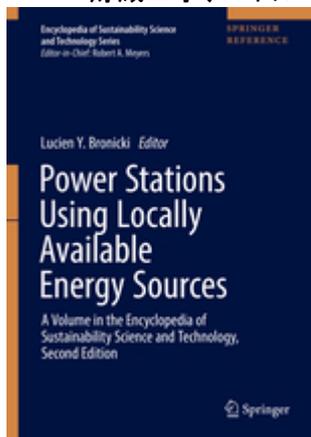


持続可能性研究における重要分野に関してすべてを収録する決定版的参考図書。
地域で利用可能な多種多様なエネルギー源をカバーします。海洋エネルギー、地熱エネルギー、探査および掘削技術、
貯蔵工学、エネルギー変換システム、環境への影響などについて、現状と将来への可能性を考察します。



ローカルエネルギー資源による発電施設 1. Power Stations Using Locally Available Energy Sources

(Encyclopedia of Sustainability Science and Technology Series)

Edited by L.Y. Bronicki, Yavne, Israel

2018年4月出版予定 ハードカバー ¥54,320

347 illus., 206 illus. in color. ISBN 978-1-4939-7510-5

Published by Springer

This volume covers the utilization of geothermal and related energy resources that exploit variations in temperature, chemistry, etc. and require different plant designs and technologies for each location. Extending beyond power plants using geothermal and ocean energy, coverage includes hot dry rock systems, geothermal conditioning, solar ponds, osmotic power, dry air, and potential future deep sea hydrothermal sources. Some technologies have reached the prototype stage, some not even that, but where much work has been invested, it is important to provide a complete picture if only to prevent others from following a dead-end path. For geothermal power plants, the greatest challenge remains the geothermal resource itself. Power conversion is the least uncertain part of a geothermal project, as it consists of a straightforward engineering design with work executed by experienced manufacturers, engineering firms, and contractors. The issues associated with integrating large amounts of ocean energy into the overall supply are also explored. Collecting more than 20 new articles and updated entries, all peer reviewed, this volume in the Encyclopedia of Sustainability Science and Technology, Second Edition, provides an authoritative introduction from exploration techniques to conversion systems for a wide range of locally available energy sources. This comprehensive reference is suitable for those just entering these fields, but also offers new insights for advanced researchers, industry experts, and decision makers.

CONTENTS: Introduction to Geothermal Power Stations.- Geothermal Energy Utilization.- Geology and Hydrology of Geothermal Energy.- Nature, Use, and Expectations of Geothermal Energy.- Sustainability and Renewability of Geothermal Power Capacity.- Geochemistry of Hydrothermal Systems.- Drilling for Geothermal Resources.- Geothermal Field and Reservoir Monitoring.- Environmental Aspects of Geothermal Resources.- Geothermal Power Conversion Technology.- Geothermal Power Economics.- Development and Sustainability of Engineered Geothermal Systems.- Direct Heat Utilization of Geothermal Resources Worldwide.- Reservoir Engineering in Geothermal Fields.- Solar Pond Power System.- Power Generation from Low Grade Heat Streams.- Introduction to Ocean Energy.- Marine and Hydrokinetic Energy Environmental Challenges.- Offshore Wind Energy Technology Trends, Challenges, and Risks.- Tidal Energy.- Ocean Thermal Energy Conversion.- Osmotic Power Generation.- Power Generation from Dry Air.



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関連書ご案内

2. Advances in Renewable Energies and Power Technologies

Volume 2: Biomass, Fuel Cells, Geothermal Energies, and Smart Grids

Edited by Imene Yahyaoui

March 2018, 536 pages, Paperback (Elsevier)

ISBN 9780128131855 ¥31,680

Advances in Renewable Energies and Power Technologies Volume 2: Biomass, Fuel Cells, Geothermal Energies, and Smart Grids examines both the theoretical and practical elements of renewable energy sources, covering biomass, fuel cells, geothermal energy, RES, distributed energy, smart grids, and converter control. Dr. Yahyaoui and a team of expert contributors present the most up-to-date information and analysis on renewable energy generation technologies in this comprehensive resource. This volume covers the principles and methods of each technology, an analysis of their implementation, management and optimization, and related economic advantages and limitations, in addition to recent case studies and models of each technology.

Advances in Renewable Energies and Power Technologies: Volume 2: Biomass, Fuel Cells, Geothermal Energies, and Smart Grids is a valuable resource for anyone working in renewable energy or wanting to learn more about theoretical and technological aspects of the most recent inventions and research in the field.

