental principles of CSP systems, including site selection and feasibility analysis, alongside socio-economic and environmental assessments. Part two focuses on technologies including linear Fresnel reflector technology, parabolic-trough, central tower, and parabolic dish CSP systems, and concentrating photovoltaic systems. Thermal energy storage, hybridization with fossil fuel power plants, and the long-term market potential of CSP technology are also explored. Part three goes on to discuss optimization, improvements, and applications, such as absorber materials for solar thermal receivers, design optimization through integrated techno-economic modelling, and heliostat size optimization. With its distinguished editors and international team of expert contributors, Concentrating Solar Power Technology, 2nd Edition is an essential guide for all those involved or interested in the design, production, development, optimization, and application of CSP technology, including renewable energy engineers and

consultants, environmental governmental departments, solar thermal equipment manufacturers, researchers, and academics. Provides a comprehensive review of concentrating solar power (CSP) technology, from the fundamental science to systems design, development and applications Reviews fundamental principles of CSP systems, including site selection and feasibility analysis and socio-economic and environmental assessments Includes an overview of the key technologies of parabolic-trough, central tower linear Fresnel reflector, and parabolic dish CSP systems, and concentrating photovoltaic systems

Rapid increases in energy demand and international drive to reduce carbon emissions from fossil fuels have led many oil-rich countries to diversify their energy portfolio and resources. Libya is one of these countries, and it has recently become interested in utilizing its renewable-energy resources in order to reduce financial and energy dependency on oil reserves. This paper introduces an original multicriteria decision-making Pairwise-CODAS model in which the modification of the CODAS method was made using Linguistic Neutrosophic Numbers (LNN).

The fourth edition of an authoritative overview, with all new chapters that capture the state of the art in a rapidly growing field. Science and Technology Studies (STS) is a flourishing interdisciplinary field that examines the transformative

power of science and technology to arrange and rearrange contemporary societies. The Handbook of Science and Technology Studies provides a comprehensive and authoritative overview of the field, reviewing current research and major theoretical and methodological approaches in a way that is accessible to both new and established scholars from a range of disciplines. This new edition, sponsored by the Society for Social Studies of Science, is the fourth in a series of volumes that have defined the field of STS. It features 36 chapters, each written for the fourth edition, that capture the state of the art in a rich and rapidly growing field. One especially notable development is the increasing integration of feminist, gender, and postcolonial studies into the body of STS knowledge. The book covers methods and participatory practices in STS research; mechanisms by which knowledge, people, and societies are coproduced; the design, construction, and use of material devices and infrastructures; the organization and governance of science; and STS and societal challenges including aging, agriculture, security, disasters, environmental justice, and climate change.

The Methodology of Discourse Analysis presents the theoretical, philosophical, and conceptual underpinnings of discourse analysis, including the contribution of feminism To The method. Steps in implementing the method are suggested, And

The presentation of a discourse analysis of nursing diagnosis elucidates the method.

Predictive Modeling for Energy Management and Power Systems Engineering introduces readers to the cutting-edge use of big data and large computational infrastructures in energy demand estimation and power management systems. The book supports engineers and scientists who seek to become familiar with advanced optimization techniques for power systems designs, optimization techniques and algorithms for consumer power management, and potential applications of machine learning and artificial intelligence in this field. The book provides modeling theory in an easy-to-read format, verified with on-site models and case studies for specific geographic regions and complex consumer markets. Presents advanced optimization techniques to improve existing energy demand system Provides data-analytic models and their practical relevance in proven case studies Explores novel developments in machine-learning and artificial intelligence applied in energy management Provides modeling theory in an easy-to-read format

This book discusses large-scale solar power systems, including an analysis of critical issues related to their design, construction and financing.

