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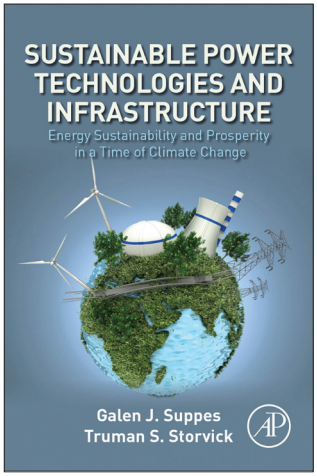

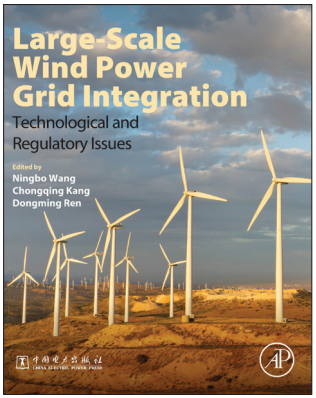

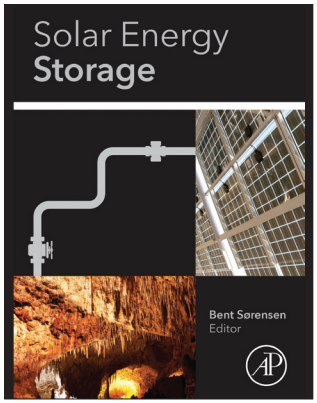

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Table of Contents

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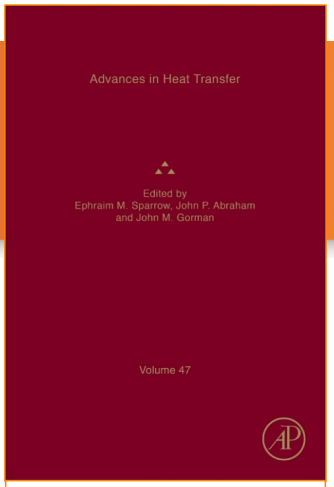

Advances in Heat Transfer, Vol 47

Advances in Heat Transfer

Edited by: ***Ephraim M. Sparrow*** University of Minnesota, Minneapolis, MN, USA
John Patrick Abraham University of St. Thomas, Saint Paul, MN, USA
John M. Gorman University of Minnesota, Minneapolis, MN, USA

This book conveys subject-encompassing overviews written by the most knowledgeable authorities, filling the information gap between regularly scheduled journals and university-level textbooks by providing in-depth review articles over a broader scope than in traditional journals or texts.

KEY FEATURES

- Compiles the expert opinions of leaders in the industry
- Fills the information gap between regularly scheduled journals and university-level textbooks by providing in-depth review articles over a broader scope than in traditional journals or texts
- Essential reading for all mechanical, chemical, and industrial engineers working in the field of heat transfer, or in graduate schools or industry

DESCRIPTION

Advances in Heat Transfer fills the information gap between regularly scheduled journals and university-level textbooks by providing in-depth review articles over a broader scope than in traditional journals or texts.

The articles, which serve as a broad review for experts in the field are also of great interest to non-specialists who need to keep up-to-date with the results of the latest research.

This serial is essential reading for all mechanical, chemical, and industrial engineers working in the field of heat transfer, or in graduate schools or industry.

ISBN: 978-0-12-802822-3
PUB DATE: October 2015
FORMAT: Hardback
PAGES: c. 448

AUDIENCE

Practitioners in industry and academics teaching advanced courses.

COMPUTING

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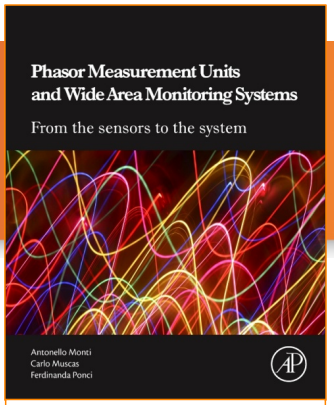

Phasor Measurement Units and Wide Area Monitoring Systems

Antonello Monti Senior member of IEEE and currently Director of the Institute for Automation of Complex Power Systems, Aachen University, Aachen, Germany
Carlo Muscas Associate Professor of Electrical and Electronic Measurement, University of Cagliari, Cagliari, Italy
Ferdinanda Ponci Chief Engineer and Lecturer, Aachen University, Germany

This practical book presents complete coverage of phasor measurement units (PMUs), bringing together a rigorous academic approach and practical considerations on the implementation of PMUs to the power system

ISBN: 978-0-12-804569-5
PUB DATE: June 2016
FORMAT: Paperback
PAGES: c. 256

AUDIENCE

engineering professionals working in electric power utilities and power distribution companies, researchers and graduate students (MSc and PhD level) in the area of power systems

KEY FEATURES

- Presents complete coverage of the topic from the measurement to the system, bringing together a rigorous academic approach and practical considerations on the implementation of PMUs to the power system
- Includes a complete proposal of implementation for a PMU platform that could be replicated in every laboratory
- Includes PMU software compiled for National Instrument HW, compiled monitoring platform to be used to monitor PMU data and developed custom solutions, and a compiled National Instrument schematic to be executed within a SmartPhone app that allows a fast user interface will be available for download at the book's companion website

DESCRIPTION

This practical book presents complete coverage of phasor measurement units (PMUs), bringing together a rigorous academic approach and practical considerations on the implementation of PMUs to the power system. Includes complete theory and practice of PMU technology development and implementation in power systems.

ENGINEERING
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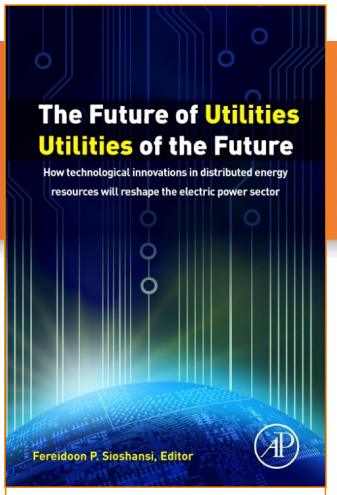

Future of Utilities - Utilities of the Future

How Technological Innovations in Distributed Generation will Reshape the Electric Power Sector

Edited by: ***Fereidoon P. Sioshansi*** President, Menlo Energy Economics, San Francisco, CA, USA

This comprehensive book relates the latest information on the electric power sector and its rapid transformation, particularly on the distribution network and customer side, presenting new trends like the rapid rise of self-generation and distributed generation, microgrids, demand response, the dissemination of electric vehicles, and zero-net energy buildings that promise to turn many consumers into prosumers

ISBN: 978-0-12-804249-6

PUB DATE: April 2016

FORMAT: Paperback

PAGES: c. 466

AUDIENCE

Professionals and researchers interested in the power sector, policy makers and regulators, senior managers of the power industry, and the technical community in the field of power generation, storage, transmission and distribution.

KEY FEATURES

- Contains discussions that help readers understand the underlying causes and drivers of change in the electrical sector, and what these changes mean in financial, operational, and regulatory terms
- Provides thought-provoking ideas on the challenges currently faced by electric utilities around the globe, the opportunities they present, and what the future might hold for both traditional players and new entrants to the sector
- Helps readers anticipate what developments are likely to define the function and role of the utility of the future

DESCRIPTION

Future of Utilities - Utilities of the Future: How technological innovations in distributed generation will reshape the electric power sector relates the latest information on the electric power sector its rapid transformation, particularly on the distribution network and customer side. Trends like the rapid rise of self-generation and distributed generation, microgrids, demand response, the dissemination of electric vehicles and zero-net energy buildings that promise to turn many consumers into prosumers are discussed.

The book brings together authors from industry and academic backgrounds to present their original, cutting-edge and thought-provoking ideas on the challenges currently faced by electric utilities around the globe, the opportunities they present, and what the future might hold for both traditional players and new entrants to the sector.

The book's first part lays out the present scenario, with concepts such as an integrated grid, microgrids, self-generation, customer-centric service, and pricing, while the second part focuses on how innovation, policy, regulation, and pricing models may come together to form a new electrical sector, exploring the reconfiguring of the current institutions, new rates design in light of changes to retail electricity markets and energy efficiency, and the cost and benefits of integration of distributed or intermittent generation, including coupling local renewable energy generation with electric vehicle fleets.

The final section projects the future function and role of existing electrical utilities and newcomers to this sector, looking at new pathways for business and pricing models, consumer relations, technology, and innovation.

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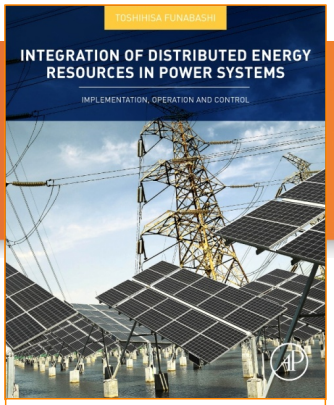


Integration of Distributed Energy Resources in Power Systems

Implementation, Operation and Control

Edited by: ***Toshihisa Funabashi*** Professor at Nagoya University, Aichi, Japan. Chartered Engineer in the UK, a senior member of IEEE and a member of IEE Japan, as well as member of the editorial board of Elsevier's journal Sustainable Energy, Grids and Networks.

As a comprehensive guide for integrating intermittent renewables and small scale power generation into the grid, this book includes important topics from the field, along with key issues that are necessary for the development of such strategies, including discussions of transmission and distribution

ISBN: 978-0-12-803212-1

PUB DATE: March 2016

FORMAT: Paperback

PAGES: c. 306

AUDIENCE

power engineering graduate students, researchers and professionals interested in power transmission, distribution and control, especially those involved in the integration of renewable energy sources to the electrical grid.

KEY FEATURES

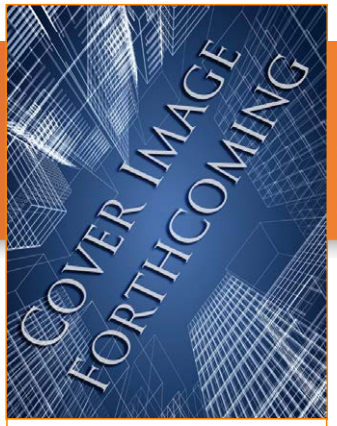
- Presents the most relevant aspects of the integration of distributed energy into power systems, with special focus on the challenges for transmission and distribution
- Explores the state-of the-art in applications of the most current technology, giving readers a clear roadmap
- Deals with the technical and economic features of distributed energy resources and discusses their business models

DESCRIPTION

Integration of Distributed Energy Resources in Power Systems: Implementation, Operation and Control covers the operation of power transmission and distribution systems and their growing difficulty as the share of renewable energy sources in the world's energy mix grows and the proliferation trend of small scale power generation becomes a reality.

The book gives students at the graduate level, as well as researchers and power engineering professionals, an understanding of the key issues necessary for the development of such strategies. It explores the most relevant topics, with a special focus on transmission and distribution areas.

Subjects such as voltage control, AC and DC microgrids, and power electronics are explored in detail for all sources, while not neglecting the specific challenges posed by the most used variable renewable energy sources.



Gas-Turbine Power Generation

Paul Breeze Freelance science and technology writer/consultant, UK

This comprehensive resource provides a concise, up-to-date, and readable guide on gas turbine power generation technology that presents detailed descriptions of gas fired generation systems, demystifies the functions of gas fired technology, and explores the economic and environmental risk factors

ISBN: 978-0-12-804005-8

PUB DATE: March 2016

FORMAT: Paperback

PAGES: c. 100

AUDIENCE

Power generation planners, electrical engineers, students and lecturers of Electrical Engineering and Energy, researchers, academics and the technical community involved in the development and implementation of power generation technologies, and power related engineering disciplines.

KEY FEATURES

- Provides a concise, up-to-date, and readable guide on gas turbine power generation technology
- Focuses on the evolution of gas-fired power generation using gas turbines
- Evaluates the economic and environmental viability of the system with concise diagrams and accessible explanations

DESCRIPTION

Gas-Turbine Power Generation is a concise, up-to-date, and readable guide providing an introduction to gas turbine power generation technology. It includes detailed descriptions of gas fired generation systems, demystifies the functions of gas fired technology, and explores the economic and environmental risk factors

Engineers, managers, policymakers and those involved in planning and delivering energy resources will find this reference a valuable guide that will help them establish a reliable power supply as they also account for both social and economic objectives.

ENGINEERING

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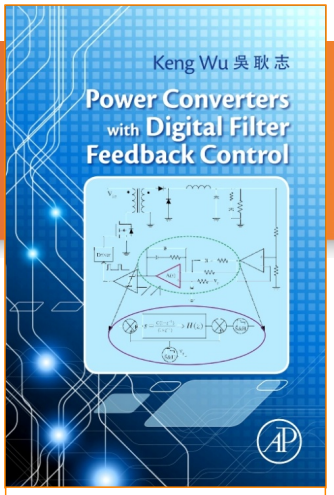


Power Converters with Digital Filter Feedback Control

Keng C. Wu Lockheed Martin, Maritime Systems & Sensors, Moorestown, NJ, USA

Details how to move a power converter with conventional analog feedback to one with modern digital filter control, enlisting the state space averaging technique to identify the core control function in analytical, close form in s-domain (Laplace)

ISBN: 978-0-12-804298-4

PUB DATE: January 2016

FORMAT: Paperback

PAGES: c. 310

AUDIENCE

Electrical and electronic engineers engaged in power supply design, researchers and postgraduate students in power electronics, electrical power equipment, systems design, integration

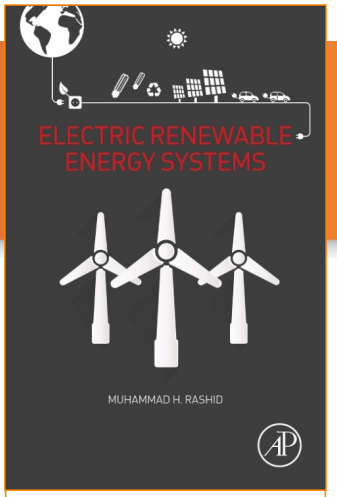
KEY FEATURES

- Offers logical sequences to identification, extraction, formulation, conversion, and implementation for the control function needed
- Contains step-by-step instructions on how to take existing analog designed power processors and move them to the digital realm
- Presents ways to extract gain functions for many power converters' power processing stages and their supporting circuitry

DESCRIPTION

Power Converter with Digital Filter Feedback Control presents a logical sequence that leads to the identification, extraction, formulation, conversion, and implementation for the control function needed in electrical power equipment systems.

This book builds a bridge for moving a power converter with conventional analog feedback to one with modern digital filter control and enlists the state space averaging technique to identify the core control function in analytical, close form in s-domain (Laplace). It is a useful reference for all professionals and electrical engineers engaged in electrical power equipment/systems design, integration, and management.



Electric Renewable Energy Systems

Muhammad H. Rashid University of West Florida, Pensacola, FL, USA

Learn how Power Electronics can enable clean, green energy, and how Alternative Energy provides new applications and opportunities

KEY FEATURES

- Provides a thorough overview of the key technologies, methods and challenges for implementing power electronics in alternative energy systems for optimal power generation
- Includes hard-to-find information on how to apply converters, inverters, batteries, controllers and more for stand-alone and grid-connected systems
- Covers wind and solar applications, as well as ocean and geothermal energy, hybrid systems and fuel cells

DESCRIPTION

Electric Renewable Energy Systems is a practical overview of designing, testing and troubleshooting power electronics in alternative energy systems, providing you with the most important information on how power electronics components such as inverters, controllers and batteries can play a pivotal role in the successful implementation of green energy solutions for both stand-alone and grid-connected applications. You will learn how to choose the right components for diverse systems, from utility-scale wind farms to photovoltaic panels on single residences, how to get the most out of existing systems, and how to solve the tough challenges particular to alternative energy applications. Whether you are a renewables professional who needs to understand more about how power electronics impact energy output, or a power engineer who is interested in learning what new avenues the alternative energy revolution is opening for your work, start here with advice and explanations from the experts, including equations, diagrams and tables designed to help you understand and succeed.

ISBN: 978-0-12-804448-3

PUB DATE: December 2015

FORMAT: Paperback

PAGES: c. 578

AUDIENCE

Researchers, engineers and scientists working with renewable energy, energy storage and/or grid transmission. Power engineers, systems planners and operators, energy storage engineers & designers

ENGINEERING

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Large-Scale Wind Power Grid Integration

Technological and Regulatory Issues

Ningbo Wang Director, Gansu Electric Power Corporation and Wind Power Engineering and Technology Center, Gansu Province, China
Chongqing Kang National Exemplary Center of Faculty Teaching Development, Tsinghua University, Beijing, China
Dongming Ren Center for Renewable Energy Development, Energy Research Institute, National Development and Reform Commission, Beijing, China

This book provides engineers with detailed solutions to the challenges of integrating and transmitting electricity generated from high power wind installations

ISBN: 978-0-12-849895-8
PUB DATE: November 2015
FORMAT: Paperback
PAGES: c. 336

AUDIENCE
Power and electrical engineers

KEY FEATURES

- Presents the first book to extensively introduce the technique of 10-GW wind power base
- Discusses the technology of large-scale wind power delivery and consumption, including the analysis, simulation and calculation of wind power delivery capacity, system stabilization and control, wind power prediction and forecasting, peak load and frequency regulation of power generation
- Introduces the background policy related to large-scale wind power delivery and the consumption plan, investigation of the present wind power policies around the world and the executive plan for the Jiuquan 10-GW wind power base

DESCRIPTION

Large Scale Wind Power Grid Integration: Technological and Regulatory Issues presents engineers with detailed solutions on the challenges of integrating and transmitting electricity generated from high power wind installations, covering all of the standard engineering issues associated with high power wind generation. The book includes detailed case studies from eight wind power bases in China, providing important insights for engineers in countries that are seeking to develop large-scale wind power farms. Also discussed is the emergence of 10 GW-level wind power bases that are now operational in China and those that are planned for offshore construction in Europe, the U.S., and other places in the world.

China's leadership in Large-scale wind power bases with capacities over 1 GW (which already account for approximately 70%-80% of the total installed capacity in China) means that globally, engineers who are challenged with developing large-scale wind power installations can gain access to the experiences of Chinese engineers in this important technology.

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Intelligent Coordinated Control of Complex Uncertain Systems for Power Distribution Network Reliability

Xiangping Meng School of Electrical and Information Engineering Changchun Institute of Technology, China
Zhaoyu Pian Associate Professor, College of Information Science and Engineering, Shenyang Ligong University, China

Provides effective solutions for problems in the study of complex control systems and new theoretical guidance on power distribution network reliability analysis

KEY FEATURES

- Provides effective solutions for complex control systems
- Presents theoretical guidance for power distribution network reliability analysis
- Focuses on practical problems and algorithms

DESCRIPTION

Intelligent Coordinated Control of Complex Uncertain Systems for Power Distribution Network Reliability discusses the important topics revolving around the control of complex uncertain systems using the intelligent coordination control mechanism, a topic that has become the research focus of current control and computer fields. The book presents a comprehensive review of the current state of research on complex uncertain systems for power distribution and network reliability and provides theoretical guidance for power distribution network reliability analysis, focusing on practical problems and algorithms within the field.

ISBN: 978-0-12-849896-5
PUB DATE: November 2015
FORMAT: Paperback
PAGES: c. 200

AUDIENCE

The book will be essential reading for practicing engineers, researchers, technicians, and advanced undergraduate and graduate students in electrical power industries.

