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Modern Solid Waste Management in Practice

The City of Malmö Experience

This book focuses on sustainable solid waste management in an urban context and gives an example of how a modern city can work with waste management for increased sustainability in close cooperation with the academy.

Features

► Focuses on sustainable solid waste management in an urban context and gives an example of how a modern city can work with waste management for increased sustainability ► Includes drawings on technical solutions, photos where equipment, information strategies etc. is presented and figures presenting results from performed projects ► Describes challenges which the city is facing and presents a case on how these can be tackled based on several research and development projects performed in the City of Malmö over the last decade

Contents

Sustainable waste management in a changing environment.- The City of Malmö as a case study.- Collaboration with external partners-Solid waste management in development.- From idea to reality-The city as a test bed.- Collaboration outcomes.- New projects, building on previous experience.- Future challenges.- The way forward.

Fields of interest

Energy Policy, Economics and Management; Civil Engineering; Waste Water Technology / Water Pollution Control / Water Management / Aquatic Pollution

Target groups

Research

Product category

Brief

J. R. Bowen, L. T. Kuhn, A. Hauch, Danmarks Tekniske Universitet, Roskilde, Denmark

Electron Microscopy Characterisation of Electrochemical Cells

The book begins with three introductory chapters on electrochemical cells, electron microscopy and sample preparation providing useful references to comprehensive classic texts on these subjects. The book then explores the relationship between electrochemical observations of performance and micro/nano-structures via a series of case studies on technologically relevant issues. It illustrates in a coherent and pedagogical way how electron microscopy and careful sample preparation can be used to explain the chemical and physical processes that occur in these devices.

Features

► Bridges the subject areas of performance and durability testing of electrochemical cells via electrical characterisation methods and electron microscopy methods for post mortem characterisation ► Focuses on solid oxide fuel cell and solid oxide electrolysis cell technologies but also creates strong links to the closely related electrochemical technologies such as polymer based fuel cells, batteries and solar cells amongst other energy conversion devices ► Divided into two main sections to provide a general introduction and case studies with each chapter structured to be read independently so as to provide a practical insight into how to apply methodologies for understanding electrochemical cell performance data representative of the overall cell scale

Fields of interest

Energy Storage; Electrochemistry; Characterization and Evaluation of Materials

Target groups

Research

Product category

Brief

B. M. Buchholz, NTB Technoservice, Pyrbaum, Germany; Z. Styczynski, University of Magdeburg, Magdeburg, Germany

Smart Grids – Fundamentals and Technologies in Electricity Networks

Efficient transmission and distribution of electricity is a fundamental requirement for sustainable development and prosperity. The world is facing great challenges regarding the reliable grid integration of renewable energy sources in the 21st century. The electric power systems of the future require fundamental innovations and enhancements to meet these challenges.

Features

► The book provides an insight into: ► The transmission and distribution networks under the challenging conditions of large-scale shares of volatile renewable energy sources ► The growing role of information and communication technologies ► International standards ► The authors are experts in the field of Smart Grid solutions

Contents

Vision and Strategy for the Electricity Networks of the Future.- Smart Generation – Resources and Potentials.- Modern UHV/ EHV /HV Technologies and the Smart Grid Challenges in Transmission.- Design of Distribution Networks and the impact of new Network Users.- Smart Operation and Observability at the Transmission Level.- The 3 Pillars of Smart Distribution.- Design of the Smart Energy Market.- Advanced Information & Communication Technologies: the Backbone of Smart Grids.- Smart Grids Worldwide.- Bibliography.- Abbreviations.

Fields of interest

Energy Systems; Power Electronics, Electrical Machines and Networks; Renewable and Green Energy

Target groups

Professional/practitioner

Product category

Professional book

Due December 2013

2014. IX, 63 p. 38 illus., 33 in color. (SpringerBriefs in Applied Sciences and Technology) Softcover

► *€ (D) 53,49 | € (A) 54,99 | sFr 67,00
► € 49,99 | £44.99

ISBN 978-1-4471-6262-9



9 781447 162629

Due May 2014

2014. 80 p. 33 illus. (SpringerBriefs in Applied Sciences and Technology) Hardcover