For multi-user PDF licensing, please contact customer service. Energy touches our lives in

countless ways and its costs are felt when we fill up at the gas pump, pay our home heating bills, and keep businesses both large and small running. There are long-term costs as well: to the environment, as natural resources are depleted and pollution contributes to global climate change, and to national security and independence, as many of the world's current energy sources are increasingly concentrated in geopolitically unstable regions. The country's challenge is to develop an energy portfolio that addresses these concerns while still providing sufficient, affordable energy reserves for the nation. The United States has enormous resources to put behind solutions to this energy challenge; the dilemma is to identify which solutions are the right ones. Before deciding which energy technologies to develop, and on what timeline, we need to understand them better. America's Energy Future analyzes the potential of a wide range of technologies for generation, distribution, and conservation of energy. This book considers technologies to increase energy efficiency, coal-fired power generation, nuclear power, renewable energy, oil and natural gas, and alternative transportation fuels. It offers a detailed assessment of the associated impacts and projected costs of implementing each technology and categorizes them into three time frames for implementation.

Addresses innovations in technology relating to the energy efficiency of a wide variety of contemporary computer systems and networks With concerns about global energy consumption at an all-time high, improving computer networks energy efficiency is becoming an increasingly important topic. Large-Scale Distributed Systems and Energy Efficiency: A Holistic View addresses innovations in technology relating to the energy efficiency of a wide variety of contemporary computer systems and networks. After an introductory overview of the

energy demands of current Information and Communications Technology (ICT), individual chapters offer in-depth analyses of such topics as cloud computing, green networking (both wired and wireless), mobile computing, power modeling, the rise of green data centers and high-performance computing, resource allocation, and energy efficiency in peer-to-peer (P2P) computing networks. Discusses measurement and modeling of the energy consumption method Includes methods for energy consumption reduction in diverse computing environments Features a variety of case studies and examples of energy reduction and assessment Timely and important, Large-Scale Distributed Systems and Energy Efficiency is an invaluable resource for ways of increasing the energy efficiency of computing systems and networks while simultaneously reducing the carbon footprint.

This book features selected high-quality papers from the International Conference on Innovation in Electrical Power Engineering, Communication, and Computing Technology (IEPCCT 2019), held at Siksha 'O' Anusandhan (Deemed to be University), Bhubaneswar, India, on 13–14 December 2019. Presenting innovations in power, communication, and computing, it covers topics such as mini, micro, smart and future power grids; power system economics; energy storage systems; intelligent control; power converters; improving power quality; signal processing; sensors and actuators; image/video processing; high-performance data mining algorithms; advances in deep learning; and optimization methods.

This book provides a practical guide for engineers doing low power System-on-Chip (SoC) designs. It covers various aspects of low power design from architectural issues and design techniques to circuit design of power gating switches. In addition to providing a theoretical basis for these techniques, the book addresses the practical issues of implementing them in

today's designs with today's tools.

This book responds to the opening up of electricity markets to competition, which has completely changed the nature of power generation. The building of new generation and transmission capacity and the setting of the energy mix between nuclear, gas and renewable resources are mainly left to private initiative and investors. The authors and the editor of this book explore whether or not market forces offer a sustainable future for electricity generation. They employ economic theory and method to answer questions such as: Will the market be able to ensure adequacy of generation capacity and secu.

Solar Power Generation Problems, Solutions, and Monitoring is a valuable resource for researchers, professionals and graduate students interested in solar power system design. Written to serve as a pragmatic resource for solar photovoltaic power systems financing, it outlines real-life, straightforward design methodology. Using numerous examples, illustrations and an easy to follow design methodology, Peter Gevorkian discusses some of the most significant issues that concern solar power generation including: power output; energy monitoring and energy output enhancement; fault detection; fire and life safety hazard mitigation; and detailed hardware, firmware and software analytic solutions required to resolve solar power technology shortcomings. This essential reference also highlights the significant issues associated with large scale solar photovoltaic and solar power generation technology covering design, construction, deployment and fault detection monitoring as well as life safety hazards.