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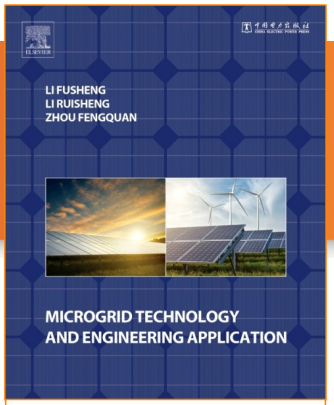

Microgrid Technology and Engineering Application

Fusheng Li XJ Electric Co., Ltd
Ruisheng Li Smart Grid Research Center, XJ Electric Co., Ltd
Fengquan Zhou Smart Grid Research Center, XJ Electric Co., Ltd

A partnership title with China Electric Power Press, this cutting-edge work provides a systematic introduction to the basic concepts, key technologies and practical design methods for microgrid power systems

ISBN: 978-0-12-803598-6
PUB DATE: September 2015
FORMAT: Hardback
PAGES: c. 184

AUDIENCE
Power engineers, Electric Power Professionals

KEY FEATURES

- Provides a systematic introduction to the basic concepts, key technologies, and practical design methods of microgrids
- Covers the theoretical design and implementation of microgrid facilities, including practical operational issues, monitoring and control. The balance of theoretical and applied content will be of real value to engineers who are specifying and design systems in regions with limited experience of microgrid systems
- Includes real-life examples and projects to help implement the content effectively

DESCRIPTION

This book is based on the authors' research and microgrid projects since 2009, and is the most up-to-date resource on the development of microgrid technologies. In addition to basic facility and network design concepts, it covers related subjects including power supply programming and energy optimization, which means it can serve as a single volume reference to the complete microgrid system implementation.

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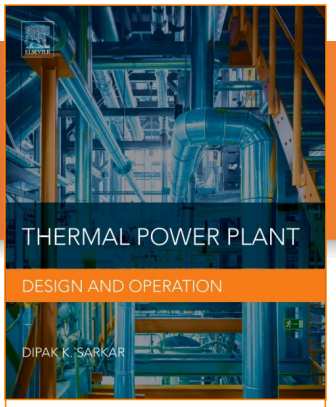


Thermal Power Plant

Design and Operation

Dipak Sarkar Guest Faculty, Department of Power Engineering, Jadavpur University, Kolkata India

ISBN: 978-0-12-801575-9

PUB DATE: August 2015

FORMAT: Paperback

PAGES: c. 584

AUDIENCE

Power Engineering professionals, graduate and undergraduate students.

Offers a new dimension on the subject of thermal power plant operating practices, troubleshooting, technology, and design

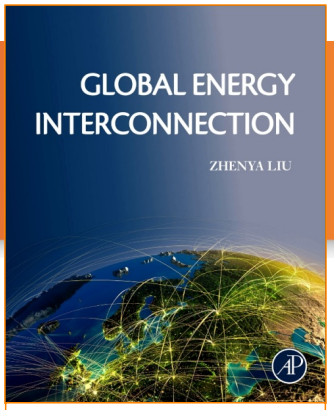
KEY FEATURES

- Focuses exclusively on thermal power, addressing some new frontiers specific to thermal plants
- Presents both technology and design aspects of thermal power plants, with special treatment on plant operating practices and troubleshooting
- Features a practical approach ideal for professionals, but can also be used to complement undergraduate and graduate studies

DESCRIPTION

Thermal Power Plant: Design and Operation deals with various aspects of a thermal power plant, providing a new dimension to the subject, with focus on operating practices and troubleshooting, as well as technology and design. Its author has a 40-long association with thermal power plants in design as well as field engineering, sharing his experience with professional engineers under various training capacities, such as training programs for graduate engineers and operating personnel.

Thermal Power Plant presents practical content on coal-, gas-, oil-, peat- and biomass-fueled thermal power plants, with chapters in steam power plant systems, start up and shut down, and interlock and protection. Its practical approach is ideal for engineering professionals.



Global Energy Interconnection

Zhenya Liu Chairman, State Grid Corporation of China

Proposes a broad concept: global energy interconnection, filling the gap between, discrete technology development and global interconnection, proposing the interdependency of energy systems

ISBN: 978-0-12-804405-6

PUB DATE: August 2015

FORMAT: Hardback

PAGES: c. 382

AUDIENCE

Scientists and researchers engaged in the energy sector, as well as energy economics researchers, economists, consultants, and government energy policy makers in relevant fields.

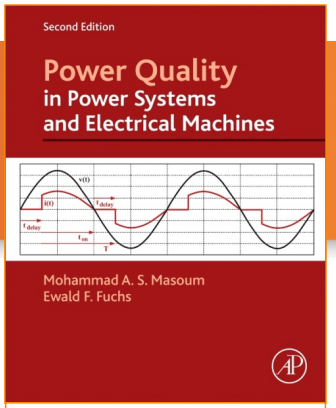
KEY FEATURES

- Based on the author's many years' experience in developing Smart Grid solutions within national and international projects.
- Combines both solid background information and cutting-edge technology progress, coupled with a useful and impressive list of references.
- The key energy problems which are challenging us nowadays are well stated and explained in this book, which facilitates a better understanding of the development of global energy interconnection with UHV AC/DC and smart grid technologies.

DESCRIPTION

Global energy network is an important platform to guarantee effective exploitation of global clean energy and ensure reliable energy supply for everybody. ***Global Energy Interconnection*** analyzes the current situation and challenges of global energy development, provides the strategic thinking, overall objective, basic pattern, construction method and development mode for the development of global energy network. Based on the prediction of global energy and electricity supply and demand in the future, with the development of UHV AC/DC and smart grid technologies, this book offers new solutions to drive the safe, clean, highly efficient and sustainable development of global energy.

The concept and development ideas concerning global energy interconnection in this book are based on the author’s thinking of strategic issues about China’s and the world’s energy and electricity development for many years, especially combined with successful practices of China’s UHV development. This book is particularly suitable for researchers and graduated students engaged in energy sector, as well as energy economics researchers, economists, consultants, and government energy policy makers in relevant fields.



Power Quality in Power Systems and Electrical Machines, 2e

Ewald Fuchs University of Colorado, Boulder, CO, USA
Mohammad A. S. Masoum Curtin University of Technology, Perth, Western Australia

Learn about the causes, effects, modeling, and mitigation of power quality problems – now updated to include power quality solutions for renewable energy systems

ISBN: 978-0-12-800782-2
PREVIOUS EDITION ISBN: 978-0-12-369536-9
PUB DATE: August 2015
FORMAT: Hardback
PAGES: c. 1124

AUDIENCE

Engineers, researchers, and postgrads working in power systems, energy conversion, power system protection, and power electronics

KEY FEATURES

- Provides theoretical and practical insight into power quality problems of machines and systems, enabling the reader to solve the power quality problems that they encounter
- Worked examples and end of chapter exercises (with available solutions) show practical applications of the material discussed in the chapter
- New to this edition: identifies problems and solutions associated with renewable energy sources, provides more practical examples, and provides a website with downloadable examples using SPICE, Mathematica, and Matlab©

DESCRIPTION

The second edition of this must-have reference covers power quality issues in four parts, including new discussions related to renewable energy systems. The first part of the book provides background on causes, effects, standards, and measurements of power quality and harmonics. Once the basics are established the authors move on to harmonic modeling of power systems, including components and apparatus (electric machines). The final part of the book is devoted to power quality mitigation approaches and devices, and the fourth part extends the analysis to power quality solutions for renewable energy systems. Throughout the book worked examples and exercises provide practical applications, and tables, charts, and graphs offer useful data for the modeling and analysis of power quality issues.

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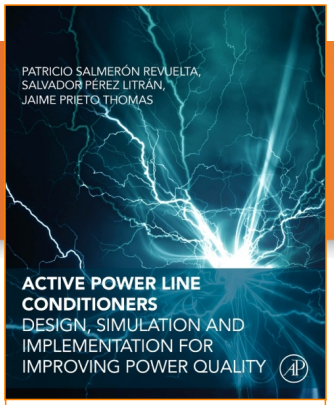

Active Power Line Conditioners

Design, Simulation and Implementation for Improving Power Quality

Patricio Salmeron Revuelta Professor at Escuela Técnica Superior de Ingeniería, University of Huelva
Salvador Pérez Litrán Professor and Head of the Department of Electrical Engineering, University of Huelva
Jaime Prieto Thomas Associate Professor. Electrical Engineering, University of Huelva

This book presents a rigorous theoretical and practical approach to active power line conditioners, one of the subjects of most interest in the field of power quality, bringing users a broad approach that will allow power engineering professionals, researchers, and graduate students to learn more about the latest landmarks on the different APLC configurations for load active compensation.

ISBN: 978-0-12-803216-9
PUB DATE: July 2015
FORMAT: Paperback
PAGES: c. 422

AUDIENCE

Engineering professionals, graduate students and researchers in the field of electrical and power engineering

KEY FEATURES

- Combines the development of theories, control strategies, and the most widespread practical implementations of active power line conditioners, along with the most recent new approaches
- Details updated and practical content on periodic disturbances mitigation technologies with special emphasis on distributed generation systems
- Includes over 28 practical simulation examples in Matlab-Simulink which are available for download at the book's companion website, with 4 reproducible case studies from real APLCs

DESCRIPTION

Active Power Line Conditioners: Design, Simulation and Implementation for Improving Power Quality presents a rigorous theoretical and practical approach to active power line conditioners, one of the subjects of most interest in the field of power quality. Its broad approach offers a journey that will allow power engineering professionals, researchers, and graduate students to learn more about the latest landmarks on the different APLC configurations for load active compensation.

By introducing the issues and equipment needs that arise when correcting the lack of power quality in power grids, this book helps define power terms according to the IEEE Standard 1459. Detailed chapters discuss instantaneous reactive power theory and the theoretical framework that enabled the practical development of APLCs, in both its original and modified formulations, along with other proposals.

Different APLCs configurations for load compensation are explored, including shunt APF, series APF, hybrid APF, and shunt combined with series APF, also known as UPQC. The book includes simulation examples carefully developed and ready for download from the book's companion website, along with different case studies where real APLCs have been developed.

Finally, the new paradigm brought by the emergence of distribution systems with dispersed generation, such as the use of small power units based on gas technology or renewable energy sources, is discussed in a chapter where mitigation technologies are addressed in a distributed environment.

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Coal-Fired Generation

Paul Breeze Freelance science and technology writer/consultant, UK

Advances in technologies, applications and the economic and environmental costs

KEY FEATURES

- Focuses on the evolution of the traditional coal-fired generation
- Evaluates the economic and environmental viability of the system with concise diagrams and accessible explanations

DESCRIPTION

Coal-Fired Generation is a concise, up-to-date and readable guide providing an introduction to this traditional power generation technology. It includes detailed descriptions of coal fired generation systems, demystifies the coal fired technology functions in practice as well as exploring the economic and environmental risk factors.

Engineers, managers, policymakers and those involved in planning and delivering energy resources will find this reference a valuable guide, to help establish a reliable power supply address social and economic objectives.

ISBN: 978-0-12-804006-5

PUB DATE: July 2015

FORMAT: Paperback

PAGES: c. 92

AUDIENCE

The series is targeted at Power generation planners, electrical engineers, students and lecturers of Electrical Engineering and Energy, researchers, academics and the technical community involved in the development and implementation of power generation technologies, and power related engineering disciplines.

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ELECTRICAL
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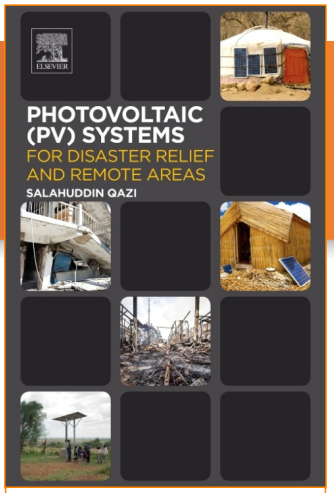

Photovoltaic (PV) Systems for Disaster Relief and Remote Areas

Salahuddin Qazi Professor Emeritus, State University of New York Polytechnic Institute (formerly SUNYIT), Utica, NY, USA

ELSEVIER

This book provides a detailed overview of PV system applications for disaster and remote areas, including guidance on managing electrical needs during outages and strategies for deploying, transporting, and using a resilient grid in remote parts of the world to increase energy availability and ensure clean energy supplies moving forward

ISBN: 978-0-12-803022-6

PUB DATE: June 2016

FORMAT: Paperback

PAGES: c. 240

AUDIENCE

Engineers, PV installers, Local and State government, energy industry professionals, academics, researchers, Federal agencies

KEY FEATURES

- Presents the only available, detailed overview of PV applications and guidance on how to build PV system in remote locations with limited infrastructure
- Includes discussions on how standalone, portable, and mobile systems can provide electricity during outages and times of crisis
- Contains detailed discussions of resilience, affordability, emissions, and cost comparisons between PV systems and other technologies such as diesel generators, wind turbines, and main grid connected applications

DESCRIPTION

Photovoltaic (PV) Systems for Disaster Relief and Remote Areas explores the increased demand for energy, including clean energy alternatives and the ways that solar energy is fast becoming a vital source for meeting peak demand, a solution for energy demand in disaster and remote areas, and a viable source to meet emerging energy security needs.

The book provides a detailed overview of PV systems and applications for disaster and remote areas, and includes a guide on how to provide electricity during outages, along with important discussions on the need for increasing the resilience of the grid. The differences and requirements for standalone, mobile, and portable PV systems are discussed, along with how systems can be deployed, transported, and used in remote areas.

In addition, the book discusses the use of solar PV systems to create environmentally friendly power systems for remote communities that can be operated independently, also comparing the costs, emissions, and practical applications of other technologies.

ENGINEERING
ENERGY
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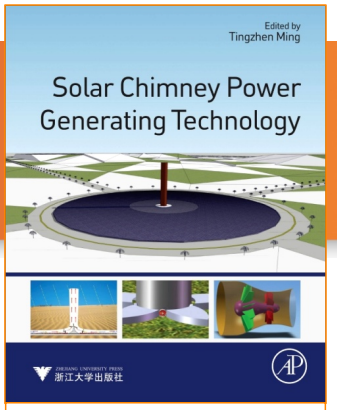

Solar Chimney Power Plant Generating Technology

Edited by: ***Tingzhen Ming*** Associate Professor, School of Energy and Power Engineering, Huazhong University of Science and Technology, Wuhan, China

This detailed guide offers a comprehensive, well-illustrated coverage of solar chimney power generating systems, including fundamental theories, technologies, and applications

ISBN: 978-0-12-805370-6

PUB DATE: June 2016

FORMAT: Hardback

PAGES: c. 230

AUDIENCE

Researchers, engineers, graduate students, and teachers in the fields of solar energy power generating technology, renewable energy technology, heat transfer, energy storage, and global warming.

KEY FEATURES

- Includes comprehensive theories, very detailed technologies, and many basic configurations of different types of systems
- Covers the basic mechanisms of fluid flow, heat transfer, power output, energy storage, and operational procedures of SCPPS (solar chimney power plant system) turbines
- Focuses on thermodynamic theory, helio-aero-gravity effect, fluid flow and heat transfer characteristics, design for SC turbine, energy storage, and the effect of ambient crosswinds

DESCRIPTION

Solar Chimney Power Plant Generating Technology presents the latest advanced solar chimney power generating technologies to help engineers acquire a comprehensive understanding of the fundamental theories, technologies, and applications of solar chimney power generating systems. The book includes comprehensive theories, very detailed technologies, and many well-illustrated, basic configurations of different types of systems, enabling readers to understand the fundamental theory, the design methods of solar chimney systems, and the basic parameters of the construction and operation of these systems.

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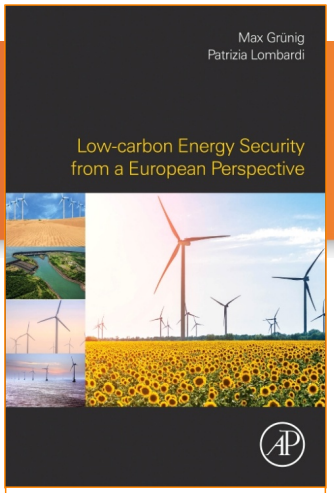

Low-carbon Energy Security from a European Perspective

Edited by: ***Max Grünig*** Coordinator for European Research and Senior Fellow, Ecologic Institute
Patrizia Lombardi Professor in planning evaluation and environmental economics and Head of the Interuniversity Department of Urban and Regional Studies & Planning, Polytechnic and University of Torino

With insights from a series of novel European energy project case studies, this timely book tackles themes such as climate change and energy security, energy security in a time of shifting geopolitical alliances, and the influence of large-scale renewable energy projects

ISBN: 978-0-12-802970-1
PUB DATE: June 2016
FORMAT: Paperback
PAGES: c. 240

AUDIENCE

Professional/ practitioner audience, graduate-level academia, policy making experts, practitioners and officers in European energy planning offices and environmental, economic, international relations, and political science researchers from academia and research institutions.

KEY FEATURES

- Offers a unique perspective on low-carbon energy security by considering the assumptions behind current energy security needs
- Suggests the benefit of envisioning energy security through out-of-the-box scenario development with respect to the energy system
- Includes energy in an international scenario with case studies from Africa, Russia, Ukraine, Morroco, China, South America, and Europe
- Draws on the European Commission's funded project MILESECURE-2050

DESCRIPTION

Low-Carbon Energy Security from a European Perspective draws on the European Commission's funded project MILESECURE-2050. It considers low-carbon energy security and energy geopolitics in Europe, with a focus on four thematic clusters: challenging the energy security paradigm; climate change and energy security objectives (the components of a secure and low-carbon energy system); energy security in a geopolitical perspective, as it relates to economics, resource competition, and availability; and the influence of large scale renewable energy projects on energy security and shifting geopolitical alliances.

An overarching narrative is that optimizing the energy system simultaneously across different objectives may be impossible, i.e., lowest cost, least environmental impact, minimal downtime, regional supply. This book explores these charged topics through insights from a series of novel, new energy project case studies, and demonstrates the need for difficult political conversations within Europe and beyond by posing fundamental yet new questions about the energy security paradigm.

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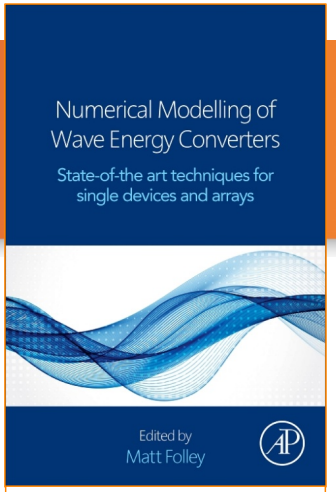

Numerical Modelling of Wave Energy Converters

State-of-the Art Techniques for Single WEC and Converter Arrays

Edited by: ***Matt Folley*** Senior Research Fellow, Marine Renewables Research Group, Queen's University Belfast and member of the SuperGen UK Centre for Marine Energy Research

This robust book presents all the information required for numerical modelling of a wave energy converter, together with a comparative review of the different available techniques

KEY FEATURES

- Consolidates in one volume information and techniques for the numerical modelling of wave energy converters and converter arrays, which has, up until now, been spread around multiple academic journals and conference proceedings making it difficult to access
- Presents a comparative review of the different numerical modelling techniques applied to wave energy converters, discussing their limitations, current available tools, examples, and verification, validation, and computational requirements
- Includes practical examples and simulations available for download at the book's companion website
- Identifies key points of each modelling technique without getting deeply involved in the mathematical representation

DESCRIPTION

Numerical Modelling of Wave Energy Converters: State-of-the Art Techniques for Single WEC and Converter Arrays presents all the information and techniques required for the numerical modelling of a wave energy converter together with a comparative review of the different available techniques. The authors provide clear details on the subject and guidance on its use for WEC design, covering topics such as boundary element methods, frequency domain models, spectral domain models, time domain models, non linear potential flow models, CFD models, semi analytical models, phase resolving wave propagation models, phase averaging wave propagation models, parametric design and control optimization, mean annual energy yield, hydrodynamic loads assessment, and environmental impact assessment.

