F. Atun, Polytechnic University of Milan, Milan, Italy

**Improving Societal Resilience to Disasters**

A Case Study of London’s Transportation System

This book documents the outcomes of a study designed to explore ways of increasing resilience in a complex city system against disasters by focusing on the transportation system in London. A survey was undertaken comprising interviews with upper level decision makers as well as questionnaires to personnel in the field and the general public. The results of this survey are presented, together with a brief description of the past and current situation in the city with respect to transportation, flood risk, and other vulnerabilities. The sources of problems in responding adequately to disasters are analyzed and important lessons drawn. In particular, it is explained how failures derive from insistence upon the application of written plans in preference over redefinition of strategies and priorities, and how flexible systems represent a better approach to crisis situations. The book will be of interest to all who are concerned with disaster planning and management and the societal response to disasters.

**Fields of interest**

Transportation; Natural Hazards; Quality Control, Reliability, Safety and Risk

**Target groups**

Research

**Discount group**

Professional Non-Medical

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L. Battisti, University of Trento, Trento, Italy

**Wind Turbines in Cold Climates**

Icing Impacts and Mitigation Systems

This book addresses the key concerns regarding the operation of wind turbines in cold climates and focuses in particular on the analysis of icing and methods for its mitigation. Topics covered include the implications of cold climates for wind turbine design and operation, the relevance of icing for wind turbines, the icing process itself, ice prevention systems, and thermal anti-icing system design. In each chapter, care is taken to build systematically on the basic knowledge, providing the reader with the level of detail required for a thorough understanding. An important feature is the inclusion of several original analytical and numerical models for ready computation of icing impacts and design assessment. The breadth of the coverage and the in-depth scientific analysis, with calculations and worked examples relating to both fluid dynamics and thermodynamics, ensure that the book will serve not only as a textbook but also as a practical manual for general design tasks.

**Features**

► Examines in detail the impact of icing on wind turbine operation and methods of mitigation
► Provides up-to-date analysis of the technology
► Includes data, calculations and worked examples
► Can be used either as a textbook or a design-oriented manual

**Contents**

Effect of cold climates on wind turbine design and operation.- Relevance of icing for wind turbines.- Icing process.- Ice prevention systems (IPS).- Thermal anti-icing systems design.- Conclusions.- Winter operation wind turbines.

**Fields of interest**

Renewable and Green Energy; Engineering Design; Geotechnical Engineering & Applied Earth Sciences

**Target groups**

Research

**Discount group**

Professional Non-Medical

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F. Cucchiella, University of L’Aquila, L’Aquila, Italy; L. Koh, The University of Sheffield Management School, Sheffield, UK (Eds)

**Sustainable Future Energy Technology and Supply Chains**

A Multi-perspective Analysis

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

**Features**

► Analyzes the future of sustainable energy in the supply chain scenario and the effects this has on efficiency and economic output
► Builds a practical approach to the energy aspects and applications within supply chains which can be applied to real-life processes to increase economic efficiency
► Includes real case studies and several examples to solve practical problems and illustrate the real-world applications and results of this approach

**Fields of interest**

Energy Policy, Economics and Management; Engineering Economics, Organization, Logistics, Marketing; Innovation/Technology Management

**Target groups**

Research

**Discount group**

Professional Non-Medical
Near-critical and Supercritical Water and Their Applications for Biorefineries

The book provides fundamental chemistry and properties of near-critical water (NCW) and supercritical water (SCW), criteria and challenges/solutions in reactor design for NCW and SCW processes, and up-to-date reviews and practice of a wide range of their applications in bio refineries including: production of hydrochars from biomass, SCW oxidation (SCWO) for waste treatment, SCW gasification (SCWG) of biomass and waste for hydrogen and methane production, hydrothermal liquefaction of biomass, production of chemicals and SCWO of biofuels for energy. It also presents techno-economic analysis of hydrogen production via SCWG of biomass. The book will be highly essential for both academic researchers and industrial practitioners for developing novel bio refinery technologies and processes employing NCW or SCW for treatment of various organic waste streams and production of bio-energy and bio-based chemicals from bio-renewable resources. Prof. Dr.