3. Advances in Steam Turbines for Modern Power Plants

Dec 2016, 568 pages, Hardcover (Woodhead)

ISBN 9780081003145 ¥55,450

Advances in Steam Turbines for Modern Power Plants provides an authoritative review of steam turbine design optimization, analysis and measurement, the development of steam turbine blades, and other critical components, including turbine retrofitting and steam turbines for renewable power plants.

As a very large proportion of the world's electricity is currently generated in systems driven by steam turbines, (and will most likely remain the case in the future) with steam turbines operating in fossil-fuel, cogeneration, combined cycle, integrated gasification combined cycle, geothermal, solar thermal, and nuclear plants across the world, this book provides a comprehensive assessment of the research and work that has been completed over the past decades.

4. EU Leadership in Energy and Environmental Governance: Global and Local Challenges and Responses

(International Political Economy Series)

Edited by Jakub M. Godzimirski

2016, 229 pages, Hardcover (Palgrave Macmillan)

ISBN 9781137502759 ¥19,630

This edited collection focuses on the impact of the changing global distribution of power on the EU's energy policy and ability to project its approach to energy-related issues abroad. It maps the EU's changing position on global energy, the impact of various factors on its energy policy, and its relations with Russia, China, the USA and Brazil.

5. Geothermal Water Management

Edited by Jochen Bundschuh & Barbara Tomaszewska

Aug 2017, 402 pages, Hardback (CRC Press)

ISBN 9781138027213 ¥46,550

Availability of and adequate accessibility to freshwater and energy are two key technological and scientific problems of global significance. At the end of the 20th century, the deficit of water for human consumption and economic application forced us to focus on rational use of resources. Increasing the use of renewable energy sources and improving energy efficiency is a challenge for the 21st century. Geothermal energy is heat energy generated and stored in the Earth, accumulated in hydrothermal systems or in dry rocks within the Earth's crust, in amounts which constitute the energy resources. The sustainable management of geothermal energy resources should be geared towards optimization of energy recovery, but also towards rational management of water resources since geothermal water serves both as energy carrier and also as valuable raw material. Geothermal waters, depending on their hydrogeothermal characteristics, the lithology of the rocks involved, the depth at which the resources occur and the sources of water supply, may be characterized by very diverse physicochemical parameters. This factor largely determines the technology to be used in their exploitation and the way the geothermal water can be used. This book is focused on the effective use of geothermal water and renewable energy for future needs in order to promote modern, sustainable and effective management of water resources.

6. Low Head Hydropower for Local Energy Solutions

By Pradeep Narrain

Nov 2017, 222 pages, Paperback (CRC Press)

ISBN 9780815396123 ¥17,610

The role of small hydropower is becoming increasingly important on a global level. Increasing energy demand and environmental awareness has further triggered research and development into sustainable low-cost technologies. In developing countries, particularly in rural areas, the possibility of local power generation could considerably improve living conditions. With this in mind, the development of a next generation low-head hydropower machines was subject of investigation in the EU-project HYLOW. Being part of the research lines of that project, this thesis presents a numerical modelling approach to improve the design of machines like water wheels for increased hydraulic efficiency. Nowadays, Computational Fluid Dynamics (CFD) enables numerical models to be quite accurate and incorporate physical complexities like free surfaces and rotating machines. The results of the CFD simulations carried out in this research show that a change in blade geometry can result in higher torque levels, thereby increasing performance. Numerical simulations also enabled to determine the optimal wheel-width to channel-width ratio and further improve performance by modifying the channel bed conditions upstream and downstream of the water wheel. With a power rating in the low kilowatt range, low-head hydropower machines like optimised water wheels seem to have a clear potential for small-scale energy generation, thereby contributing to achieving the Sustainable Development Goals by providing local energy solutions.

7. Microgrids and other Local Area Power and Energy Systems

By **Alexis Kwasinski**, University of Texas, Austin; **Wayne Weaver**, Michigan Technological University; & **Robert S. Balog**, Texas A & M University

Aug 2016, 450 pages, Hardback (Cambridge U.P.)

ISBN 9781107012790 **¥17,600**

Describing the formation, integration, planning, composition and operation of microgrids, this book explains how local power systems can address limitations in conventional electric power grids and provides insights into the practical implementation needs and outcomes of microgrid technology. All aspects of microgrid design and applications are covered, including the main technologies involved in microgrids and other local area power and energy systems. The reliability and economic characteristics of microgrid system architecture, energy storage and grid interaction are explored in depth. Over 300 illustrations and real-world application examples make this a fully self-contained resource, ideal for graduate students and professionals in electrical, mechanical and chemical engineering and materials science.