Each chapter starts by defining the fundamental principles underlying the numerical modelling technique and finishes with a discussion of the technique's limitations and a summary of the main points in the chapter. The contents of the chapters are not limited to a description of the mathematics, but also include details and discussion of the current available tools, examples available in the literature, and verification, validation, and computational requirements. In this way, the key points of each modelling technique can be identified without having to get deeply involved in the mathematical representation that is at the core of each chapter.

The book is separated into four parts. The first two parts deal with modelling single wave energy converters; the third part considers the modelling of arrays; and the final part looks at the application of the different modelling techniques to the four most common uses of numerical models. It is ideal for graduate engineers and scientists interested in numerical modelling of wave energy converters, and decision-makers who must review different modelling techniques and assess their suitability and output.

ISBN: 978-0-12-803210-7
PUB DATE: June 2016
FORMAT: Paperback
PAGES: c. 288

AUDIENCE

graduate students and researchers in the area of wave energy conversion, engineering professionals involved in the development of wave energy converters.

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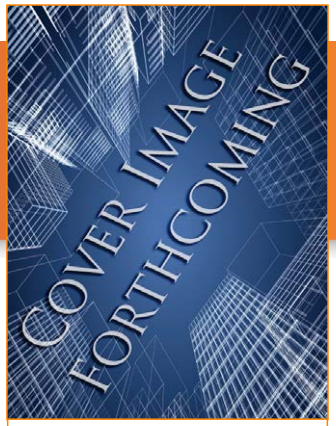


Solar Power Generation

Paul Breeze Freelance science and technology writer/consultant, UK

An introduction to the leading renewable power generation technology, including detailed descriptions of solar photovoltaic and thermal generation systems and exploring economic and environmental risk factors

ISBN: 978-0-12-804004-1

PUB DATE: June 2016

FORMAT: Paperback

PAGES: c. 140

AUDIENCE

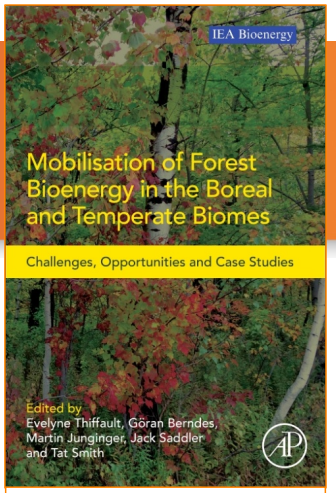
Power generation planners, electrical engineers, students and lecturers of Electrical Engineering and Energy, researchers, academics and the technical community involved in the development and implementation of power generation technologies, and power related engineering disciplines.

KEY FEATURES

- Focuses on the evolution and developments in solar energy generation
- Evaluates the economic and environmental viability of the systems with concise diagrams and accessible explanations
- Demystifies the relevant solar energy technology functions in practice
- Explores economic and environmental risk factors

DESCRIPTION

Solar Power Generation is a concise, up-to-date, and readable guide providing an introduction to the leading renewable power generation technology. It includes detailed descriptions of solar photovoltaic and solar thermal generation systems, and demystifies the relevant solar energy technology functions in practice while also exploring economic and environmental risk factors. Engineers, managers, policymakers, and those involved in planning and delivering energy resources will find this reference a valuable guide to help establish a reliable power supply to address social and economic objectives.



Mobilisation of Forest Bioenergy in the Boreal and Temperate Biomes

Challenges, Opportunities and Case Studies

Edited by: ***Evelyne Thiffault*** Professor, Department of Wood and Forest Science, Laval University, Canada
C.T. Smith Professor, University of Toronto, Canada
Martin Junginger Professor, Utrecht University, The Netherlands
Göran Berndes Professor, Chalmers University, Sweden

International experts identify and analyze the main opportunities and roadblocks for the implementing sustainable forest biomass supply chains in the boreal and temperate regions offering a global overview of forest biomass supply chains for sustainable bioenergy, including best practices and recommendations

ISBN: 978-0-12-804514-5
PUB DATE: June 2016
FORMAT: Paperback
PAGES: c. 216

AUDIENCE
professionals, policymakers, researchers and graduate students in the field of bioenergy

KEY FEATURES

- Presents foundational theory, examples and lessons learned, drawing on scientific and technical literature, as well as surveys conducted among stakeholders from various countries of the boreal and temperate biomes
- Provides best practices, insights, and recommendations through an integrative framework that encompasses various aspects of forest biomass supply chain, at different scales, and looking at a broad geographical and geopolitical range
- Compares contrasting history, policy context, and level of forest bioenergy development in several countries through several case studies
- Analyzes the efficiency and profitability of the supply chain, highlighting the scale and level of confidence of feedstock inventory estimates

DESCRIPTION

Mobilisation of Forest Bioenergy in the Boreal and Temperate Biomes: Challenges, Opportunities, and Case Studies features input from key international experts who identify and analyze the main opportunities and roadblocks for the implementation of sustainable forest biomass supply chains in the boreal and temperate regions. It draws from responses to surveys that were sent to specialists from different countries, compares models of bioenergy deployment, and discusses different types of bioenergy carriers.

Efficiency and profitability of the supply chain are analyzed and the scale and level of confidence of feedstock inventory estimates are highlighted. Logistics and ecological and socio-economic footprints are also covered. This book provides a synthesis of the scientific and technical literature on specific aspects of forest biomass supply chains, and quantifies future potentials in comparison to estimates provided by other sources and the targets for bioenergy production set by various organizations (IEA, IPCC, etc.).

Finally, the book proposes recommendations for practitioners, policymakers, and future research. This approach makes the book especially relevant for professionals, policymakers, researchers, and graduate students in the field of bioenergy conversion and management, as well as those interested in sustainable management of natural resources.

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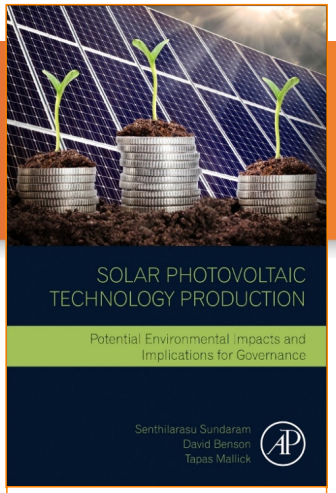

Solar Photovoltaic Technology Production

Potential Environmental Impacts and Implications for Governance

Senthilarasu Sundaram Environment and Sustainability Institute, University of Exeter, UK
David Benson Environment and Sustainability Institute, University of Exeter, UK
Tapas K. Mallick Environment and Sustainability Institute, University of Exeter, UK

Presents an overview of the potential impacts and existing governance frameworks relating to solar photovoltaic technology production in order to facilitate the development of the PV industry, its technologies, and regulatory frameworks

ISBN: 978-0-12-802953-4
PUB DATE: May 2016
FORMAT: Paperback
PAGES: c. 140

AUDIENCE

Researchers, engineers and professionals engaged in developing PV technologies, PV implementation and global PV manufacturers.

KEY FEATURES

- Fills the need for a coherent source of information on the potential impacts of different PV technologies
- Provides comprehensive coverage of lifecycle analysis (LCA) of PV technologies in a single reference
- Analyzes relevant governance arrangements for researchers and manufacturers

DESCRIPTION

Solar Photovoltaic Technology Production: Potential Environmental Impacts and Implications for Governance provides an overview of the emerging industrial PV sector, its technologies, and the regulatory frameworks supporting them.

This new book reviews and categorizes the potential environmental impacts of several main PV technologies, examining the extent to which current EU governance frameworks regulate such impacts. By identifying the gaps or regulatory mismatches and creating a basis for normative recommendations on governance change, this book analyzes potential governance implications and their impacts in relation to manufacturers upscaling PV production techniques.

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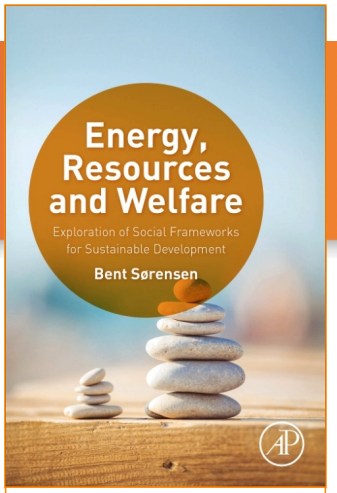


Energy, Resources and Welfare

Exploration of Social Frameworks for Sustainable Development

Bent Sorensen (Sorensen) Professor, Department of Environmental, Social and Spatial Change, Roskilde University, Denmark; Independent Consultant, NOVATOR Advanced Technology Consulting, Denmark

Barriers to full-scale, sustainable energy and how to surpass them

ISBN: 978-0-12-803218-3

PUB DATE: April 2016

FORMAT: Paperback

PAGES: c. 214

AUDIENCE

scientists, engineers, planners and policy makers working in the energy area, as well as those interested in studying the relationship between energy, resources and social arrangements

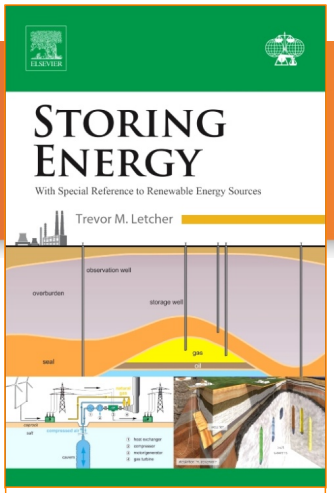
KEY FEATURES

- One of the world's leading experts in renewable energy systems looks into economic, social and political factors that influence the current state of renewable energy implementation in the world.
- Sørensen examines the reasons why reaching 100% renewable and sustainable energy sources might seem like an unattainable goal, and proposes alternative solutions that would allow the world to proceed towards energy sustainability without losing welfare.

DESCRIPTION

Bent Sørensen, one of the world's leading experts in the field of renewable energy systems, explores the current hurdles to the universal adoption of renewable energy sources and proposes solutions to the current situation in this new inspiring work. He discusses the social, political and economic issues that make sustainability seem like such an attainable goal, and explores the ways through which change can be achieved without loss of welfare.

Even though the author has written several scientific monographs covering the technical issues behind the energy and social transitions mentioned in this book, and bases his conclusions on solid facts and analysis, Sørensen avoids specialist jargon in this text. He therefore addresses scientists and engineers directly involved in sustainable technologies, as well as energy planners and decision makers in industry and government, and also those interested in the direction in which our societies are moving. This book can be a good basis for discussions and debate, whether in academic or in political circles, and may even be used as complementary reading for students in the field of energy generation, implementation, planning, management, markets and policy.



Storing Energy

with Special Reference to Renewable Energy Sources

Trevor Letcher Emeritus Professor, School of Chemistry, University of KwaZulu-Natal, Durban, South Africa

ISBN: 978-0-12-803440-8

PUB DATE: March 2016

FORMAT: Hardback

PAGES: c. 574

AUDIENCE

Researchers and grad students working in the area of energy, including engineers and scientists

This comprehensive book discusses the needs of the world's future energy and climate change policies, covering the various types of renewable energy storage in one all-encompassing volume that allows readers to conveniently compare the different technologies and find the best process that suits their particular needs

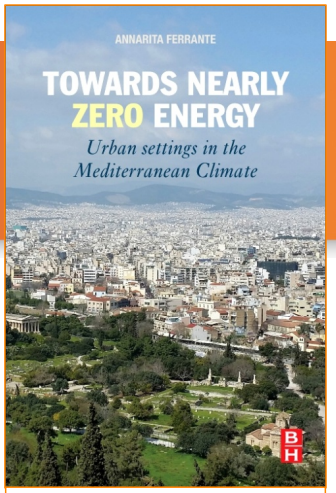
KEY FEATURES

- Covers most types of energy storage that is being considered today, and allows comparisons to be made
- Each chapter is written by a world expert in the field, providing the latest developments is this fast moving and vital field
- Covers technical, environmental, social and political aspects related to the storing of energy and in particular renewable energy

DESCRIPTION

Energy Storage discusses the needs of the world's future energy and climate change policies, covering the various types of renewable energy storage in one comprehensive volume that allows readers to conveniently compare the different technologies and find the best process that suits their particularly needs.

Each chapter is written by an expert working in the field and includes copious references for those wishing to study the subject further. Various systems are discussed, including mechanical/kinetic, thermal, electrochemical and other chemical, as well as other emerging technologies. Incorporating the advancements in storing energy as described in this book will help the people of the world further overcome the problems related to future energy and climate change.



Towards Nearly Zero Energy

Urban Settings in the Mediterranean Climate

Annarita Ferrante School of Engineering, University of Bologna, Bologna, Italy

Looks at energy production from renewable sources amidst the exceptionally challenging global economic crisis that the Mediterranean areas and other societies are currently experiencing, providing tools and measures that can be developed at the public, legislative, and market levels to counterbalance the lengthy payback times of energy efficiency measures

ISBN: 978-0-08-100735-8

PUB DATE: February 2016

FORMAT: Paperback

PAGES: c. 284

AUDIENCE

Researchers, engineers and scientists working with renewable energy, energy storage and/or grid transmission; power engineers, systems planners and operators, energy storage engineers & designers

KEY FEATURES

- Includes toolkits and zero energy solutions for practitioners
- Presents policy recommendations and designed resolutions to combat legislative barriers
- Includes examples and case studies of nearly zero energy urban environments

DESCRIPTION

Towards Nearly Zero Energy: Urban Settings in the Mediterranean Climate discusses tactics that can be used to effectively reduce energy consumption towards zero energy. With energy usage in buildings accounting for over 40% of primary energy use and 24% of greenhouse gas emissions worldwide, this remains an unavoidable objective.

The book looks at the life of the systems of energy production from renewable sources amidst the exceptionally challenging global economic crisis that the Mediterranean areas and other societies are currently experiencing. By using an innovative and interdisciplinary approach of socio-oriented technological design, the book indicates tools and measures that can be developed at the public, legislative, and market levels to counterbalance the large pay-back times of energy efficiency measures.

In particular, the book displays guidelines and best practices to activate new forms of economic incentives in order to attract potential investors that demonstrate that a large set of possible solutions is technically feasible to achieve nearly zero energy, even in high energy consuming circumstances and urban settings.

Furthermore, by discussing and comparing the economic and energy impact of different technology options, this work offers guidelines and best practices to activate new cost-effective forms and social incentives in order to attract both potential investors and motivate the urban stakeholders toward nearly zero energy.

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ENERGY

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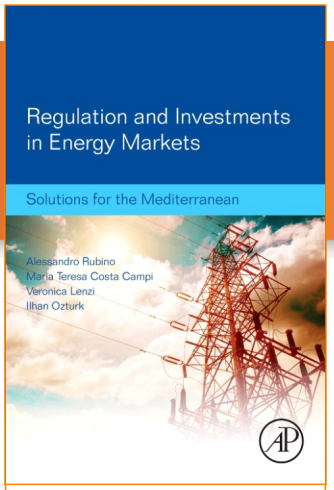

Regulation and Investments in Energy Markets

Solutions for the Mediterranean

Edited by: ***Alessandro Rubino*** Bari University, Bari, Italy; International Energy Regulation Network (IERN);Enel Foundation.; ***Ilhan Ozturk*** Cag University, Mersin, Turkey; IJEEP; IJEFI, Mersin, TURKEY; ***Veronica Lenzi*** IMT Institute for Advanced Studies of Lucca, Italy
Maria Teresa Costa Campi University of Barcelona, Spain; National Energy Commission (2005-2011); Association of Energy Regulators (2005-2012); Iberian Electricity Market (MIBEL) (2006-2007); MEDREG (2010-2011)

With Mediterranean countries facing unprecedented challenges in the energy sector, this book presents detailed information on energy policy and regulation, two necessary, key factors needed to tackle the energy efficiency challenges of the region.

ISBN: 978-0-12-804436-0

PUB DATE: December 2015

FORMAT: Paperback

PAGES: c. 348

AUDIENCE

Professional/practitioner audience, graduate-level academia, policy making experts, practitioners and officers in European energy planning offices and environmental, economic, international relations, and political science researchers from academia and research institutions

KEY FEATURES

- Contains a detailed overview of the specificities and institutional frameworks, giving greater clarity on existing energy practice
- Provides recommendations and contributions from leading scholars and key players in energy policy research
- Presents information from a region wide interdisciplinary approach based on specific industry information

DESCRIPTION

Regulation & Investments in Energy Markets: Solutions for the Mediterranean presents the status of advancement and maturity of the Mediterranean energy policy, identifying patterns of development as well as lessons learned.

Mediterranean countries are facing unprecedented challenges in the energy sector which affect the entire region. Energy policy and regulation is the key to tackling energy efficiency challenges, and providing favorable conditions for engineering infrastructures, investments, and improving security of energy supply.

The assumption that the normative model, on which the EC energy policy is based, could be adopted outside EU boundaries has proven to be difficult to implement. This book looks at the Mediterranean regions search for a revised model for regulatory convergence and provides answers to those research questions, allowing the reader to understand the different technical, institutional, and financial frameworks for energy policy.

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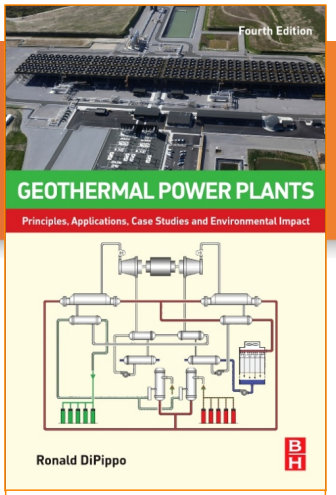

Geothermal Power Plants, 4e

Principles, Applications, Case Studies and Environmental Impact

Ronald DiPippo Renewable Energy Consultant, Chancellor Professor Emeritus, University of Massachusetts Dartmouth, N. Dartmouth, MA, USA

An authoritative exposition of renewable geothermal power technology applied to a variety of resources of all temperatures and characteristics

"This book covers everything professionals and students need to know about geothermal power plants, by someone you need to know it from." Raffaele Cataldi – Founder of the International Geothermal Association

ISBN: 978-0-08-100879-9

PUB DATE: November 2015

FORMAT: Hardback

PAGES: c. 764

AUDIENCE

Geothermal reservoir engineers; geothermal professionals; mechanical, electrical, chemical, industrial, and power engineers; system designers; power plant technicians; geoscientific researchers; project developers and managers; advanced students

KEY FEATURES

- Important new and revised content on double- and triple-flash steam power plants, plant and well pumps, and biomass-geothermal and solar-geothermal hybrid systems
- New chapters on global case studies with comprehensive and up-to-date statistics, including New Zealand, Indonesia, Central America and the Caribbean, and the state of Nevada, USA, plus updated chapters on Larderello (Italy), The Geysers (USA), Turkey and Enhanced Geothermal Systems (EGS) make this useable and relevant for a global audience
- Revised and additional practice problems with emphasis on system simulation using electronic equations of state for working fluid properties. SI units are now used exclusively

DESCRIPTION

Now in its 4th edition, this single resource covers all aspects of the utilization of geothermal energy for power generation using fundamental scientific and engineering principles. Its practical emphasis is enhanced by the use of global case studies from real plants and applications from around the world that increase your understanding of geothermal energy conversion and provide a unique compilation of hard-to-obtain data and experience.