Design and Performance Optimization of Renewable Energy Systems provides an integrated discussion of issues relating to renewable energy performance design and optimization using

advanced thermodynamic analysis with modern methods to configure major renewable energy plant configurations (solar, geothermal, wind, hydro, PV). Vectors of performance enhancement reviewed include thermodynamics, heat transfer, exergoeconomics and neural network techniques. Source technologies studied range across geothermal power plants, hydroelectric power, solar power towers, linear concentrating PV, parabolic trough solar collectors, grid-tied hybrid solar PV/Fuel cell for freshwater production, and wind energy systems. Finally, nanofluids in renewable energy systems are reviewed and discussed from the heat transfer enhancement perspective. Reviews the fundamentals of thermodynamics and heat transfer concepts to help engineers overcome design challenges for performance maximization Explores advanced design and operating principles for solar, geothermal and wind energy systems with diagrams and examples Combines detailed mathematical modeling with relevant computational analyses, focusing on novel techniques such as artificial neural network analyses Demonstrates how to maximize overall system performance by achieving synergies in equipment and component efficiency

Novel Algorithms and Techniques in Telecommunications, Automation and Industrial Electronics includes a set of rigorously reviewed world-class manuscripts addressing and detailing state-of-the-art research projects in the areas of Industrial Electronics, Technology and Automation, Telecommunications and Networking. Novel Algorithms and Techniques in Telecommunications, Automation and Industrial Electronics includes selected papers form the conference proceedings of the International Conference on Industrial Electronics, Technology and Automation (IETA 2007) and International Conference on Telecommunications and Networking (TeNe 07) which were part of the International Joint Conferences on Computer,

Information and Systems Sciences and Engineering (CISSE 2007).

Goal Oriented Methodology and Applications in Nuclear Power Plants: A Modern Systems Reliability Approach presents the latest data and research on the modern system reliability approach by GO methodology to improve the quality and reliability of nuclear power plants (NPP). Quality and reliability are two key factors which are critical to the economic success of NPPs, hence this book provides a comprehensive and systematic analysis of the latest data and research illustrated through the provision of examples and solutions, applications and problems to test comprehension. Authors Xiao-Jian, Jian and Hui-Na systematically illustrate reliability modeling, analysis, optimization allocation and assessment, and their applications in NPPs. This book, without assuming prior knowledge, presents all required information in an accessible and easily applied style. It will be particularly valuable to engineering and reliability professionals, nuclear engineering graduate students, reliability engineering specialists and nuclear energy researchers. Presents the latest research and data in one resource, eliminating the need to consult many diverse sources Includes examples and solutions that provide practical applications Combines principles, applications and examples within NPPs to provide a very thorough understanding of the technological aspects presented

This book offers meaningful insights into an impending challenge for the energy industry, namely the increasing role of asset management amongst the utilities' core operations. In the aftermath of energy digitalization, power and gas companies will be able to seize asset productivity—through risk-based operation and maintenance—and better balance capital and operational expenditures. By addressing the asset management of both power and gas infrastructures, and by adopting a comprehensive approach—including regulation and business

models, as well as a solid technology background—this book offers a unique perspective on the energy utilities' transformation journey and the road to optimal decision-making for both asset portfolio expansion and replacement. The asset management end-to-end mission requires appropriate internal governance—depending on the business framework—and the development of decision aid models (for asset replacement and maintenance), supported on probabilistic risk and reliability indexes. This book advocates systematically digitalizing the power and gas assets, addressing both data governance and infrastructure, alongside real-time equipment condition monitoring. It also provides a meaningful methodology for designing data-centric asset management and predictive operation and maintenance, using artificial intelligence and engineering-based approaches. As such, it provides valuable strategy, methods and models—illustrated by case studies and proofs of concept—for a wide range of stakeholders, including utilities and industry professionals, regulators, policy-makers, researchers and students.