8.Minimizing Energy Consumption, Energy Poverty and Global and Local Climate Change in the Built Environment: Innovating to Zero Casualties and Impacts in a Zero Concept World

by Mattheos Santamouris

Oct 2018, 300 pages, Paperback (Elsevier)

ISBN 9780128114179 **¥17,590**

Minimizing Energy Consumption, Energy Poverty and Global and Local Climate Change in the Built Environment: Innovating to Zero analyzes three major issues of the built environment, including the political, economic and technical contexts, the impacts of global and local climate change, and the technical and social characteristics of energy poverty. In addition, the book addresses the causes and reasons for the magnitude and characteristics of the built environment's energy consumption.

Users will find a fresh view of energy consumption in the built environment, especially in relation to energy poverty and climate change from the ZERO energy world perspective.

9.Ocean Wave Energy Conversion Resource, Technologies and Performance

by Aurelien Babarit

Nov 2017, 262 pages, Hardcover (ISTE Pr. – Elsevier) ISBN 9781785482649 **¥29,040**

The waves that animate the surface of the oceans represent a deposit of renewable energy that for the most part is still unexploited today. This is not for lack of effort, as for more than two hundred years inventors, researchers and engineers have struggled to develop processes and systems to recover the energy of the waves. While all of these efforts have failed to converge towards a satisfactory technological solution, the result is a rich scientific and technical literature as well as extensive and varied feedback from experience.

For the uninitiated, this abundance is an obstacle. In order to facilitate familiarization with the subject, we propose in this work a summary of the state of knowledge on the potential of wave energy as well as on the processes and technologies of its recovery (wave energy converters). In particular, we focus on the problem of positioning wave energy in the electricity market, the development of wave energy conversion technologies from a historical perspective, and finally the energy performance of the devices. This work is aimed at students, researchers, developers, industry professionals and decision makers who wish to acquire a global perspective and

the necessary tools to understand the field.

10.Operation and Maintenance of Thermal Power Stations

Best Practices and Health Monitoring

By Pradip Chanda & Suparna Mukhopadhyay

July 2016, Hardcover (Springer)

ISBN 9788132227205 **¥28,540**

This book illustrates operation and maintenance practices/guidelines for economic generation and managing health of a thermal power generator beyond its regulatory life. The book provides knowledge for professionals managing power station operations, through its unique approach to chemical analysis of water, steam, oil etc. to identify malfunctioning/defects in equipment/systems much before the physical manifestation of the problem. The book also contains a detailed procedure for conducting performance evaluation tests on different equipment, and for analyzing test results for predicting maintenance requirements, which has lent a new dimension to power systems operation and maintenance practices. A number of real life case studies also enrich the book. This book will prove particularly useful to power systems operations professionals in the developing economies, and also to researchers and students involved in studying power systems operations and control.

11.Operation, Planning, and Analysis of Energy Storage Systems in Smart Energy Hubs

Edited by Behnam Mohammadi-Ivatloo & Farkhondeh Jabari

May 2018, 404 pages, Hardcover (Springer)

ISBN 9783319750965 **¥28,350**

This book discusses the design and scheduling of residential, industrial, and commercial energy hubs, and their integration into energy storage technologies and renewable energy sources. Each chapter provides theoretical background and application examples for specific power systems including, solar, wind, geothermal, air and hydro. Case-studies are included to provide engineers, researchers, and students with the most modern technical and intelligent approaches to solving power and energy integration problems with special attention given to the environmental and economic aspects of energy storage systems.

12.Renewable Energy, Second Ed. A First Course

By Robert Ehrlich & Harold A. Geller

Oct 2017, 490 pages, Hardback (CRC Press)

ISBN 9781138297388 **¥35,220**

This revised edition is fully updated and continues to provide the best in-depth introduction to renewable energy science. It focuses mainly on renewable energy, but also addresses nonrenewable energy (fossil fuels and nuclear technology). The coverage extends from the basic physics to conservation, economic, and public policy issues, with strong emphasis on explaining how things work in practice. The authors avoid technical jargon and advanced math, but address fundamental analytical skills with wide application, including:

Two brand new chapters giving an introduction to population dynamics and statistical analysis for energy studies

Additional self-study problems and answers

More worked examples

Up-to-date coverage of areas such as hydraulic fracturing, integration of renewable energy to power grid, and cost.