Technical, economic and business aspects presented in case studies provide current and up-and-coming geothermal developers and entrepreneurs with a solid understanding of opportunities and pitfalls. ***Geothermal Power Plants, 4th Edition,*** presents state-of-the-art geothermal developments and experience of real applications for professionals, and a comprehensive reference for theory and practice.

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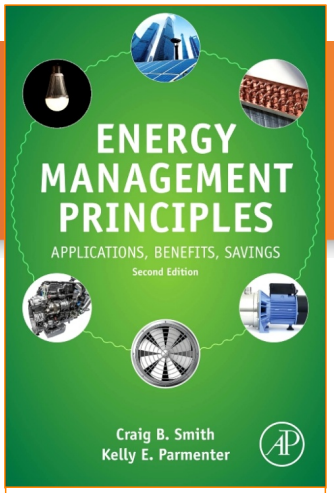


Energy Management Principles, 2e

Applications, Benefits, Savings

Craig B. Smith Ph.D., P.E. (ret.), Principal, Dockside Consultants Inc, California, USA

Kelly E. Parmenter Ph.D., C.E.M, Principal Project Manager, Applied Energy Group, Inc, California, USA

ISBN: 978-0-12-802506-2

PREVIOUS EDITION ISBN: 978-1-4831-0790-5

PUB DATE: November 2015

FORMAT: Paperback

PAGES: c. 410

AUDIENCE

Practicing engineers, energy managers, industry professionals, decision makers, managers, consultants, policy makers, planners

With its emphasis on energy management principles, this book provides users with a comprehensive guide to the fundamental principles and systematic processes of maintaining and improving energy efficiency and reducing waste.

KEY FEATURES

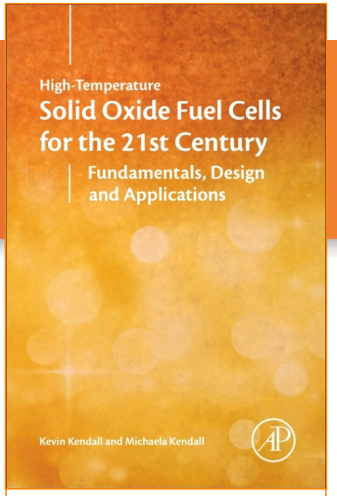
- Provides extensive coverage of all major fundamental energy management principles
- Applies general principles to all major components of energy use, such as HVAC, electrical end use and lighting, and transportation
- Describes how to initiate an energy management program for a building, a process, a farm or an industrial facility

DESCRIPTION

Energy Management Principles: Applications, Benefits, Savings, Second Edition is a comprehensive guide to the fundamental principles and systematic processes of maintaining and improving energy efficiency and reducing waste.

Fully revised and updated with analysis of world energy utilization, incentives and utility rates, and new content highlighting how energy efficiency can be achieved through 1 of 16 outlined principles and programs, the book presents cost effective analysis, case studies, global examples, and guidance on building and site auditing.

This fully revised edition provides a theoretical basis for conservation, as well as the avenues for its application, and by doing so, outlines the potential for cost reductions through an analysis of inefficiencies.



High-temperature Solid Oxide Fuel Cells for the 21st Century, 2e

Fundamentals, Design and Applications

Kevin Kendall Professor of Chemical Engineering, University of Birmingham, UK
Michaela Kendall Dr Michaela Kendall School of Metallurgy and Materials University of Birmingham

The authoritative reference on the world's most efficient fuel cells--now updated with the cutting-edge breakthroughs that will finally push this green energy source into the mainstream

"The information contained in most of the chapters is fundamental enough for the book to be useful as a textbook for students at graduate level....Scientists and researchers already active in the field will also find the book very interesting. "- Paola Costamagna, DICHEP - University of Genova, Italy

ISBN: 978-0-12-410453-2
PREVIOUS EDITION ISBN: 978-1-85617-387-2
PUB DATE: November 2015
FORMAT: Hardback
PAGES: c. 508

AUDIENCE

Designers, manufacturers and end-users of solid oxide and other fuel cells: researchers in fuel cell technology; membrane manufacturers.

KEY FEATURES

- A single source for all the latest information on solid oxide fuel cells and their applications
- Illustrates the need for new, more comprehensive books and study on the topic
- Explores the growing interest in fuel cells as viable, sustainable sources of energy

DESCRIPTION

High-temperature Solid Oxide Fuel Cells, Second Edition, explores the growing interest in fuel cells as a sustainable source of energy. The text brings the topic of green energy front and center, illustrating the need for new books that provide comprehensive and practical information on specific types of fuel cells and their applications. This landmark volume on solid oxide fuel cells contains contributions from experts of international repute, and provides a single source of the latest knowledge on this topic.

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Wind Power Generation

Paul Breeze Freelance science and technology writer/consultant, UK

Advances in technologies, applications and the economic and environmental costs

KEY FEATURES

- Focuses on the evolution and developments in wind energy generation
- Evaluates the economic and environmental viability of the systems with concise diagrams and accessible explanations

DESCRIPTION

Wind Power Generation is a concise, up-to-date and readable guide providing an introduction to one of the leading renewable power generation technologies. It includes detailed descriptions of on and offshore generation systems, and demystifies the relevant wind energy technology functions in practice as well as exploring the economic and environmental risk factors.

Engineers, managers, policymakers and those involved in planning and delivering energy resources will find this reference a valuable guide, to help establish a reliable power supply address social and economic objectives.

ISBN: 978-0-12-804038-6

PUB DATE: November 2015

FORMAT: Paperback

PAGES: c. 98

AUDIENCE

The series is targeted at Power generation planners, electrical engineers, students and lecturers of Electrical Engineering and Energy, researchers, academics and the technical community involved in the development and implementation of power generation technologies, and power related engineering disciplines.

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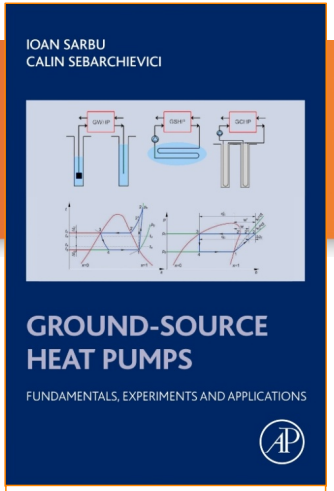

Ground-Source Heat Pumps

Fundamentals, Experiments and Applications

Ioan Sarbu Professor and Head, Department of Building Services Engineering, Polytechnic University of Timisoara, Romania
Calin Sebarchievici Department of Building Services Engineering, Polytechnic University of Timisoara, Romania

Overview of geothermal heat pump systems in buildings, new research and case study

KEY FEATURES

- Explores fundamentals and state-of-the-art research, including ground-coupled heat pump (GCHP) systems.
- Includes performance assessment and comparison for different types of GSHP, numerical simulation models, practical applications of GSHPs with details on the renewable energy integration, information on refrigerants, and economic analysis.

DESCRIPTION

Ground-Source Heat Pumps presents the theory and some of the most recent advances of GSHPs and their implementation in the heating/cooling system of buildings. The authors explore the thermodynamic cycle with calculation, operation regimes and economic indicators and GHG emissions of a vapor compression heat pump. They go on to examine substitution strategies of non-ecological refrigerants and types of compressors and heat pumps, before delving into the different GSHP systems, as well as their compared economic, energy and environmental performances using classical and optimized adjustment for various operating modes. Surface water heat pumps and ground water heat pumps are covered, and special focus is given to both vertical and horizontal ground-coupled heat pump systems, for which modelling and simulation is discussed, and experimental systems are described. Due to its advanced approach to the subject, this book will be especially valuable for researchers, graduate students and academics, and as reference for engineers and specialists in the varied domains of building services.

ISBN: 978-0-12-804220-5
PUB DATE: October 2015
FORMAT: Paperback
PAGES: c. 204

AUDIENCE

scientific researchers, as well as engineers, grad students and professors/academics, specialists in the varied domains of building services.

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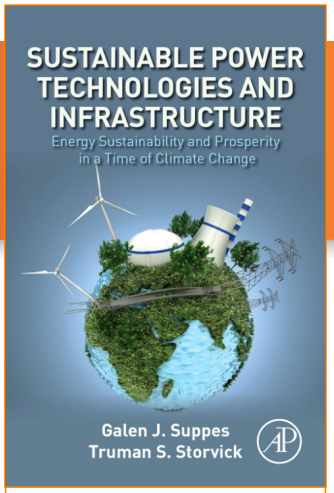

Sustainable Power Technologies and Infrastructure

Energy Sustainability and Prosperity in a Time of Climate Change

Galen J. Suppes Professor, Department of Chemical Engineering, University of Missouri, Columbia, MO, USA

Truman S. Storvick Professor Emeritus, University of Missouri, Columbia, MO, USA

Accessible, definitive and up-to-date information on renewable power sources and energy economics

ISBN: 978-0-12-803909-0

PUB DATE: October 2015

FORMAT: Paperback

PAGES: c. 390

AUDIENCE

engineering professionals, students and junior researchers in all areas of energy and power systems, professionals involved in energy planning and management, policy makers in the energy field

KEY FEATURES

- Presents a realistic and clear overview of the key sustainable energy technologies that will play important roles in the world's energy mix and their impact on the current power infrastructure.
- Discusses key societal and economic topics related to the implementation of sustainable energy sources in a straightforward way.
- Covers a broad variety of sustainable and renewable energy sources, including hydrogen and bioenergy. It also explores key issues on small modular nuclear facilities, advances in battery technologies, grid integration, off-grid communities and the most recent topics in energy economics and policy.

DESCRIPTION

This book presents an overview of current renewable energy sources, challenges and future trends. Drawing from their longtime expertise and deep knowledge of the field, the authors present a critic and well-structured perspective on sustainable power sources and technologies, including solar, wind, hydrogen and nuclear, both in large and small scale. Using accessible language they provide rigorous technological reviews and analyze the main issues of practical usage. The book addresses current questions in this area, such as: "Is there enough biomass to make a difference in energy needs? Should biomass be used in Energy Generation?"; "How mature is battery technology? Will it finally become cost effective, and will it make a significant difference this next decade?"; "How big a role will small and modular nuclear power generation play in the coming decades?"; "What will be the influence of national tax policies?". No prior technical knowledge is assumed of the reader. It is, therefore, ideal for professionals and students in all areas of energy and power systems, as well as those involved in energy planning, management and policy.

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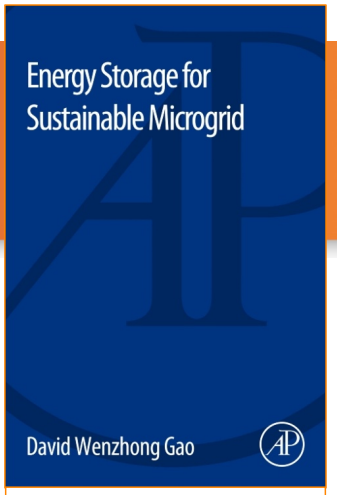

Energy Storage for Sustainable Microgrid

David Wenzhong Gao Associate Professor, University of Denver; Director, DU Renewable Energy and Power Electronics Laboratory, Colorado, USA

A concise guide to the design and operation of sustainable microgrid applications with a focus on the critical issue of the interaction of storage and microgrid technology

KEY FEATURES

- Explanations for major power electronic converters/technology required to achieve the desired interfacing
- Case studies on the major impacts of energy storage on microgrid
- Detailed solutions for choosing the right ESS for particular microgrid applications
- Valuable economics chapter to help evaluate entire systems

DESCRIPTION

Energy Storage for Sustainable Microgrid addresses the issues related to modelling, operation and control, steady-state and dynamic analysis of microgrids with ESS. This book discusses major electricity storage technologies in depth along with their efficiency, lifetime cycles, environmental benefits and capacity, so that readers can envisage which type of storage technology is best for a particular microgrid application.

This book offers solutions to numerous difficulties such as choosing the right ESS for the particular microgrid application, proper sizing of ESS for microgrid, as well as design of ESS control systems for proper interfacing with the microgrid.

ISBN: 978-0-12-803374-6

PUB DATE: July 2015

FORMAT: Paperback

PAGES: c. 142

AUDIENCE

Students, academics and researchers in the field of electrical engineering and power systems, renewable energy engineering and sustainability; Professional engineers and managers working in industry in power systems, microgrid project development, climate change and energy security

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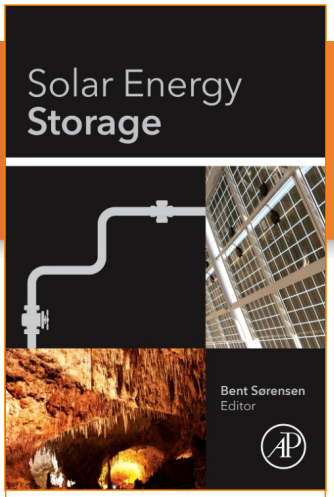


Solar Energy Storage

Bent Sorensen (Sorensen) Professor, Department of Environmental, Social and Spatial Change, Roskilde University, Denmark; Independent Consultant, NOVATOR Advanced Technology Consulting, Denmark

ISBN: 978-0-12-409540-3

PUB DATE: June 2015

FORMAT: Paperback

PAGES: c. 394

AUDIENCE

Energy and Power Engineers, Scientists, Researchers working with renewable technologies

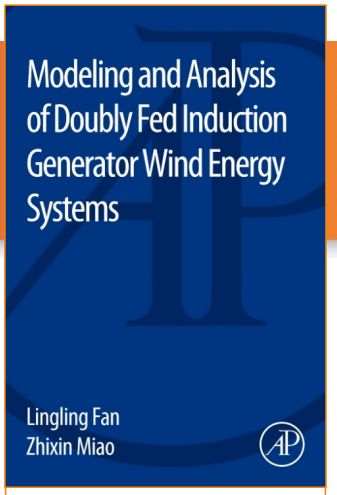
"...a state-of-the-art description and discussion of the energy storage issues relevant for most solar energy systems... One of the two areas of application for solar energy storage systems handles the obvious day-to-night storage requirement and the other is seasonal energy storage..."--**Power Electronics, *Solar Energy Storage***

KEY FEATURES

- Expert contributing authors explain current and emergent storage technologies for solar, thermal, and photovoltaic applications.
- Sheds light on the economic status of solar storage facilities, including case studies of the particular challenges that solar energy systems present to remote locations.
- Includes information on: chemical storage mechanisms, mechanical storage tactics, pumped hydro, thermal storage, and storage strategies for systems of all sizes—from centralized utilities to distributed generation.

DESCRIPTION

While solar is the fastest-growing energy source in the world, key concerns around solar power's inherent variability threaten to de-rail that scale-up . Currently, integration of intermittent solar resources into the grid creates added complication to load management, leading some utilities to reject it altogether, while other operators may penalize the producers via rate increases or force solar developers to include storage devices on-site to smooth out power delivery at the point of production. However these efforts at mitigation unfold, it is increasingly clear to parties on all sides that energy storage will be pivotally important in the drive to boost the integration of variable renewable sources into power infrastructures across the globe. Thoughtfully implemented storage technologies can reduce peak demand, improve day-to-day reliability, provide emergency power in case of interrupted generation, reduce consumer and utility costs by easing load balance challenges, decrease emissions, and increase the amount of distributed and renewable energy that makes it into the grid. While energy storage has long been an area of concern for scientists and engineers, there has been no comprehensive single text covering the storage methods available to solar power producers, which leaves a lamentable gap in the literature core to this important field. *Solar Energy Storage* aims to become the authoritative work on the topic, incorporating contributions from an internationally recognized group of top authors from both industry and academia, focused on providing information from underlying scientific fundamentals to practical applications, and emphasizing the latest technological developments driving this discipline forward.



Modeling and Analysis of Doubly Fed Induction Generator Wind Energy Systems

Lingling Fan Associate Professor, Department of Electrical Engineering, University of South Florida, Tampa, FL, USA
Zhixin Miao Assistant Professor, Department of Electrical Engineering, University of South Florida, Tampa, FL, USA

Advances in technologies, theories and applications for sustainable energy systems

KEY FEATURES

- Focuses on real and reactive power control
- Supported by PSCAD and Matlab/Simulink examples
- Considers the difference in control objectives between ac drive systems and grid integration systems

DESCRIPTION

Wind Energy Systems: Modeling, Analysis and Control with DFIG provides key information on machine/converter modelling strategies based on space vectors, complex vector, and further frequency-domain variables. It includes applications that focus on wind energy grid integration, with analysis and control explanations with examples.

For those working in the field of wind energy integration examining the potential risk of stability is key, this edition looks at how wind energy is modelled, what kind of control systems are adopted, how it interacts with the grid, as well as suitable study approaches.

Not only giving principles behind the dynamics of wind energy grid integration system, but also examining different strategies for analysis, such as frequency-domain-based and state-space-based approaches.

ISBN: 978-0-12-802969-5
PUB DATE: April 2015
FORMAT: Paperback
PAGES: c. 144

AUDIENCE

Researchers, academics, policy makers, and technical community involved in the development and implementation of sustainable energy systems and the related engineering disciplines

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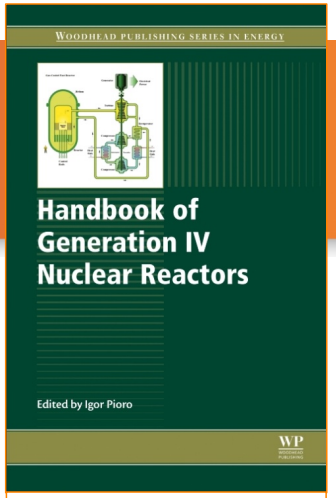

Handbook of Generation IV Nuclear Reactors

Edited by: ***Igor Pioro*** Faculty of Energy Systems and Nuclear Science, University of Ontario Institute of Technology, Canada

WP WOODHEAD PUBLISHING

The *Handbook of Generation IV Nuclear Reactors* is an authoritative overview of current nuclear-reactor research that reviews the latest trends and developments in Generation IV nuclear-reactor technologies as written by an international team of experts on the topic

A Volume in the Woodhead Publishing Series in Energy.

KEY FEATURES

- Presents the first comprehensive handbook dedicated entirely to generation IV nuclear reactors
- Reviews the latest trends and developments
- Complete with the latest research, development, and design information in generation IV nuclear reactors
- Written by an international team of experts in the field

DESCRIPTION

Handbook of Generation IV Nuclear Reactors presents information on the current fleet of Nuclear Power Plants (NPPs) with water-cooled reactors (Generation III and III+) (96% of 430 power reactors in the world) that have relatively low thermal efficiencies (within the range of 32 36%) compared to those of modern advanced thermal power plants (combined cycle gas-fired power plants – up to 62% and supercritical pressure coal-fired power plants – up to 55%).

Moreover, thermal efficiency of the current fleet of NPPs with water-cooled reactors cannot be increased significantly without completely different innovative designs, which are Generation IV reactors. Nuclear power is vital for generating electrical energy without carbon emissions.

Complete with the latest research, development, and design, and written by an international team of experts, this handbook is completely dedicated to Generation IV reactors.