This report describes work performed as a subcontract to Argonne National Laboratory's project "Environmental Control Technology for Generation of Power from Coal." The intention of that Argonne Program is to provide an independently developed assessment of alternative environmental control technologies for coal-fired electric power generation and to develop an independently evaluated set of recommendations for future environmental control technology research, development, and demonstration programs for these processes. This report describes a probabilistic, systems analytic methodology appropriate for use in comparing the alternative control technologies. In addition to the discussions about this probabilistic framework, there are examples.of the use of the framework for comparative purposes.

Information is presented on the methods and sources for making these comparisons on health effects bases, as well as the relevant economic, technological, availability, resource use, emissions, and ambient-level information. In addition, there are bibliographies of key references in the related areas.

In its pursuit to equip the reader with a basic knowledge of Islamic economics, this book divulges the micro-foundations of the discipline, and highlights the predominant schools of thought that exist in the field. It explains, in simple terms, what Islamic economics entails and how it can be studied as a science in relation to the Holy Quran, the Sunnah and the Islamic intellectual tradition based on these two sources. The book familiarizes the reader with knowledge of the basic maxims of the discipline. It then establishes the arguments that are presented by the proponents of religion-based economics, specifically Islam, and apprises readers about the aforementioned schools as they exist. A number of chapters consider the dimension of the dilemmas the discipline is facing, and the chronological progress of the field is reviewed, hence providing a comprehensive overview of the topic. The book deals with the issues about the origins of Islamic economics, the basic methodological questions, the use of the opportunities offered by fiqh in the methodological discussions and the main problems arising from the encounter with other cultures and civilizations. It offers practical solutions, despite the differing schools of thought, not unlike the development of conventional Economics where radical differences between Keynesian, Classical and Monetarist approaches existed. It concludes by incorporating some of the finest works that explain to the reader how Islamic economics may progress as a discipline. This guide will provide both students and researchers in Comparative Economic Studies, Islamic Economics and Islamic Finance with an essential

overview of the field.

This volume features research and case studies across a variety of industries to showcase technological innovations and policy initiatives designed to promote renewable energy and sustainable economic development. The first section focuses on policies for the adoption of renewable energy technologies, the second section covers the evaluation of energy efficiency programs and the final section provides evaluations of energy technology innovations.

Environmental concerns, energy availability and political pressure have prompted governments to look for alternative energy resources that can minimize the undesirable effects for current energy systems. For example, shifting away from the conventional fuel resources and increasing the percentage of electricity generated from renewable resources, such as solar and wind power, is an opportunity to guarantee lower CO2 emissions and to create better economic opportunities for citizens in the long run. Including discussions of such of timely topics and issues as global warming, bio-fuels and nuclear energy, the editors and contributors to this book provide a wealth of insights and recommendations for sustainable energy innovations.

This book documents electric power requirements for the dismounted soldier on future Army battlefields, describes advanced energy concepts, and provides an integrated assessment of technologies likely to affect limitations and needs in the future. It surveys technologies associated with both supply and demand including: energy sources and systems; low power electronics and design; communications, computers, displays, and sensors; and networks, protocols, and

operations. Advanced concepts discussed are predicated on continued development by the Army of soldier systems similar to the Land Warrior system on which the committee bases its projections on energy use. Finally, the volume proposes twenty research objectives to achieve energy goals in the 2025 time frame.