Features

- Focuses on utilizing near-critical water and supercritical water in bio refineries
- Covers almost all aspects of near-critical water and supercritical water
- Contributed by leading experts in the area

Contents


Fields of interest

Renewable and Green Energy; Wood Science & Technology; Renewable and Green Energy

Target groups

Research

Discount group

Professional Non-Medical

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The series Green Chemistry and Sustainable Technology aims to present cutting-edge research and important advances in green chemistry, green chemical engineering and sustainable industrial technology. The scope of coverage includes (but is not limited to): - Environmentally benign chemical synthesis and processes (green catalysis, green solvents and reagents, atom-economy synthetic methods etc.) - Green chemicals and energy produced from renewable resources (biomass, carbon dioxide etc.) - Novel materials and technologies for energy production and storage (bio-fuels and bioenergies, hydrogen, fuel cells, solar cells, lithium-ion batteries etc.) - Green chemical engineering processes (process integration, materials diversity, energy saving, waste minimization, efficient separation processes etc.) - Green technologies for environmental sustainability (carbon dioxide capture, waste and harmful chemicals treatment, pollution prevention, environmental redemption etc.) The series Green Chemistry and Sustainable Technology is intended to provide an accessible reference resource for postgraduate students, academic researchers and industrial professionals who are interested in green chemistry and technologies for sustainable development.

F. Jin, Shanghai Jiao Tong University, Shanghai, China (Ed)

Application of Hydrothermal Reactions to Biomass Conversion

Contents

N. L. Madureira, Instituto Universitario de Lisboa, Lisboa, Portugal

Key Concepts in Energy

Organized around eight fundamental ideas, Key concepts in energy history explores the discoveries, technologies and new paradigms in the field of energy, and how they have changed the course of history. Complex technical concepts such as the ‘rebound effect’, ‘technological hybridization’, ‘marginal cost pricing’ are explained in clear terms and a balanced and concise account of energy sources in the XIX and XX century such as wood, coal, oil, hydroelectricity and nuclear energy is provided. Key concepts in energy considers the process of energy-substitutions and analyzes it as a process of complementary usages, hybridization and technological mixes.

Features
- Highlights how key energy concepts surfaced, tracing their evolution throughout history to encompass four economic concepts and four technological-engineering concepts developed through their history to conclude with current economic and environmental sciences
- Considers the process of energy-substitutions through complementary usages, hybridization and technological mixes
- Combines a conceptual approach with key theoretical concepts from engineering, geological and economic sciences providing cross disciplinary overview of energy fundamentals in a short and focused reading

Contents

Fields of interest
Energy Policy, Economics and Management; R & D/Technology Policy; Energy Economics

Target groups
Research

Discount group
Professional Non-Medical

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ISBN 978-3-319-04977-9

Z. D. Rekioua, UNIVERSITY OF BEJAIA-ALGERIA, Bejaia, Algeria

Wind Power Electric Systems
Modeling, Simulation and Control

The book helps readers understand key concepts in standalone and grid connected wind energy systems and features analysis into the modeling and optimization of commonly used configurations through the implementation of different control strategies. Utilizing several electrical machinery control approaches, such as vector control and direct torque control. Wind Power Electric Systems equips readers with the means to understand, assess and develop their own wind energy systems and to evaluate the performance of such systems. Mathematical models are provided for each system and a corresponding MATLAB/SIMULINK example is included at the end of each section in order to demonstrate key processes and methods.

Features
- Enriches understanding of key concepts in standalone and grid connected wind energy systems
- Equips readers with the means to understand, assess and develop their own wind energy systems and to evaluate the performance of such systems
- Contains supplementary MATLAB/SIMULINK material on the modeling and optimization of wind energy systems

Contents
1.- Wind applications overview 2.- Wind energy conversion and power electronics modeling 3.- Optimized wind systems 4.- Modeling of storage systems 5.- Control of wind turbine systems 6.- Hybrid wind systems 7.- Applications of wind systems 8.- Examples of wind systems.

Fields of interest
Renewable and Green Energy; Power Electronics, Electrical Machines and Networks; Control

Target groups
Research

Discount group
Professional Non-Medical

Available
2014. 217 p. 216 illus. With online files/update. (Green Energy and Technology) Hardcover
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F. Wagner, University of Duisburg-Essen Campus Essen, Essen, Germany

Renewables in Future Power Systems
Implications of Technological Learning and Uncertainty

The book examines the future deployment of renewable power from a normative point of view. It identifies properties characterizing the cost-optimal transition towards a renewable power system and analyzes the key drivers behind this transition. Among those drivers, particular attention is paid to technological cost reductions and the implications of uncertainty.

Features
- Analyzes the cost-optimal transition towards a renewable power system using advanced optimization methods
- Bridges the gap between the strand of literature covering renewable potential analyses on the one hand and energy system modeling with endogenous technological change on the other
- Gives practically relevant insights regarding the long-term competitiveness of renewable power generation

Contents

Fields of interest
Renewable and Green Energy; Complexity; R & D/Technology Policy

Target groups
Research

Discount group
Professional Non-Medical

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