ISBN: 978-0-08-100149-3
PUB DATE: June 2016
FORMAT: Hardback
PAGES: c. 360

AUDIENCE

Engineers and specialists in nuclear, power and other related industries as well as researchers and scientists working on nuclear power and generation IV nuclear reactors.

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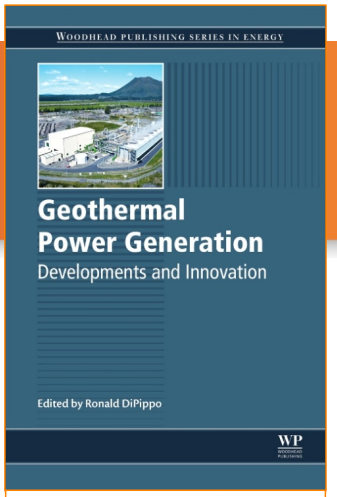


Geothermal Power Generation

Developments and Innovation

Edited by: ***Ron DiPippo*** Chancellor Professor Emeritus of Mechanical Engineering and the former Associate Dean of Engineering, University of Massachusetts Dartmouth (UMD), MA, USA

ISBN: 978-0-08-100337-4

PUB DATE: June 2016

FORMAT: Hardback

PAGES: c. 740

AUDIENCE

Research and development professionals and engineers in the geothermal energy industry as well as postgraduate researchers in academia working on geothermal energy.

This fascinating text on geothermal power generation, written by a leading expert in the field, provides a comprehensive overview of the major aspects of geothermal power production and includes fascinating case studies on the topic from across the world, ranging from Larderello to Indonesia

KEY FEATURES

- 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 from Larderello to Indonesia

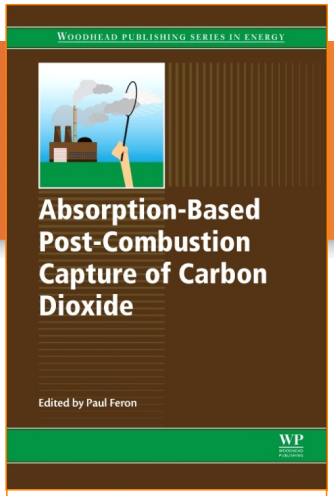
DESCRIPTION

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 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.



Absorption-Based Post-Combustion Capture of Carbon Dioxide

Edited by: ***Paul Feron*** CSIRO, Australia

WP WOODHEAD PUBLISHING

ISBN: 978-0-08-100514-9

PUB DATE: June 2016

FORMAT: Hardback

PAGES: c. 660

AUDIENCE

Research and development professionals in the power generation industry as well as postgraduate researchers in academia working on carbon capture.

Absorption-Based Post-Combustion Capture of Carbon Dioxide **is a comprehensive and authoritative review of the use of absorbents for post-combustion capture of carbon dioxide - one that also includes information on carbon storage initiatives**

KEY FEATURES

- Provides researchers in academia and industry with an authoritative overview of the amine-based methods for carbon dioxide capture from flue gases and related processes
- Editors and contributors are well known experts in the field
- Presents the first book on this specific topic

DESCRIPTION

Absorption-Based Post-Combustion Capture of Carbon Dioxide provides a comprehensive and authoritative review of the use of absorbents for post-combustion capture of carbon dioxide. As fossil fuel-based power generation technologies are likely to remain key in the future, at least in the short- and medium-term, carbon capture and storage will be a critical greenhouse gas reduction technique.

Post-combustion capture involves the removal of carbon dioxide from flue gases after fuel combustion, meaning that carbon dioxide can then be compressed and cooled to form a safely transportable liquid that can be stored underground.

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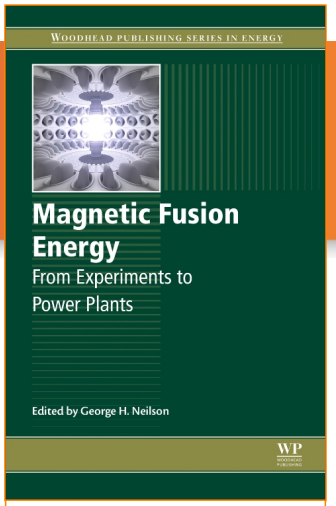

Magnetic Fusion Energy

From Experiments to Power Plants

Edited by: ***George Neilson*** Princeton Plasma Physics Laboratory, Princeton, NJ, USA

ISBN: 978-0-08-100315-2

PUB DATE: June 2016

FORMAT: Hardback

PAGES: c. 510

AUDIENCE

Professional scientists and engineers involved in fusion energy experiments as well as postgraduate researchers in academia working on nuclear fusion.

***Magnetic Fusion Energy: From Experiments to Power Plants* gives an authoritative overview of the latest significant fusion energy experiments, providing the basis for practical fusion power plants, systems that will continuously convert the energy released from burning plasma to usable electricity**

KEY FEATURES

- Provides researchers in academia and industry with an authoritative overview of the significant fusion energy experiments
- Considers the pathway towards future development of magnetic fusion energy power plants
- Contains experts contributions from editors and others who are well known in the field

DESCRIPTION

Magnetic Fusion Energy: From Experiments to Power Plants is a timely exploration of the field, giving readers an understanding of the experiments that brought us to the threshold of the ITER era, as well as the physics and technology research needed to take us beyond ITER to commercial fusion power plants.

With the start of ITER construction, the world's magnetic fusion energy (MFE) enterprise has begun a new era. The ITER scientific and technical (S&T) basis is the result of research on many fusion plasma physics experiments over a period of decades.

Besides ITER, the scope of fusion research must be broadened to create the S&T basis for practical fusion power plants, systems that will continuously convert the energy released from a burning plasma to usable electricity, operating for years with only occasional interruptions for scheduled maintenance.

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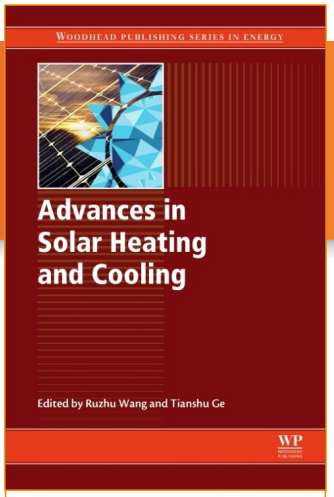

Advances in Solar Heating and Cooling

Edited by: ***Ruzhu Wang*** Shanghai Jiao Tong University, China
Tianshu Ge Shanghai Jiao Tong University, Shanghai, China

ISBN: 978-0-08-100301-5
PUB DATE: June 2016
FORMAT: Hardback
PAGES: c. 480

AUDIENCE

Research and development professionals and engineers in the solar heating and cooling industries as well as postgraduate researchers in academia working on solar heating and cooling.

Advances in Solar Heating and Cooling **provides an authoritative review of the latest research in solar heating and cooling technologies and applications, providing researchers in academia and industry with an overview of the state-of-the-art techniques now available for buildings**

KEY FEATURES

- Provides researchers in academia and industry with an authoritative overview of heating and cooling for buildings and industry in one convenient volume
- Part III, '*Solar cooling technologies*' is contributed by authors from Shanghai Jiao Tong University, which is a world-leader in this area
- Covers advanced applications from zero-energy buildings, through industrial process heat to district heating and cooling

DESCRIPTION

Advances in Solar Heating and Cooling presents new information on the growing concerns about climate change, the security of energy supplies, and the ongoing interest in replacing fossil fuels with renewable energy sources.

The amount of energy used for heating and cooling is very significant, estimated, for example, as half of final energy consumption in Europe. Solar thermal installations have the potential to meet a large proportion of the heating and cooling needs of both buildings and industry and the number of solar thermal installations is increasing rapidly. This book provides an authoritative review of the latest research in solar heating and cooling technologies and applications.

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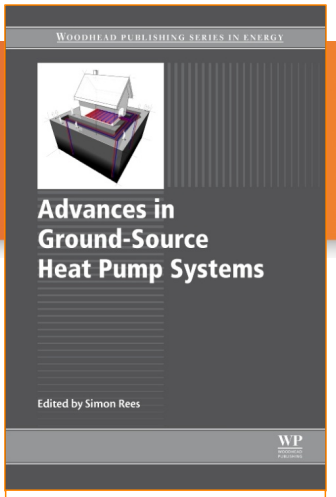

Advances in Ground-Source Heat Pump Systems

Edited by: ***Simon Rees*** De Montfort University, UK

WP WOODHEAD PUBLISHING

***Advances in Ground-Source Heat Pump Systems* offers an authoritative overview of developments in closed loop GSHP systems, surface water and open loop systems, and related thermal energy storage systems, also addressing the different technologies and components and methods of analysis and optimization, among other subjects.**

ISBN: 978-0-08-100311-4

PUB DATE: June 2016

FORMAT: Paperback

PAGES: c. 390

AUDIENCE

Professional scientists, engineers and postgraduate researchers involved in the development, design, manufacture, installation and commissioning of renewable heating and cooling systems.

KEY FEATURES

- Provides the geological aspects and building integration covered together in one convenient volume
- Includes chapters on hybrid systems
- Presents carefully selected chapters that cover areas in which there is significant ongoing research
- Addresses geothermal heat pumps in both heating and cooling modes

DESCRIPTION

Advances in Ground-Source Heat Pump Systems relates the latest information on source heat pumps (GSHPs), the types of heating and/or cooling systems that transfer heat from, or to, the ground, or, less commonly, a body of water.

As one of the fastest growing renewable energy technologies, they are amongst the most energy efficient systems for space heating, cooling, and hot water production, with significant potential for a reduction in building carbon emissions.

The book provides an authoritative overview of developments in closed loop GSHP systems, surface water, open loop systems, and related thermal energy storage systems, addressing the different technologies and component methods of analysis and optimization, among other subjects. Chapters on building integration and hybrid systems complete the volume.

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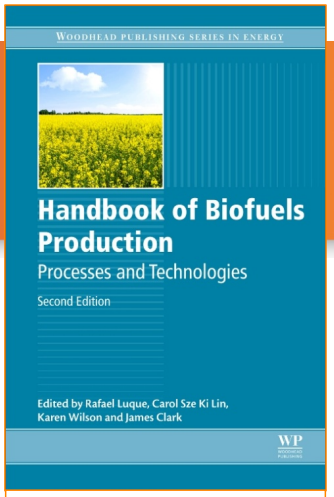


Handbook of Biofuels Production, 2e

Edited by: ***Rafael Luque*** University of Cordoba, Spain
Carol Sze Ki Lin School of Energy and Environment, City University of Hong Kong, Hong Kong
Karen Wilson Aston University, UK
James Clark University of York, UK

ISBN: 978-0-08-100455-5
PREVIOUS EDITION ISBN: 9781845696795
PUB DATE: June 2016
FORMAT: Hardback
PAGES: c. 730

AUDIENCE

Professional engineers in the biofuel industry and researchers in academia from postgraduate level onwards working on biofuels.

Handbook of Biofuels Production, Second Edition, **provides a comprehensive and systematic reference on the range of biomass conversion processes and technologies that are being used to combat the global increase in energy usage, including coverage of emerging feedstocks and more emphasis on by-product valorization**

KEY FEATURES

- Provides systematic and detailed coverage of the processes and technologies being used for biofuel production
- Discusses advanced chemical, biochemical, and thermochemical biofuels production routes that are fast being developed to address the global increase in energy usage
- Reviews the production of both first and second generation biofuels
- Addresses integrated biofuel production in biorefineries and the use of waste materials as feedstocks

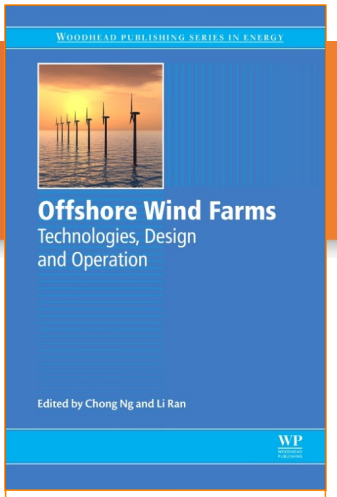
DESCRIPTION

Handbook of Biofuels Production, Second Edition, discusses advanced chemical, biochemical, and thermochemical biofuels production routes that are fast being developed to address the global increase in energy usage.

Research and development in this field is aimed at improving the quality and environmental impact of biofuels production, as well as the overall efficiency and output of biofuels production plants. The book provides a comprehensive and systematic reference on the range of biomass conversion processes and technology.

Key changes for this second edition include increased coverage of emerging feedstocks, including microalgae, more emphasis on by-product valorization for biofuels' production, additional chapters on emerging biofuel production methods, and discussion of the emissions associated with biofuel use in engines.

The editorial team is strengthened by the addition of two extra members, and a number of new contributors have been invited to work with authors from the first edition to revise existing chapters, thus offering fresh perspectives.



Offshore Wind Farms

Technologies, Design and Operation

Edited by: ***Chong Ng*** Offshore Renewable Energy (ORE) Catapult
Li Ran University of Warwick, UK

WP WOODHEAD PUBLISHING

As a comprehensive overview of the emerging technologies, design, and operation of offshore wind farms, this book highlights the latest information on offshore wind energy, one of Europe's most promising and quickly maturing industries, and a potentially huge untapped renewable energy source which could contribute significantly towards EU 20-20-20 renewable energy generation targets

A Volume in the Woodhead Publishing Series in Energy.

ISBN: 978-0-08-100779-2
PUB DATE: March 2016
FORMAT: Paperback
PAGES: c. 626

AUDIENCE

Scientists, researchers and academics in the field of wind energy generation and renewable energy, from graduate level to research professors.

KEY FEATURES

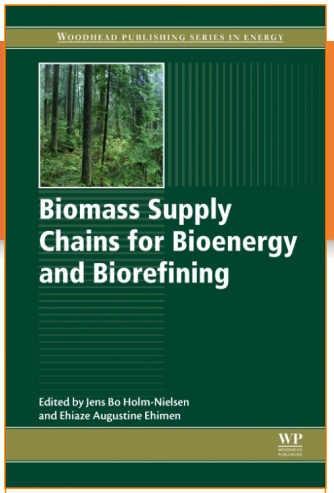
- Provides an in-depth, multi-contributor, comprehensive overview of offshore technologies, including design, monitoring, and operation
- Edited by respected and leading experts in the field, with experience in both academia and industry
- Covers a highly relevant and important topic given the great potential of offshore wind power in contributing significantly to EU 20-20-20 renewable energy targets

DESCRIPTION

Offshore Wind Farms: Technologies, Design and Operation provides the latest information on offshore wind energy, one of Europe's most promising and quickly maturing industries, and a potentially huge untapped renewable energy source which could contribute significantly towards EU 20-20-20 renewable energy generation targets.

It has been estimated that by 2030 Europe could have 150GW of offshore wind energy capacity, meeting 14% of our power demand. *Offshore Wind Farms: Technologies, Design and Operation* provides a comprehensive overview of the emerging technologies, design, and operation of offshore wind farms.

Part One introduces offshore wind energy as well as offshore wind turbine siting with expert analysis of economics, wind resources, and remote sensing technologies. The second section provides an overview of offshore wind turbine materials and design, while part three outlines the integration of wind farms into power grids with insights to cabling and energy storage. The final section of the book details the installation and operation of offshore wind farms with chapters on condition monitoring and health and safety, amongst others.



Biomass Supply Chains for Bioenergy and Biorefining

Edited by: ***Jens Holm-Nielsen*** Aalborg University, Aalborg, Denmark
Ehiaze Augustine Ehimen Future Analytics Consulting Ltd., Ireland

WP WOODHEAD PUBLISHING

As an in-depth study of the long and complex supply chains that produce, harvest, transport and store biomass feedstocks for energy generation, this book highlights the emergence of energy generation through the use of biomass and the ways it is becoming more widely used

A Volume in the Woodhead Publishing Series in Energy.

ISBN: 978-1-78242-366-9
PUB DATE: March 2016
FORMAT: Paperback
PAGES: c. 384

AUDIENCE

R&D managers in energy generation companies as well as academics and postgraduate students working in the areas of biomass and biofuel energy generation

KEY FEATURES

- Focuses on the complex supply chains of the various potential feedstocks for biomass energy generation
- Studies a wide range of biomass feedstocks, including woody energy crops, sugar and starch crops, lignocellulosic crops, oil crops, grass crops, algae, and biomass waste
- Reviews the modeling and optimization, standards, quality control and traceability, socioeconomic, and environmental impacts of supply chains

DESCRIPTION

Biomass Supply Chains for Bioenergy and Biorefining highlights the emergence of energy generation through the use of biomass and the ways it is becoming more widely used. The supply chains that produce the feedstocks, harvest, transport, store, and prepare them for combustion or refinement into other forms of fuel are long and complex, often differing from feedstock to feedstock.

Biomass Supply Chains for Bioenergy and Biorefining considers every aspect of these supply chains, including their design, management, socioeconomic, and environmental impacts. The first part of the book introduces supply chains, biomass feedstocks, and their analysis, while the second part looks at the harvesting, handling, storage, and transportation of biomass. The third part studies the modeling of supply chains and their management, with the final section discussing, in minute detail, the supply chains involved in the production and usage of individual feedstocks, such as wood and sugar starches, oil crops, industrial biomass wastes, and municipal sewage stocks.

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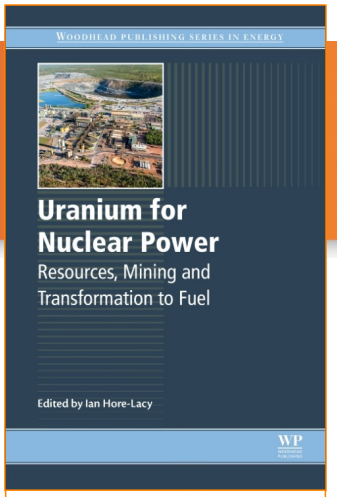

Uranium for Nuclear Power

Resources, Mining and Transformation to Fuel

Edited by: ***Ian Hore-Lacy*** World Nuclear Association (WNA), UK

WP WOODHEAD PUBLISHING

As an all-encompassing resource on the nuclear industry and its dependence on competitively priced uranium, this book provides a comprehensive review of the developments in uranium exploration, mining, milling, and its conversion to fuel, also including best practices for efficient, safe, environmentally-benign exploration.

ISBN: 978-0-08-100307-7

PUB DATE: March 2016

FORMAT: Hardback

PAGES: c. 390

AUDIENCE

Geologists, engineers, researchers, managers in the uranium and nuclear power industries as well as researchers at postgraduate level onwards in academia with an interest in uranium and/or nuclear power. Also for professional staff in international nuclear organizations e.g. IAEA, OECD-NEA, EURATOM and national nuclear commissions and regulators

KEY FEATURES

- Provides researchers in academia and industry with an authoritative overview of the front end of the nuclear fuel cycle
- Presents a comprehensive and systematic coverage of geology, mining, and conversion to fuel, alternative fuel sources, and the environmental and social aspects
- Written by leading experts in the field of nuclear power, uranium mining, milling, and geological exploration who highlight the best practices needed to ensure environmental safety

DESCRIPTION

Uranium for Nuclear Power: Resources, Mining and Transformation to Fuel discusses the nuclear industry and its dependence on a steady supply of competitively priced uranium as a key factor in its long-term sustainability. A better understanding of uranium ore geology and advances in exploration and mining methods will facilitate the discovery and exploitation of new uranium deposits. The practice of efficient, safe, environmentally-benign exploration, mining and milling technologies, and effective site decommissioning and remediation are also fundamental to the public image of nuclear power. This book provides a comprehensive review of developments in these areas.