Low Carbon Energy Technologies for Sustainable Energy Systems examines, investigates, and integrates current research aimed at operationalizing low carbon technologies within complex transitioning energy economies. Scholarly research has traditionally focused on the technical aspects of exploitation, R&D, operation, infrastructure, and decommissioning, while approaches which can realistically inform their reception and scale-up across real societies and real markets are piecemeal and isolated in separate literatures. Addressing both the technical foundations of each technology together with the sociotechnical ways in which they are spread in markets and societies, this work integrates the technoeconomic assessment of low carbon technologies with direct discussion on legislative and regulatory policies in energy markets. Chapters address issues, such as social acceptance, consumer awareness, environmental valuation systems, and the circular economy, as low carbon technologies expand into energy systems sustainability, sensitivity, and stability. This collective

research work is relevant to both researchers and practitioners working in sustainable energy systems. The combination of these features makes it a timely book that is useful and attractive to university students, researchers, academia, and public or private energy policy makers. Combines socio-cultural perspectives, environmental sustainability, and economic feasibility in the analysis of low carbon energy technologies Assesses regulatory governance impacting the environmental protection and the social cohesion of environmentally-directed energy markets Reviews the carbon trade exchange, attributing economic value to carbon and enabling its trading perspectives by people, companies or countries invested in low carbon technologies

A powerful new blueprint for how governments and nonprofits can harness the power of digital technology to help solve the most serious problems of the twenty-first century As the speed and complexity of the world increases, governments and nonprofit organizations need new ways to effectively tackle the critical challenges of our time—from pandemics and global warming to social media warfare. In Power to the Public, Tara Dawson McGuinness and Hana Schank describe a revolutionary new approach—public interest technology—that has the potential to transform the way governments and nonprofits around the world solve problems. Through inspiring stories about successful projects ranging from

a texting service for teenagers in crisis to a streamlined foster care system, the authors show how public interest technology can make the delivery of services to the public more effective and efficient. At its heart, public interest technology means putting users at the center of the policymaking process, using data and metrics in a smart way, and running small experiments and pilot programs before scaling up. And while this approach may well involve the innovative use of digital technology, technology alone is no panacea—and some of the best solutions may even be decidedly low-tech. Clear-eyed yet profoundly optimistic, Power to the Public presents a powerful blueprint for how government and nonprofits can help solve society's most serious problems.

Methodology and Technology for Power System GroundingJohn Wiley & Sons

Proceedings of a workshop held by the Asian Development Bank in Manila, Philippines, Feb. 20-23, 1996 to assess the current state of solar photovoltaic (PV) technology and its feasibility for power generation in the next 10-15 years. The study also reviewed the role of bilateral agencies, multilateral institutions such as the Bank and the World Bank, national governments, public utilities, development finance institutions in DMCs, and manufacturing and trading firms in disseminating PV technology to consumers. Panel themes include: international solar initiatives; technology; institutions; and financing. Charts and tables.

The book compiles the research works related to smart solutions concept in context to smart energy systems, maintaining electrical grid discipline and resiliency, computational collective intelligence consisted of interaction between smart devices, smart environments and smart interactions, as well as information technology support for such areas. It includes high-quality papers presented in the International Conference on Intelligent Computing Techniques for Smart Energy Systems organized by Manipal University Jaipur. This book will motivate scholars to work in these areas. The book also prophesies their approach to be used for the business and the humanitarian technology development as research proposal to various government organizations for funding approval.

The International Conference on E-business Technology & Strategy (CETS) provides a peer-reviewed forum for researchers from across the globe to share contemporary research on developments in the fields of e-business, information technology and business strategy. It seeks to promote effective and vibrant networking among researchers and practitioners from around the world who are concerned about the effective management of information technology in organizations. This network of researchers views fostering the development of emerging scholars in the information technology and e-business fields as its primary task. Consequently the conference is designed to provide a venue for

researchers to get substantive and beneficial feedback on their work. There were 134 contributions submitted to CETS 2010. After in-depth discussions, 29 high-quality contributions were selected for publication in this volume. The authors are from Canada, USA, China, Japan, India and Malaysia. We thank all the authors who submitted papers, the Program Committee members, and the external reviewers. We also thank all the local people who were instrumental in making this edition of CETS another very successful event. In particular, we are very grateful to Ying Xie, who was responsible for the local arrangements. Special gratitude goes to the publishing editor, Leonie Kunz, who managed the complexity of information and communication aspects. Furthermore, we thank the many students who volunteered on the organization team, as well as the IT services of Carleton University.