13. Renewing Local Planning to Face Climate Change in the Tropics

(Series: Green Energy and Technology)

Edited by Maurizio Tiepolo, Alessandro Pezzoli, & Vieri Tarchiani

July 2017, 372 pages, Hardcover (Springer)

ISBN 9783319590950 **¥10,900**

This book aims to inspire decision makers and practitioners to change their approach to climate planning in the tropics through the application of modern technologies for characterizing local climate and tracking vulnerability and risk, and using decision-making tools. Drawing on 16 case studies conducted mainly in the Caribbean, Central America, Western and Eastern Africa, and South East Asia it is shown how successful integration of traditional and modern knowledge can enhance disaster risk reduction and adaptation to climate change in the tropics. The case studies encompass both rural and urban settings and cover different scales: rural communities, cities, and regions. In addition, the book looks to the future of planning by addressing topics of major importance, including residual risk integration in local development plans, damage insurance and the potential role of climate vulnerability reduction credits. In many regions of the tropics, climate planning is growing but has still very low quality. This book identifies the weaknesses and proposes effective solutions.

14. Sustainable Energy for All Selected Papers from the World Renewable Energy Congress WREC 2016

(Series: Innovative Renewable Energy)

Edited by Ali Sayigh

Springer - June 2018, 548 pages, Hardcover

ISBN 9783319775401 **¥32,720**

This book contains selected papers presented during technical and plenary sessions at the World Renewable Energy Congress, the world's premier conference on renewable energy and sustainable development. This biennial Congress provides an international forum that brings together top experts, policy makers and business practitioners to address the most strategic issues of sustainable energy development and innovation. The book highlights the most current research and technological breakthroughs in this rapidly growing field and contains the most up-to-date innovations and practical applications in renewable energy development, utilization and energy efficiency efforts.

15. Sustainable Local Energy Planning and Decision Making Emerging Research and Opportunities

(Series: Practice, Progress, and Proficiency in Sustainability)

Edited by Vangelis Marinakis

March 2017, 171 pages, Hardcover (IGI Global)

ISBN 9781522522867 **¥24,640**

It is imperative to promote and maintain sustainability in all areas of the world. By developing effective energy usage frameworks, regional communities can better achieve this goal.

Sustainable Local Energy Planning and Decision Making: Emerging Research and Opportunities is an authoritative reference source featuring the latest scholarly research on an operational framework for decision support for local and regional authorities to aid in sustainable energy planning. Including extensive coverage on a broad range of topics and perspectives such as emission trends, energy balance, and

climate change, this book is ideally designed for academicians, researchers, and students seeking current research on the development of regional sustainable energy plans.

16. Tidal Energy Systems Design, Optimization and Control

by Vikas Khare, Cheshta Khare, Savita Nema, & Prashant Baredar

Elsevier - Oct 2018, 512 pages, Paperback

ISBN 9780128148815 **¥35,200**

Tidal Energy Systems provides a comprehensive overview of concepts, technologies, management, and control of tidal energy systems and tidal power plants.

It presents the fundamentals of tidal energy, including structure of tidal currents and turbulence. Technology, principles and components of tidal power plants, as well as operation and performance assessment of each component, are also covered. The book then explores pre-feasibility analysis methods, considering variables like climatic conditions, resource availability, and load demand. Aspects plant operation, maintenance and power generation are discussed, encompassing automatic control and control strategies such as reactive power control. The book examines reliability assessment in terms of failure distribution, constant failure rate, time dependent failure model. It also presents a chronological multiple state probability model of tidal power generation system (TPGS) considering both forced outage rate (FOR) and random nature of tidal current speed. Finally, the most recent research advances and future trends are reviewed, with the inclusion of real life examples worldwide and a case study of India's tidal energy scenario. Policy aspects are considered, as well as economic analysis including capital cost, replacement cost, and operation and maintenance cost of complete tidal power plant.

Tidal Energy Systems provides ocean energy researchers, practitioners and graduate students with all the information needed for design, deployment, management and operation of tidal energy systems up to actual tidal power plants. Senior undergraduate students will also find in this book a useful resource on the fundamentals of tidal energy systems and their components.

17. Wave and Tidal Energy

by Deborah Greaves & Gregorio Iglesias

May 2018, 720 pages, Hardcover (Wiley)

ISBN 9781119014447 **¥26,400**

Wave and Tidal Energy provides a comprehensive and self-contained review of the developing marine renewable energy sector, drawing from the latest research and from the experience of device testing. The book has a twofold objective: to provide an overview of wave and tidal energy suitable for newcomers to the field and to serve as a reference text for advanced study and practice.

Including detail on key issues such as resource characterisation, wave and tidal technology, power systems, numerical and physical modelling, environmental impact and policy. The book also includes an up-to-date review of developments worldwide and case studies of selected projects.