Membrane Technologies for Biorefining

Edited by: ***Alberto Figoli*** ITM-CNR, Italy
Alfredo Cassano Senior Researcher, Institute on Membrane Technology (ITM) of the Italian National Research Council (CNR), Italy
Angelo Basile Senior Researcher, Institute on Membrane Technology (ITM) Italian National Research Council (CNR), Italy

WP WOODHEAD PUBLISHING

As an authoritative overview of the different types of membranes and the ways in which they can be applied in biorefineries for the production of chemicals and biofuels, this comprehensive book sheds new light on the best practices needed for the efficient and environmentally-compatible separation techniques that are fundamental to the conversion of biomass for use as alternatives to petroleum refining

ISBN: 978-0-08-100451-7
PUB DATE: March 2016
FORMAT: Hardback
PAGES: c. 480

AUDIENCE

Research and development professionals in the membrane and biorefinery industries as well as postgraduate researchers in academia working on membranes and biorefineries

KEY FEATURES

- Presents the first book to focus specifically on membrane technologies in biorefineries
- Provides a comprehensive overview of the different types of membranes and highlight ways in which they can be applied in biorefineries for the production of chemicals and biofuels
- Topics selected highlight both the variety of raw materials treated using membranes in biorefineries and the range of biofuel and chemical end-products

DESCRIPTION

Membrane Technologies for Biorefining highlights the best practices needed for the efficient and environmentally-compatible separation techniques that are fundamental to the conversion of biomass to fuels and chemicals for use as alternatives to petroleum refining.

Membrane technologies are increasingly of interest in biorefineries due to their modest energy consumption, low chemical requirements, and excellent separation efficiency. The book provides researchers in academia and industry with an authoritative overview of the different types of membranes and highlights the ways in which they can be applied in biorefineries for the production of chemicals and biofuels. Topics have been selected to highlight both the variety of raw materials treated in biorefineries and the range of biofuel and chemical end-products.

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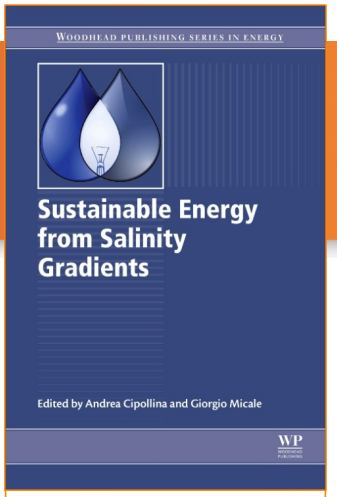

Sustainable Energy from Salinity Gradients

Edited by: ***Andrea Cipollina*** University of Palermo, Italy
Giorgio Micale University of Palermo, Italy

WP WOODHEAD PUBLISHING

As an authoritative guide on the resources, technologies, and applications of salinity gradient power, this book presents the latest information on salinity energy, also known as blue energy and osmotic power, and defined as the energy stored as the difference in salt concentration between two feed solutions, conventionally sea water and river water

ISBN: 978-0-08-100312-1
PUB DATE: March 2016
FORMAT: Hardback
PAGES: c. 380

AUDIENCE

R&D professionals in the energy industry working on salinity gradient power as well as researchers in academia interested in salinity gradient power from post-graduate level upwards

KEY FEATURES

- Covers applications of pressure retarded osmosis, reverse electrodialysis, and capacitive mixing for salinity gradient power in one convenient volume
- Presents the environmental aspects and economics of salinity gradient energy
- Explores possible synergies between desalination and salinity gradient energy

DESCRIPTION

Sustainable Energy from Salinity Gradients presents the latest information on salinity energy, also known as blue energy and osmotic power, and defined as the energy stored as the difference in salt concentration between two feed solutions, conventionally sea water and river water.

It is a large-scale renewable resource that can be harvested and converted to electricity, although efficient extraction of this energy is not straightforward. This book provides a comprehensive review of the resources, technologies, and applications in this fast-growing area. Key technologies covered include pressure retarded osmosis, reverse electrodialysis, and capacitive mixing. In addition, its environmental and economic aspects are also considered, together with the possible synergies between desalination and salinity gradient energy.

Sustainable Energy from Salinity Gradients is an essential text for professionals in the energy industry who are interested in salinity gradient power, and for researchers in academia who are interested in salinity gradient power from post-graduate level upwards.

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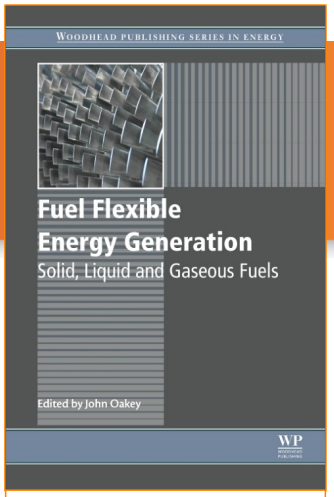

Fuel Flexible Energy Generation

Solid, Liquid and Gaseous Fuels

Edited by: ***John Oakey*** Cranfield University, UK

WP WOODHEAD PUBLISHING

A comprehensive guide to flexible fuel energy generation across all potential fuel types that provides updated information on flexible fuel energy generation, the process by which one or more fuels can be combusted in the same boiler or turbine to generate power

ISBN: 978-1-78242-378-2

PUB DATE: December 2015

FORMAT: Paperback

PAGES: c. 318

AUDIENCE

R&D managers in firms which produce boilers or turbines, those who work in the fuel industry and academics working in engineering departments on energy generation

KEY FEATURES

- Focuses on fuel flexibility across all potential fuel types
- Includes thorough treatment of the technology being developed to allow for fuel flexibility
- Written by leading experts in the field
- Provides an essential text for R&D managers in firms which produce boilers or turbines, those who work in the fuel industry, and academics working in engineering departments on energy generation

DESCRIPTION

Fuel Flexible Energy Generation: Solid, Liquid and Gaseous Fuels provides updated information on flexible fuel energy generation, the process by which one or more fuels can be combusted in the same boiler or turbine to generate power. By adapting or building boilers and turbines to accept multiple fuel sources, they can be co-fired with biomass and waste derived fuels, allowing a reduction in carbon output, thus providing cleaner energy.

Fuel flexibility is becoming more important in a world of diminishing fossil fuel stocks. Many countries are investing in the development of more efficient fuel flexible boilers and turbines, and their use is becoming more prevalent in industry as well.

This book provides comprehensive coverage of flexible fuel energy generation across all potential fuel types, and was written by a selection of experts in the field who discuss the types of fuels which can be used in fuel flexible energy generation, from solid fuels to biomass fuels, the preparation of fuels to be used in fuel flexible operations, that includes their handling and transport, and combustion and conversion technologies with chapters ranging from large-scale coal gasification to technology options and plant design issues.

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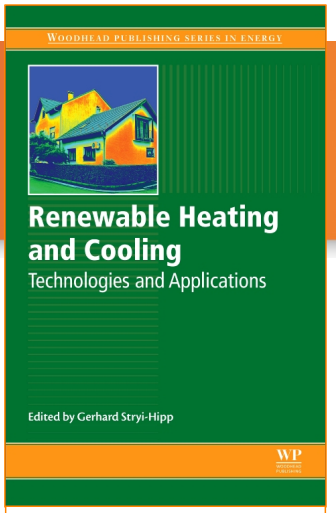


Renewable Heating and Cooling

Technologies and Applications

Edited by: ***G Stryi-Hipp*** Fraunhofer Institute for Solar Energy Systems, Germany

This book provides an in-depth guide to the issues, development, and application of key enabling technologies in the context of global heating and cooling demand, and includes discussions of solar thermal process heat generation, deep geothermal energy, solar cooling technologies, special applications, and case studies with detailed coverage of thermal energy storage and more

A Volume in the Woodhead Publishing Series in Energy.

ISBN: 978-1-78242-213-6

PUB DATE: November 2015

FORMAT: Hardback

PAGES: c. 274

AUDIENCE

Managers/lead engineers for renewable heating and cooling in engineering companies, engineering consultants with an interest in renewable heating and cooling, R&D professionals in private research institutes interested in associated technologies and academics and postgraduate students teaching and studying in this field.

KEY FEATURES

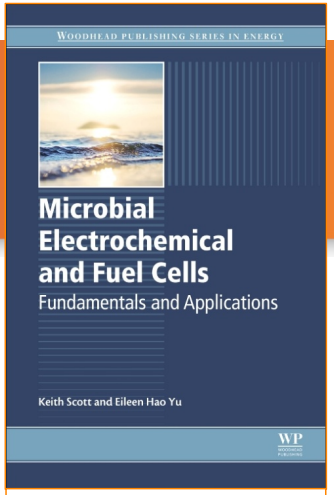
- Includes coverage on biomass, solar thermal, and geothermal renewable heating and cooling technologies
- Features chapters on solar thermal process heat generation, deep geothermal energy, solar cooling technologies, and special applications
- Presents case studies with detailed coverage of thermal energy storage, hybrid systems, and renewable heating for RHC
- Explores enabling technologies and special applications

DESCRIPTION

Renewable Heating and Cooling: Technologies and Applications presents the latest information on the generation of heat for industry and domestic purposes, an area where a significant proportion of total energy is consumed. In Europe, this figure is estimated to be almost 50%, with the majority of heat generated by the consumption of fossil fuels. As there is a pressing need to increase the uptake of renewable heating and cooling (RHC) to reduce greenhouse gas emissions, this book provides a comprehensive and authoritative overview on the topic.

Part One introduces key RHC technologies and discusses RHC in the context of global heating and cooling demand, featuring chapters on solar thermal process heat generation, deep geothermal energy, and solar cooling technologies. Part Two explores enabling technologies, special applications, and case studies with detailed coverage of thermal energy storage, hybrid systems, and renewable heating for RHC, along with case studies in China and Sweden.

Users will find this book to be an essential resource for lead engineers and engineering consultants working on renewable heating and cooling in engineering companies, as well as academics and R&D professionals in private research institutes who have a particular interest in the subject matter.



Microbial Electrochemical and Fuel Cells

Fundamentals and Applications

Edited by: ***Keith Scott*** Newcastle Univeristy, UK
Eileen Hao Yu Newcastle Univeristy, UK

WP WOODHEAD PUBLISHING

Extensive coverage of microbial fuel cells, which hold great potential as a very sustainable power source with their ability to mimic bacterial interactions found in nature to produce small amounts of power that could, in turn, be very useful in rural areas where providing more conventional sources of power is often difficult

ISBN: 978-1-78242-375-1

PUB DATE: November 2015

FORMAT: Hardback

PAGES: c. 394

AUDIENCE

R&D managers working in waste management companies and renewable energy as well as postgraduate students and academic researchers in biochemistry and renewable energy

KEY FEATURES

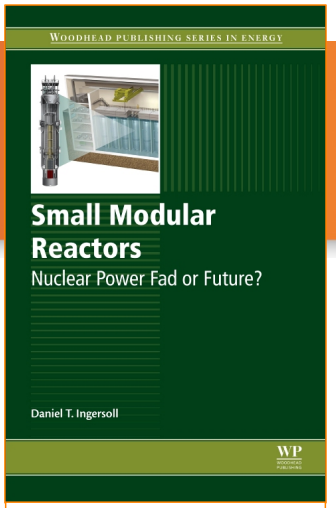
- Includes coverage of the types and principles of electrochemical cells<
- Provides information on the construction of fuel cells and appropriate materials
- Presents the latest on this renewable source of energy and the process for the treatment of waste water

DESCRIPTION

Microbial Electrochemical and Fuel Cells: Fundamentals and Applications contains the most updated information on bio-electrical systems and their ability to drive an electrical current by mimicking bacterial interactions found in nature to produce a small amount of power.

One of the most promising features of the microbial fuel cell is its application to generate power from wastewater, and its use in the treatment of water to remove contaminants, making it a very sustainable source of power generation that can feasibly find application in rural areas where providing more conventional sources of power is often difficult.

The book explores, in detail, both the technical aspects and applications of this technology, and was written by an international team of experts in the field who provide an introduction to microbial fuel cells that looks at their electrochemical principles and mechanisms, explains the materials that can be used for the various sections of the fuel cells, including cathode and anode materials, and provides key analysis of microbial fuel cell performance looking at their usage in hydrogen production, waste treatment, and sensors, amongst other applications.



Small Modular Reactors

Nuclear Power Fad or Future?

Daniel T Ingersoll NuScale Power, USA

WP WOODHEAD PUBLISHING

This book provides a unique guide to small modular reactors, presenting policymakers in governments, business, and research with the background they need in small nuclear power to create a balanced discussion of the many advantages of SMRs and the criticisms they face.

ISBN: 978-0-08-100252-0

PUB DATE: November 2015

FORMAT: Hardback

PAGES: c. 184

AUDIENCE

Energy policy makers in government and the power industry

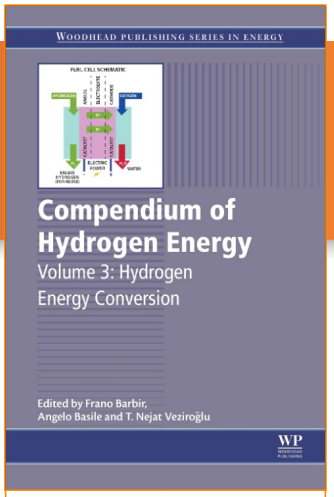
KEY FEATURES

- Provides decision-makers in governments, business, and research with the needed background on small nuclear power and an overview of the current situation
- Presents a balanced discussion of the many advantages of SMRs and the challenges they face
- Written by a highly respected expert in the nuclear industry

DESCRIPTION

There is currently significant interest in the development of small modular reactors (SMRs) for the generation of both electricity and process heat. SMRs offer potential benefits in terms of better affordability and enhanced safety, and can also be sited more flexibly than traditional nuclear plants. *Small Modular Reactors: Nuclear Power Fad or Future?* reviews SMR features, promises, and problems, also discussing what lies ahead for reactors of this type.

The book is organized into three major parts with the first part focused on the role of energy, especially nuclear energy, for global development. It also provides a brief history of SMRs. The second major part presents basic nuclear power plant terminology and then discusses in depth the attributes of SMRs that distinguish them from traditional nuclear plants. The third and final major section discusses the current interest in SMRs from a customer's perspective and delineates several remaining hurdles that must be addressed to achieve wide-spread SMR deployment.



Compendium of Hydrogen Energy

Hydrogen Energy Conversion

Edited by: ***Frano Barbir*** University of Split, Croatia
Angelo Basile Senior Researcher, Institute on Membrane Technology (ITM) Italian National Research Council (CNR), Italy
T. Nejat Veziroglu President, International Association for Hydrogen Energy, Miami, FL, USA

WP WOODHEAD PUBLISHING

The third part of this four volume series is a comprehensive guide to the methods of converting stored hydrogen into useful energy.

A Volume in the Woodhead Publishing Series in Energy.

KEY FEATURES

- Highlights how different fuel cells and hydrogen-fueled combustion engines and turbines work
- Features input written by leading academics in the field of sustainable energy and experts from the world of industry
- Examines various types of hydrogen fuel cells, including solid oxide, molten carbonate, and proton exchange membrane
- Presents part of a very comprehensive compendium which, across four volumes, looks at the entirety of the hydrogen energy economy

DESCRIPTION

Compendium of Hydrogen Energy: Hydrogen Energy Conversion, Volume Three is the third part of a four volume series and focuses on the methods of converting stored hydrogen into useful energy. The other three volumes focus on hydrogen production and purification; hydrogen storage and transmission; and hydrogen use, safety, and the hydrogen economy, respectively.

Many experts believe that, in time, the hydrogen economy will replace the fossil fuel economy as the primary source of energy. Once hydrogen has been produced and stored, it can then be converted via fuel cells or internal combustion engines into useful energy.

This volume highlights how different fuel cells and hydrogen-fueled combustion engines and turbines work. The first part of the volume investigates various types of hydrogen fuel cells, including solid oxide, molten carbonate, and proton exchange membrane. The second part looks at hydrogen combustion energy, and the final section explores the use of metal hydrides in hydrogen energy conversion.

ISBN: 978-1-78242-363-8
PUB DATE: September 2015
FORMAT: Hardback
PAGES: c. 312

AUDIENCE

R&D managers in industry interested in the development of hydrogen conversion technologies as well as academic researchers and postgraduate students working in the wider area of the hydrogen economy.

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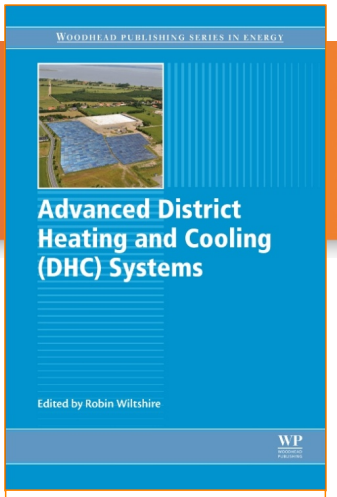


Advanced District Heating and Cooling (DHC) Systems

Edited by: ***Robin Wiltshire*** Technical Director at Building Research Establishment (BRE), UK

WP WOODHEAD PUBLISHING

Presents the latest information on district heating and cooling, providing valuable information on the distribution of centrally generated heat or cold energy to buildings

A Volume in the Woodhead Publishing Series in Energy.

ISBN: 978-1-78242-374-4

PUB DATE: August 2015

FORMAT: Hardback

PAGES: c. 354

AUDIENCE

Academic researchers working in the district heating and cooling (DHC) field and professionals working on improving and developing DHC systems

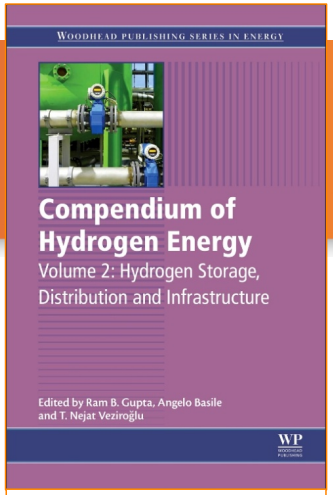
KEY FEATURES

- Gives a comprehensive overview of DHC systems and the technologies and energy resources utilized within these systems
- Analyzes the various methods used for harnessing energy to apply to DHC systems
- Ideal resource for those interested in district cooling, teleheating, heat networks, distributed heating, thermal energy, cogeneration, combined heat and power, and CHP
- Reviews the application of DHC systems in the field, including both the business model side and the planning needed to implement these systems

DESCRIPTION

Advanced District Heating and Cooling (DHC) Systems presents the latest information on the topic, providing valuable information on the distribution of centrally generated heat or cold energy to buildings, usually in the form of space heating, cooling, and hot water.

As DHC systems are more efficient and less polluting than individual domestic or commercial heating and cooling systems, the book provides an introduction to DHC, including its potential contribution to reducing carbon dioxide emissions, then reviews thermal energy generation for DHC, including fossil fuel-based technologies, those based on renewables, and surplus heat valorization. Final sections address methods to improve the efficiency of DHC.



Compendium of Hydrogen Energy

Hydrogen Storage, Distribution and Infrastructure

Edited by: ***Gupta*** Auburn University, USA
Angelo Basile Senior Researcher, Institute on Membrane Technology (ITM) Italian National Research Council (CNR), Italy
T. Nejat Veziroglu President, International Association for Hydrogen Energy, Miami, FL, USA

As the second installment in this four-volume series, this book provides an insightful look into both hydrogen storage, transmission, and the transition to the hydrogen economy

A Volume in the Woodhead Publishing Series in Energy.