The lives of people with disabilities are complex and various, and there are many situations where technology – particularly assistive technology – already makes a real difference. It is clear that smart phone and tablet computer based solutions continue to enhance the independence of many users, but it is also important that more traditional assistive technologies and services are not forgotten or neglected. This book presents the proceedings of the 14th conference of the Association for the Advancement of Assistive Technology in Europe (AAATE 2017) entitled: ‘Harnessing the power of

technology to improve lives', held in Sheffield, UK, in September 2017. This 4-day event about assistive technologies (AT) highlights the association's interest in innovating not only technology, but also services, and addresses the global challenge of meeting the needs of the increasing number of people who could benefit from assistive technology. The 200+ papers in the book are grouped under 30 subject headings, and include contributions on a wide range of topical subjects, including aging well and dementia; care robotics; eHealth and apps; innovations; universal design; sport; and disordered speech. The breadth of the AAATE conference reflects people's life needs and so the book is sure to contain something of interest to all those whose work involves the design, development and use of assistive technology, whatever the situation. The photo on the front cover illustrates the breadth of assistive technologies that can improve lives. Photographer: Simon Butler.

The prevention and treatment of diseases is a primary concern for any nation in modern society. To maintain an effective public health system, procedures and infrastructure must be analyzed and enhanced accordingly. Public Health and Welfare: Concepts, Methodologies, Tools, and Applications provides a comprehensive overview of the latest research perspectives on public health initiatives and promotion efforts. Highlighting critical analyses and emerging innovations on an international scale, this book is a pivotal reference source for professionals, researchers, academics, practitioners, and students interested in the improvement of public health

infrastructures.

To achieve goals for climate and economic growth, "negative emissions technologies" (NETs) that remove and sequester carbon dioxide from the air will need to play a significant role in mitigating climate change. Unlike carbon capture and storage technologies that remove carbon dioxide emissions directly from large point sources such as coal power plants, NETs remove carbon dioxide directly from the atmosphere or enhance natural carbon sinks. Storing the carbon dioxide from NETs has the same impact on the atmosphere and climate as simultaneously preventing an equal amount of carbon dioxide from being emitted. Recent analyses found that deploying NETs may be less expensive and less disruptive than reducing some emissions, such as a substantial portion of agricultural and land-use emissions and some transportation emissions. In 2015, the National Academies published Climate Intervention: Carbon Dioxide Removal and Reliable Sequestration, which described and initially assessed NETs and sequestration technologies. This report acknowledged the relative paucity of research on NETs and recommended development of a research agenda that covers all aspects of NETs from fundamental science to full-scale deployment. To address this need, Negative Emissions Technologies and Reliable Sequestration: A Research Agenda assesses the benefits, risks, and "sustainable scale potential" for NETs and sequestration. This report also defines the essential components of a research and development program, including its estimated costs and potential impact.

Grounding is the fundamental measures to ensure the safeoperation of power systems, including power apparatus andcontrol/monitoring systems, and guarantee the personal safety.Grounding technology is an interdiscipline involving electricalengineering, high voltage technology, electric safety,electromagnetics, numerical analysis, and geologicalexploration Methodology and Technology for Power SystemGrounding: Covers all topics related to power system grounding Presents fundaments and theories of grounding systems Well balances technology and methodology related to groundingsystem design Helps to understand the grounding analysis softwares Highlights the advanced research works in the field ofgrounding systems Comprehensively introduces numerical analysis methods Discovers impulse ionization phenomenon of soil around thegrounding conductors Touches on lightning impulse characteristics of groundingdevices for towers and buildings As a comprehensive treatment of the topic, Methodology andTechnology for Power System Grounding is ideal for engineersand researchers in power system, lightning protection, andgrounding. The book will also better equip postgraduates, seniorundergraduate students in electrical engineering.