ISBN: 978-1-78242-362-1
PUB DATE: August 2015
FORMAT: Hardback
PAGES: c. 428

AUDIENCE

Academic researchers and postgraduate students working in the area of hydrogen storage and transmission, R&D managers in power generation companies studying next generation fuels, academic researchers and postgraduate students working in the wider area of the hydrogen economy

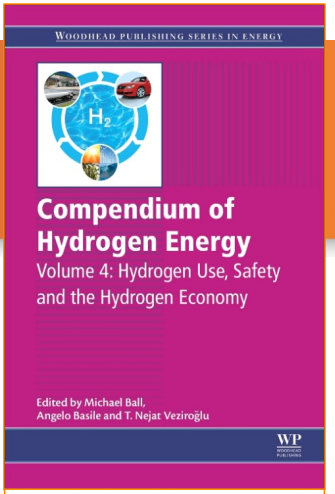
KEY FEATURES

- Covers a wide array of methods for storing hydrogen, detailing hydrogen transport and the infrastructure required for transition to the hydrogen economy
- Written by leading academics in the fields of sustainable energy and experts from the world of industry
- Part of a very comprehensive compendium which looks at the entirety of the hydrogen energy economy

DESCRIPTION

Compendium of Hydrogen Energy, Volume 2: Hydrogen Storage, Distribution and Infrastructure focuses on the storage and transmission of hydrogen. As many experts believe the hydrogen economy will, at some point, replace the fossil fuel economy as the primary source of the world's energy, this book details hydrogen storage in pure form, including chapters on hydrogen liquefaction, slush production, as well as underground and pipeline storage.

Other sections in the book explore physical and chemical storage, including environmentally sustainable methods of hydrogen production from water, with final chapters dedicated to hydrogen distribution and infrastructure.



Compendium of Hydrogen Energy

Hydrogen Use, Safety and the Hydrogen Economy

Edited by: ***Michael Ball*** Shell, The Netherlands
Angelo Basile Senior Researcher, Institute on Membrane Technology (ITM) Italian National Research Council (CNR), Italy
T. Nejat Veziroglu President, International Association for Hydrogen Energy, Miami, FL, USA

As the final installment in this four-volume series, this book provides an insightful look at the exploration of hydrogen and its further uses

A Volume in the Woodhead Publishing Series in Energy.

KEY FEATURES

- Written by both leading academics in the fields of sustainable energy and experts from the world of industry
- Part of a very comprehensive compendium which across four volumes looks at the entirety of the hydrogen energy economy
- Covers a wide array of hydrogen uses, and details safety tactics, hydrogen applications in transport, and the hydrogen economy as a whole

DESCRIPTION

Compendium of Hydrogen Energy Volume 4: Hydrogen Use, Safety and the Hydrogen Economy focuses on the uses of hydrogen. As many experts believe the hydrogen economy will, at some point, replace the fossil fuel economy as the primary source of the world's energy, this book investigates the uses of this energy, from transport, to stationary and portable applications, with final sections discussing the difficulties and possibilities of the widespread adoption of the hydrogen economy.

ISBN: 978-1-78242-364-5
PUB DATE: August 2015
FORMAT: Hardback
PAGES: c. 376

AUDIENCE

Academic researchers and postgraduate students working in the area of hydrogen useage, R&D managers in industry interested in hydrogen as an energy source and academic researchers and postgraduate students working in the wider area of the hydrogen economy.

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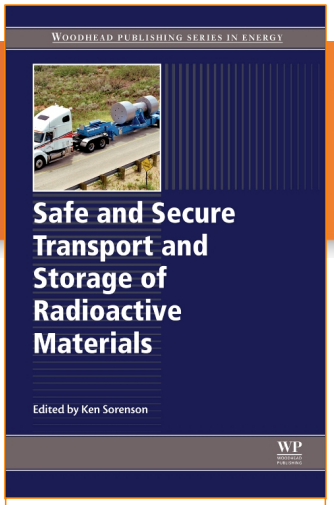

Safe and Secure Transport and Storage of Radioactive Materials

Edited by: ***Ken Sorenson*** Sandia National Laboratories, Albuquerque, NM, USA

WP WOODHEAD PUBLISHING

Best practices and emerging techniques in the transport of radioactive materials

KEY FEATURES

- Uniquely comprehensive and systematic coverage of the packaging, transport, and storage of radioactive materials
- Section devoted to spent nuclear fuels
- Expert team of authors and editors

DESCRIPTION

Safe and Secure Transport and Storage of Radioactive Materials reviews best practice and emerging techniques in this area. The transport of radioactive materials is an essential operation in the nuclear industry, without which the generation of nuclear power would not be possible. Radioactive materials also often need to be stored pending use, treatment, or disposal. Given the nature of radioactive materials, it is paramount that transport and storage methods are both safe and secure.

A vital guide for managers and general managers in the nuclear power and transport industries, this book covers topics including package design, safety, security, mechanical performance, radiation protection and shielding, thermal performance, uranium ore, fresh fuel, uranium hexafluoride, MOX, plutonium, and more.

ISBN: 978-1-78242-309-6

PUB DATE: July 2015

FORMAT: Hardback

PAGES: c. 342

AUDIENCE

General Managers and R&D Managers in the nuclear transport industry; General Managers and R&D Managers in the nuclear power industry; researchers in academia and governmental organisations working on nuclear transport

ENGINEERING

ENERGY AND ENVIRONMENT

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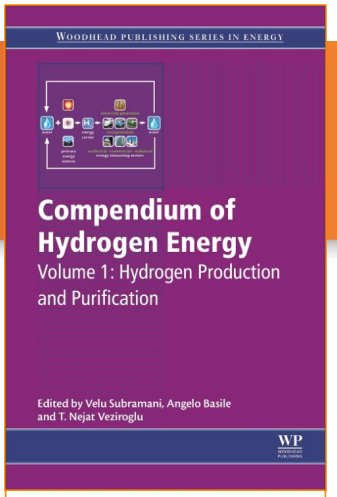

Compendium of Hydrogen Energy

Hydrogen Production and Purification

Edited by: ***Subramani*** BP Products North America, Inc, USA
Angelo Basile Senior Researcher, Institute on Membrane Technology (ITM) Italian National Research Council (CNR), Italy
T. Nejat Veziroglu President, International Association for Hydrogen Energy, Miami, FL, USA

As the first text in a four-volume series, this book focuses on the production of hydrogen and its potential to replace fossil fuels as our primary source of energy

A Volume in the Woodhead Publishing Series in Energy.

KEY FEATURES

- Provides a comprehensive understanding of the current methods used in the production of hydrogen
- Discusses the hydrogen economy and its potential to replace fossil fuels as our primary source of energy
- Details the methods of hydrogen production using fossil fuels, also exploring sustainable extraction methods of hydrogen production from water and hydrogen purification processes

DESCRIPTION

Compendium of Hydrogen Energy: Hydrogen Production and Purification, the first text in a four-volume series, focuses on the production of hydrogen. As many experts believe that the hydrogen economy will eventually replace the fossil fuel economy as our primary source of energy, the text provides a timely discussion on this interesting topic.

The text details the methods of hydrogen production using fossil fuels, also exploring sustainable extraction methods of hydrogen production from water and hydrogen purification processes.

ISBN: 978-1-78242-361-4
PUB DATE: May 2015
FORMAT: Hardback
PAGES: c. 532

AUDIENCE

Academic researchers and postgraduate students working in hydrogen production; R&D managers in power generation companies studying next generation fuels; Academic researchers and postgraduate students working in the wider area of the hydrogen economy

ENGINEERING
ENERGY AND ENVIRONMENT
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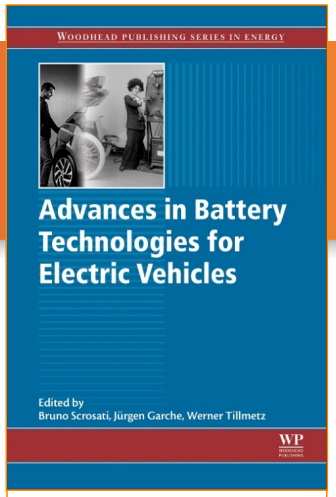

Advances in Battery Technologies for Electric Vehicles

Edited by: ***Bruno Scrosati*** University of Rome: Sapienza, Rome, Italy
Jürgen Garche Fuel Cell and Battery Consulting, Ulm, Germany
Werner Tillmetz Zentrum für Sonnenenergie, Ulm, Germany

WP WOODHEAD PUBLISHING

An in-depth look into the research being conducted on the development of more efficient batteries capable of long distance travel

A Volume in the Woodhead Publishing Series in Energy.

KEY FEATURES

- Provides an in-depth look into new research on the development of more efficient, long distance travel batteries
- Contains an introductory section on the market for battery and hybrid electric vehicles
- Discusses battery pack design and management and the issues involved with end-of-life management for these types of batteries

DESCRIPTION

Advances in Battery Technologies for Electric Vehicles provides an in-depth look into the research being conducted on the development of more efficient batteries capable of long distance travel.

The text contains an introductory section on the market for battery and hybrid electric vehicles, then thoroughly presents the latest on lithium-ion battery technology.

Readers will find sections on battery pack design and management, a discussion of the infrastructure required for the creation of a battery powered transport network, and coverage of the issues involved with end-of-life management for these types of batteries.

ISBN: 978-1-78242-377-5
PUB DATE: May 2015
FORMAT: Hardback
PAGES: c. 526

AUDIENCE

R&D managers in the automotive industry, Academics and post-graduate students working on battery technology

ENGINEERING
ENERGY AND ENVIRONMENT
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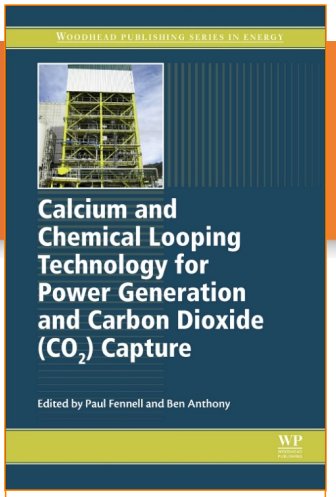

Calcium and Chemical Looping Technology for Power Generation and Carbon Dioxide (CO2) Capture

Edited by: ***Paul Fennell*** Imperial College, London, UK
Ben Anthony Cranfield University, Oxford, UK

WP WOODHEAD PUBLISHING

An indispensable guide to the two emerging methods for carbon capture, calcium and chemical looping technology

A Volume in the Woodhead Publishing Series in Energy.

ISBN: 978-0-85709-243-4
PUB DATE: May 2015
FORMAT: Hardback
PAGES: c. 446

AUDIENCE
Researchers from post-graduate level onwards interested in power generation using fossil fuels and R&D professionals in the power generation industry working with fossil fuels

KEY FEATURES

- Reviews the fundamental principles, systems, oxygen carriers, and carbon dioxide carriers relevant to calcium and chemical looping
- Provides a lucid explanation of advanced concepts and developments in calcium and chemical looping, high pressure systems, and alternative CO2 carriers
- Presents information on the market development, economics, and deployment of these systems

DESCRIPTION

Calcium and Chemical Looping Technology for Power Generation and Carbon Dioxide (CO_2) Capture reviews the fundamental principles, systems, oxygen carriers, and carbon dioxide carriers relevant to chemical looping and combustion.

Chapters review the market development, economics, and deployment of these systems, also providing detailed information on the variety of materials and processes that will help to shape the future of CO_2 capture ready power plants.

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ENERGY AND ENVIRONMENT
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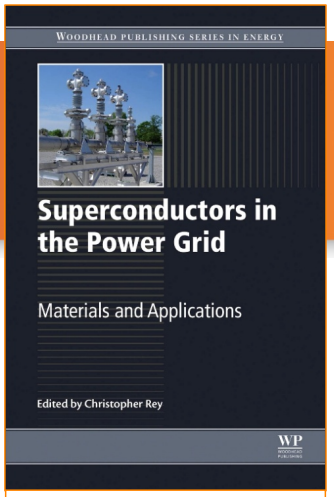

Superconductors in the Power Grid

Materials and Applications

Edited by: ***C. Rey*** Institut National Polytechnique de Toulouse, France

Provides an overview of superconductors and their applications in power grids

A Volume in the Woodhead Publishing Series in Energy.

KEY FEATURES

- Expert editor from highly respected US government-funded research centre
- Unique focus on superconductors in the power grid
- Comprehensive coverage

DESCRIPTION

Superconductors offer high throughput with low electric losses and have the potential to transform the electric power grid. Transmission networks incorporating cables of this type could, for example, deliver more power and enable substantial energy savings. *Superconductors in the Power Grid: Materials and Applications* provides an overview of superconductors and their applications in power grids. Sections address the design and engineering of cable systems and fault current limiters and other emerging applications for superconductors in the power grid, as well as case studies of industrial applications of superconductors in the power grid.

ISBN: 978-1-78242-029-3

PUB DATE: April 2015

FORMAT: Hardback

PAGES: c. 438

AUDIENCE

R&D professionals and mangers in energy technology and utility companies. Postgraduate students and academic/government-employed researchers with an interest in electricity transmission and/or superconductivity (probably in physics, applied physics, technical physics, electrical engineering or power systems faculties/departments)

ENGINEERING

ENERGY AND ENVIRONMENT

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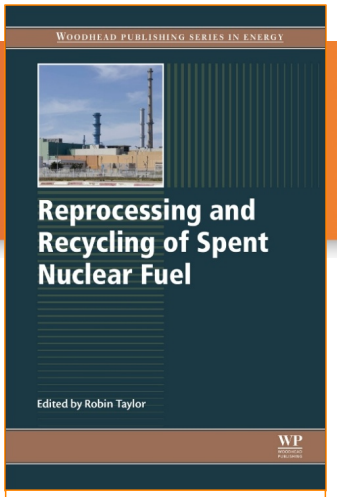

Reprocessing and Recycling of Spent Nuclear Fuel

Edited by: ***Robin Taylor*** National Nuclear Laboratory, UK

WP WOODHEAD PUBLISHING

An authoritative overview of spent fuel reprocessing, considering future prospects for advanced closed fuel cycles

A Volume in the Woodhead Publishing Series in Energy.

KEY FEATURES

- Expert introduction to the recycling and reprocessing of spent nuclear fuel
- Detailed overview of past and current technologies, the possible implications of Generation IV nuclear reactors, and associated safely and security issues
- A lucid exploration of aqueous-based reprocessing methods and pyrochemical methods

DESCRIPTION

Reprocessing and Recycling of Spent Nuclear Fuel presents an authoritative overview of spent fuel reprocessing, considering future prospects for advanced closed fuel cycles. Part One introduces the recycling and reprocessing of spent nuclear fuel, reviewing past and current technologies, the possible implications of Generation IV nuclear reactors, and associated safely and security issues. Parts Two and Three focus on aqueous-based reprocessing methods and pyrochemical methods, while final chapters consider the cross-cutting aspects of engineering and process chemistry and the potential for implementation of advanced closed fuel cycles in different parts of the world.

ISBN: 978-1-78242-212-9
PUB DATE: April 2015
FORMAT: Hardback
PAGES: c. 658

AUDIENCE

R&D professionals and postgraduate working on the separation and recycling of spent nuclear fuel

ENGINEERING
ENERGY AND ENVIRONMENT
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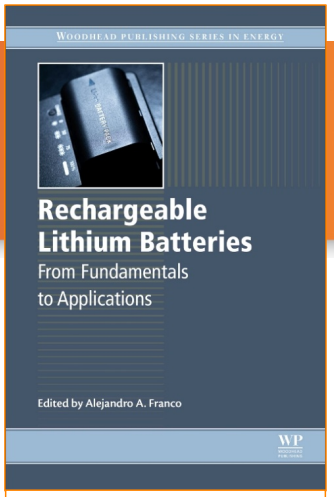

Rechargeable Lithium Batteries

From Fundamentals to Applications

Edited by: ***A A Franco*** University of Picardie Jules Verne, France

WP WOODHEAD PUBLISHING

An authoritative overview of rechargeable lithium batteries, from fundamental materials to characterization, modelling, and applications

A Volume in the Woodhead Publishing Series in Energy.

KEY FEATURES

- Expert overview of the main scientific and technological challenges posed by rechargeable lithium batteries
- Address the important topics of analysis, characterization, and modeling in rechargeable lithium batteries
- Key analysis of essential aspects such as battery management, battery safety, and emerging rechargeable lithium battery technologies

DESCRIPTION

Rechargeable Lithium Batteries: From Fundamentals to Application provides an overview of rechargeable lithium batteries, from fundamental materials, though characterization and modeling, to applications. The market share of lithium ion batteries is fast increasing due to their high energy density and low maintenance requirements. Lithium air batteries have the potential for even higher energy densities, a requirement for the development of electric vehicles, and other types of rechargeable lithium battery are also in development.

After an introductory chapter providing an overview of the main scientific and technological challenges posed by rechargeable Li batteries, Part One of this book reviews materials and characterization of rechargeable lithium batteries. Part Two covers performance and applications, discussing essential aspects such as battery management, battery safety and emerging rechargeable lithium battery technologies as well as medical and aerospace applications.

ISBN: 978-1-78242-090-3

PUB DATE: April 2015

FORMAT: Hardback

PAGES: c. 392

AUDIENCE

Postgraduates and academics interested in rechargeable Li batteries in chemical engineering. R&D engineers and managers in companies developing rechargeable Li batteries.

ENGINEERING

ENERGY AND ENVIRONMENT

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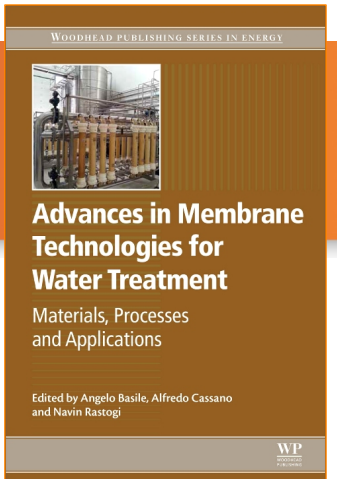

Advances in Membrane Technologies for Water Treatment

Materials, Processes and Applications

Edited by: ***A Basile*** Senior Researcher, Institute on Membrane Technology (ITM) Italian National Research Council (CNR), Italy
A Cassano Senior Researcher, Institute on Membrane Technology (ITM) of the Italian National Research Council (CNR), Italy
N K Rastogi Senior Principal Scientist at Central Food Technological Research Institute, India

WP WOODHEAD PUBLISHING

Provides a detailed overview of advanced water treatment methods involving membranes, which are increasingly seen as effective replacements for a range of conventional water treatment methods

A Volume in the Woodhead Publishing Series in Energy.

KEY FEATURES

- Provides a detailed overview of advanced water treatment methods involving membranes
- Coverage includes advancements in membrane materials, improvement in membrane performance, and their applications in water treatment
- Discusses the use of membrane technologies in the production of drinking water, desalination, wastewater treatment, and recovery

DESCRIPTION

Advances in Membrane Technologies for Water Treatment: Materials, Processes and Applications provides a detailed overview of advanced water treatment methods involving membranes, which are increasingly seen as effective replacements for a range of conventional water treatment methods.

The text begins with reviews of novel membrane materials and advances in membrane operations, then examines the processes involved with improving membrane performance.

Final chapters cover the application of membrane technologies for use in water treatment, with detailed discussions on municipal wastewater and reuse in the textile and paper industries.

ISBN: 978-1-78242-121-4
PUB DATE: March 2015
FORMAT: Hardback
PAGES: c. 642

AUDIENCE

Materials scientists and industry engineers carrying out research and development on membrane materials for water treatment, as well as postgraduates working in this field.

ENGINEERING
ENERGY AND ENVIRONMENT
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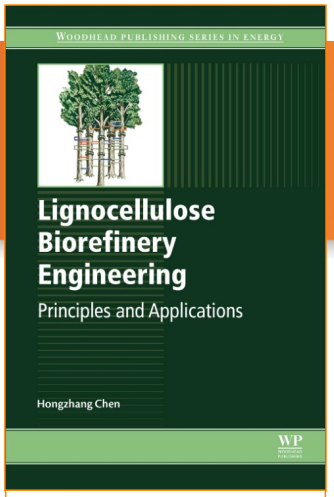


Lignocellulose Biorefinery Engineering

Principles and Applications

Hongzhang Chen State Key Laboratory of Biochemical Engineering, Institute of Process Engineering, Chinese Academy of Sciences, PR of China

WP WOODHEAD PUBLISHING

This book explores the basic principles and applications of lignocellulose biorefining and presents the theory of the integrated biomass refinery system.

KEY FEATURES

- Explores mechanisms of selective fractionation of biomass based on biomass structural characteristics and product requirements
- Addresses biological, physical and chemical conversion technologies, as well as combinations of different methods based on the biomass material characteristics
- This thorough exploration of lignocellulose biorefining is written by an expert from a key research institute in this field

DESCRIPTION

Biomass resources and their refining are key research topics internationally as alternatives to fossil fuel resources and oil refining. This book explores the heterogeneous nature of lignocellulosic biomass, which restricts its use as a raw material, and describes the theoretical basis of the lignocellulose refinery. It puts forward the theory of the integrated biomass refinery system, which produces multiple products, including biofuels, biomaterials, biochemicals, food and feed based on careful fractionation of the raw material.

Chapter 1 introduces the significance and development of lignocellulose biorefining. Chapter 2 gives the theoretical basis of lignocellulose biorefinery engineering. Chapters 3 to 6 describe in detail biomass refinery engineering from the perspectives of feedstocks, conversions, products and processes respectively. Models of integrated industrial biomass refinery chains are presented in Chapter 7. Finally, Chapter 8 considers future trends in lignocellulose biorefining.

ISBN: 978-0-08-100135-6

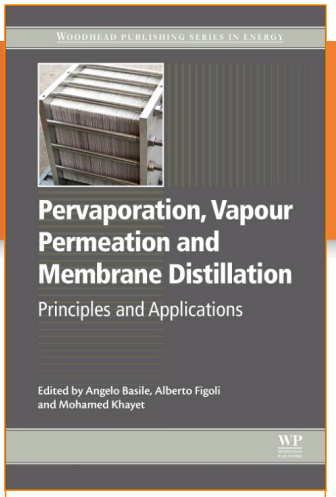
PUB DATE: February 2015

FORMAT: Hardback

PAGES: c. 262

AUDIENCE

Biorefinery engineers, industrial chemists and biochemists will all find *Lignocellulose Biorefinery Engineering* an indispensable reference book. It will also be useful to academics from postgraduate level upwards with an interest in biomass and biorefineries.



Pervaporation, Vapour Permeation and Membrane Distillation

Principles and Applications

A Basile Senior Researcher, Institute on Membrane Technology (ITM) Italian National Research Council (CNR), Italy
A Figoli ITM-CNR, Italy
M Khayet Complutense University of Madrid, Spain

WP WOODHEAD PUBLISHING

Pervaporation, vapour permeation and membrane distillation are three emerging membrane technologies which produce a vapour as the permeate. This book covers the fundamentals, applications and the next generation for each technology.

A Volume in the Woodhead Publishing Series in Energy.

ISBN: 978-1-78242-246-4
PUB DATE: February 2015
FORMAT: Hardback
PAGES: c. 460

AUDIENCE

Chemical engineers interested in membrane technologies for: desalination, process water/steam treatment, water purification; VOCs removal and other aspects of pollution control; industrial process chemistry; renewable energy production; separation and concentration in the food/pharmaceutical industries. Academic researchers (i.e. postgraduates onwards) interested in these areas (usually chemical engineers and membranologists).

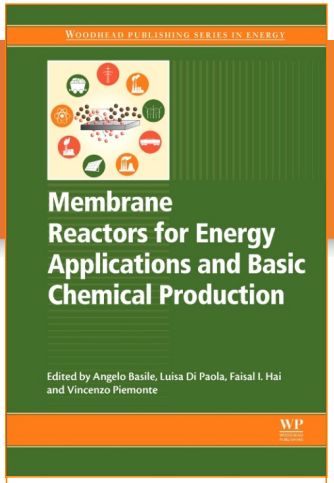
KEY FEATURES

- Explores three emerging membrane technologies that produce vapour as a permeate.
- Looks at the fundamentals, applications, state of the art uses and next generation of each technology.
- Provides an authoritative guide for chemical engineers and academic researchers interested in membrane technologies for desalination, process water/steam treatment, water purification, VOCs removal and other aspects of pollution control, industrial process chemistry, renewable energy production or separation and concentration in the food/pharmaceutical industries.

DESCRIPTION

Vapour permeation and membrane distillation are two emerging membrane technologies for the production of vapour as permeate, which, in addition to well-established pervaporation technology, are of increasing interest to academia and industry. As efficient separation and concentration processes, they have high potential for use in the energy, water, chemical, food and pharmaceutical sectors.

Part One begins by covering the fundamentals, preparation and characterization of pervaporation, before going on to outline the associated systems and applications. State of the art uses, future trends and next generation pervaporation are then discussed. Part Two then explores the preparation, characterization, systems and applications of membranes for vapour permeation, followed by modelling and the new generation of vapour permeation membranes. Finally, Part Three outlines the fundamentals of membrane distillation and its applications in integrated systems, before the book concludes with a view of the next generation.



Membrane Reactors for Energy Applications and Basic Chemical Production

Edited by: ***A Basile*** Senior Researcher, Institute on Membrane Technology (ITM) Italian National Research Council (CNR), Italy
L Di Paola Professor at University of Campus Biomedico, Italy
F Hai Senior Lecturer at the School of Civil, Mining and Environmental Engineering, University of Wollongong, Australia
V Piemonte Professor at University of Campus Biomedico, Italy

WP WOODHEAD PUBLISHING

Explores the potential of membrane reactors (MRs) in energy applications for increased efficiency and saving potential - and provides insights into basic chemical production

A Volume in the Woodhead Publishing Series in Energy.

ISBN: 978-1-78242-223-5
PUB DATE: February 2015
FORMAT: Hardback
PAGES: c. 674

AUDIENCE

R&D managers in chemical engineering companiesdeveloping membrane reactors for energy applications and basic chemical production; Postgraduates working on membrane reactors for energy applications and basic chemical production (departments of chemistry; engineering; energy).

KEY FEATURES

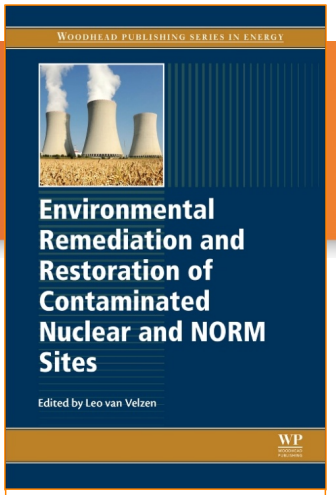
- Provides comprehensive coverage of membrane reactors as presented by a world-renowned team of experts
- Includes discussions of the use of membrane reactors in ammonia production and the dehydrogenation of alkanes to alkenes
- Tackles the use of membrane reactors in syngas, hydrogen, and basic chemical production
- Keen focus placed on the industry, particularly in the use of membrane reactor technologies in energy

DESCRIPTION

Membrane Reactors for Energy Applications and Basic Chemical Production presents a discussion of the increasing interest in membrane reactors that has emerged in recent years from both the scientific and industrial communities, in particular their usage for energy applications and basic chemical production.

Part One of the text investigates membrane reactors for syngas and hydrogen production, while Part Two examines membrane reactors for other energy applications, including biodiesel and bioethanol production.

The final section of the book reviews the use of membrane reactors in basic chemical production, including discussions of the use of MRs in ammonia production and the dehydrogenation of alkanes to alkenes.



Environmental Remediation and Restoration of Contaminated Nuclear and Norm Sites

Edited by: ***L van Velzen*** Senior Engineer and Consultant, NRG Nuclear Research and Consultancy Group, The Netherlands

WP WOODHEAD PUBLISHING

A guide to the aims of environmental remediation and restoration to reduce exposure to radiation from contaminated soil or groundwater

A Volume in the Woodhead Publishing Series in Energy.

KEY FEATURES

- Explores types and characteristics of contaminated nuclear and NORM sites
- Provides an in depth guide to environmental restoration frameworks and processes including stakeholder involvement, risk assessment and cost-benefit analysis in the remediation and restoration of contaminated nuclear and NORM sites
- Offers coverage of remediation techniques and waste disposal from electrokinetic remediation to in situ and ex situ bioremediation of radionuclides contaminated soils

DESCRIPTION

Nuclear sites become contaminated with radionuclides due to accidents and activities carried out without due consideration for the environment. Naturally-occurring radioactive materials (NORM) released by industrial processes such as coal power production and fertilizer manufacture may also require clean-up. Environmental remediation and restoration aim to reduce exposure to radiation from contaminated soil or groundwater. This book provides a comprehensive overview of this area. Part 1 provides an introduction to the different types of contaminated site and their characteristics. Part 2 addresses environmental restoration frameworks and processes. Part 3 then reviews different remediation techniques and methods of waste disposal.

ISBN: 978-1-78242-231-0

PUB DATE: February 2015

FORMAT: Hardback

PAGES: c. 262

AUDIENCE

Environmental technologists specialising in the remediation of contaminated nuclear sites, as well as consultants, academics and postgraduate studentswith an interest in environmental remediation of contaminated nuclear sites (from a variety of departments including environmental engineering, radiochemistry, nuclear engineering, biology, ecology)

ENGINEERING

ENERGY AND ENVIRONMENT

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Oral Communication Skills for Scientific Presentations

William B. Krantz President's Teaching Scholar and Professor Emeritus, University of Colorado, Boulder, CO, USA;Rieveschl Ohio Eminent Scholar and Professor Emeritus, University of Cincinnati, Cincinnati,OH, USA

A practical, compact guidebook covering the 'nuts and bolts' of effective public speaking

ISBN: 978-0-12-805418-5

PUB DATE: April 2016

FORMAT: Paperback

PAGES: c. 160

AUDIENCE

Students and researchers across the sciences interested in improving their oral communication skills; in particular non-native English speakers

KEY FEATURES

- Discusses best practices in putting together an effective talk
- Focuses on leveraging the speaker's existing skill sets to develop the delivery style that works best for that individual
- Features one-page quick reference guides for giving formal oral and informal poster presentations
- Addresses cross-cultural communication as well as particular concerns for non-native English speakers
- Includes a companion site with tools and video examples of formal and informal presentations for further self-guidance

DESCRIPTION

Oral Communication Skills for Scientific Presentations is intended for inexperienced speakers as well as those aspiring to improve their communication skills in making either formal or informal presentations on a technical subject. A complement to having good organization for a technical presentation is to have an effective delivery style. This book provides a template for organizing a technical talk that will include a discussion of various ways to effectively develop each part of a technical presentation.

A special feature of *Oral Communication Skills for Scientific Presentations* is the focus on making presentations to a cross-cultural audience. This relates to relatively minor considerations such as how to list the names of the co-authors on your presentation as well as to more substantive considerations such as how to handle eye contact and use humor, both of which can differ across the global spectrum of cultures. The cross-cultural focus of this book relates not only to the audience, but also to the speaker. This book also includes helpful tips for non-native English speakers.

Graduate Research, 4e

A Guide for Students in the Sciences

Robert V. Smith Collaborative Brain Trust University Consulting (CBT UC), Sacramento, CA, USA
Llewellyn D. Densmore Department of Biological Sciences, Texas Tech University, Lubbock, TX, USA
Edward F. Lener University Libraries, Virginia Tech, Blacksburg, VA, USA

This newly revised go-to resource is for graduate researchers at all stages of study and covers a range of topics including writing and preparation of research proposals, developing and refining teaching skills, and ethics and compliance areas such as research involving human subjects and animals

ISBN: 978-0-12-803749-2
PREVIOUS EDITION ISBN: 9780295977058
PUB DATE: February 2016
FORMAT: Paperback
PAGES: c. 288

AUDIENCE
Graduate student, graduate advisors, and mentors across the Sciences

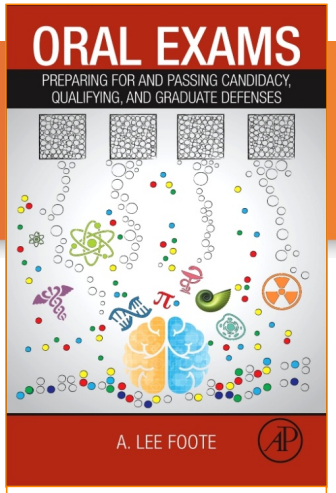
KEY FEATURES

- Discusses a broad range of topics including time management, library and literature work, and grant support
- Includes a new chapter on career planning and development with advice on careers in academia, government, and the private sector
- Contains chapters that promote the development of a varied set of communication skills
- Greatly expanded treatment of graduate study and research in international settings

DESCRIPTION

Graduate Research is an all-in-one resource for prospective and matriculated graduate students in the sciences. The newly revised edition includes updates to every chapter. *Graduate Research* covers a range of topics including writing and preparation of research proposals, developing and refining teaching skills, and ethics and compliance areas such as research involving human subjects and animals.

Graduate Research helps readers navigate the multidimensional and interdisciplinary world of scientific research and it is an invaluable resource for graduate researchers as well as those in advising or mentoring roles.



Oral Exams

Preparing For and Passing Candidacy, Qualifying, and Graduate Defenses

Lee A Foote Professor and Director, Devonian Botanic Garden, University of Alberta, Edmonton, AB, Canada

This book provides students with a great resource to help them prepare for oral comprehensive and viva voca exams, and is also valuable for faculty as they prepare new questions.

ISBN: 978-0-12-802578-9

PUB DATE: September 2015

FORMAT: Paperback

PAGES: c. 192

AUDIENCE

Graduate students, postdoctoral fellows and faculty in every discipline

KEY FEATURES

- Describes in detail the general format of oral comprehensive exams, viva voce examinations and defenses, what to expect, and what the requirements are that students need to fulfill to pass.
- Includes appendices with numerous practice questions sourced from a range of disciplines and countries for individual or group learning
- Useful for Early Career academics that are supervising, supporting, and examining PhD students

DESCRIPTION

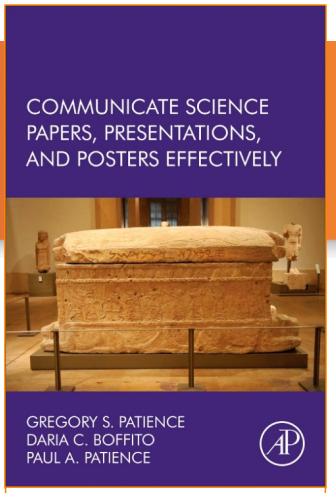
Oral Exams: Preparing For and Passing Candidacy, Qualifying, and Graduate Defenses provides guidance on how to prepare for oral comprehensive and viva voce exams.

Topics discussed include the supervisory committee, preparing the seminar, arranging content, mental preparation, question framing, and the types of questions to expect.

At its core, the book prepares students to be the best they can be by offering insights into how to interpret and appropriately respond to explicit and implied oral comps questions.

This book benefits faculty by helping them prepare new questions, also providing tips on how to mentor their students in preparation for exams.

The training included can be used to prepare for intensive qualifying or certification exams, job interviews, and presentations.



Communicate Science Papers, Presentations, and Posters Effectively

Gregory S Patience Department of Chemical Engineering, Ecole Polytechnique de Montreal, Canada
Daria C. Boffito Department of Chemical Engineering, Ecole Polytechnique de Montreal, Canada
Paul Patience Ecole Polytechnique de Montreal, Canada

The tools readers need to become better writers, presenters, and communicators

KEY FEATURES

- Covers how to accurately and clearly exhibit results, ideas, and conclusions
- Identifies phrases common in scientific literature that should never be used
- Discusses the theory of presentation, including “before and after” examples highlighting best practices
- Provides concrete, step-by-step examples on how to make camera ready graphs and tables

DESCRIPTION

Communicate Science Papers, Presentations, and Posters Effectively is a guidebook on science writing and communication that professors, students, and professionals in the STEM fields can use in a practical way. This book advocates a clear and concise writing and presenting style, enabling users to concentrate on content.

The text is useful to both native and non-native English speakers, identifying best practices for preparing graphs and tables, and offering practical guidance for writing equations. It includes content on significant figures and error bars, and provides the reader with extensive practice material consisting of both exercises and solutions.

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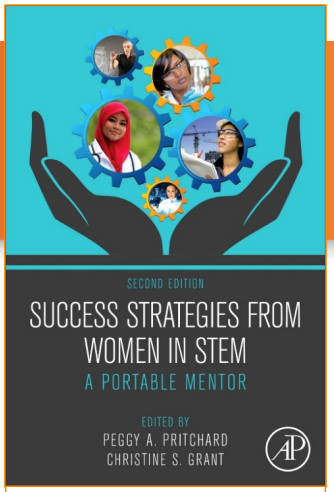

Success Strategies From Women in STEM, 2e

A Portable Mentor

Edited by: ***Peggy A. Pritchard*** Associate Librarian, Learning and Curriculum Support Team, University of Guelph, Guelph, ON, Canada
Christine Grant PhD, Full Professor of Chemical and Biomolecular Engineering and Associate Dean of Faculty Advancement, North Carolina State University, College of Engineering, Raleigh, NC, USA

A comprehensive and accessible manual that provides valuable strategies, tools, and sucess tips for women pursuing and involved in STEM careers

"...we need women to fully participate in this industry...morally and ethically, it's simply the right thing to do. This book will undoubtedly help."--**Network Security,** ***Success Strategies from Women in STEM, Second Edition***

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AUDIENCE
Women pursuing careers or involved in careers in science, technology, engineering and mathematics

KEY FEATURES

- Preserves the style and tone of the first edition by bringing together mentors, trainees and early-career professionals in a series of conversations about important topics related to careers in STEM fields, such as leadership, time stress, negotiation, networking, social media and more
- Identifies strategies that can improve career success along with stories that elucidate, engage, and inspire
- Companion website provides authoritative information from successful women engaged in STEM careers, including annotated links to key organizations, associations, granting agencies, teaching support materials, and more

DESCRIPTION

Success Strategies from Women in Stem: A Portable Mentor, Second Edition, is a comprehensive and accessible manual containing career advice, mentoring support, and professional development strategies for female scientists in the STEM fields.

This updated text contains new and essential chapters on leadership and negotiation, important coverage of career management, networking, social media, communication skills, and more. The work is accompanied by a companion website that contains annotated links, a list of print and electronic resources, self-directed learning objects, frequently asked questions, and more.

With an increased focus on international relevance, this comprehensive text contains shared stories and vignettes that will help women pursuing or involved in STEM careers develop the necessary professional and personal skills to overcome obstacles to advancement.

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