► approx. *€ (D) 53,45 | € (A) 54,95 | sFr 66,50
► approx. € 49,95 | £44.99

ISBN 978-1-4471-5654-3



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Due May 2014

2014. 300 p. 220 illus., 20 in color. Hardcover

► approx. *€ (D) 106,95 | € (A) 109,95 | sFr 133,50
► approx. € 99,95 | £90.00

ISBN 978-3-642-45119-5



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N. Cerullo, University of Pisa, Pisa, Italy;
G. Lomonaco, University of Genova, Genova, Italy

Innovative Gas Cooled Reactors

New frontiers for nuclear technology

Gas Cooled Innovative Reactors are opening new frontiers to the future nuclear technology due to their non-electric applications and the closure of nuclear fuel cycles. This book provides readers with a comprehensive and holistic understanding of HTRs, GFRs and the associate Innovative Fuel Cycles and Nuclear Hydrogen Production.

Features

► Explains and considers the non-electric applications and the closure of nuclear fuel cycles and their potential to develop nuclear fuel technology and applications ► Provides a comprehensive but holistic outlook at HTRs, GFRs and the associate Innovative Fuel Cycles and Nuclear Hydrogen Production ► Highlights the implementation of symbiotic LWR-HTR-GFR fuel cycles and their potential, beyond reducing wastes, to optimize the exploitation of uranium (and thorium) mineral resources

Contents

Part 1 High Temperature Gas-Cooled Reactors.- Part 2 Gas Cooled Fast Reactors.- Part 3 Innovative Fuel Cycles.- Part 4 Nuclear Hydrogen Production. [...]

Fields of interest

Nuclear Energy; Renewable and Green Energy; Plant Biochemistry

Target groups

Research

Product category

Brief

A. Dorsman, VU University Amsterdam, Amsterdam, The Netherlands; T. Gök, DePaul University Driehaus, College of Business, Chicago, IL, USA; M. B. Karan, Hacettepe University, Ankara, Turkey (Eds)

Perspectives on Energy Risk

Since the Industrial Revolution, the efficiency with which energy resources are extracted and converted into work has played a prominent role in the accumulation of material wealth.

Features

► Combines energy economics, energy finance and energy policy issues ► Contributions by scholars from all over the world ► Multidisciplinary approach

Contents

1 Introduction: Perspectives on Energy Risk.- Part I: Global Risks. 2 Changing Dynamics and Risks in World Energy: The Way Forward.- 3 Slack Resources, Innovation and Growth: Evidence from the US Energy Sector.- 4 Measuring Risks in Energy Markets.- Part II: Geopolitical Risks.- 5 The Natural Gas Revolution and Central Asia.- 6 The Influence of Economic, Financial and Political Indicators in Southeast Asian Electricity Markets.- 7 Geopolitical Market Concentration (GMC) Risk of Turkish Crude Oil and Natural Gas Supplies.- 8 Re-examining Turkey's Potential of Becoming a Natural Gas Transit Hub.- Part III: Local Risks.- 9 Hedging and Speculation: A Discussion on the Economic Role of Commodity Futures Markets (Including the Oil Markets).- 10 The Influence of Renewables on the German Day Ahead Electricity Prices.- 11 Corporate Financing and Investment Decisions in the Renewable Energy Sector.- 12 Prospective Costs for the Aviation Sector of the Emissions Trading Scheme.

Fields of interest

Energy Policy, Economics and Management; R & D/Technology Policy; International Relations

Target groups

Research

Product category

Contributed volume

N. Imanishi, Mie University, Tsu, Japan; P. Bruce, University of St Andrews, St. Andrews, UK (Eds)

Lithium Air Batteries

Fundamentals and Prospects

Lithium/air rechargeable batteries are the best candidate for a power source for electric vehicles because of their high specific energy density. In this book the history, scientific background, status and prospects of the lithium/air system are introduced by specialists in the field.

Features

► First book devoted solely to Lithium-Ion Air batteries ► Edited by recognized well-respected experts in the field ► A comprehensive text about an important technological subject that has been drawing huge amounts of global interest but has yet to be satisfactorily covered

Contents

General concepts.- Electrolytes.- Air electrode in non-aqueous electrolytes.- Air electrode in aqueous electrolytes.- Lithium electrodes in aqueous and non-aqueous Li/air.- Aqueous Li/air.- All solid state Li/air.- Primary lithium/air.- Technological challenge of Li/air.

Fields of interest

Energy Storage; Electrochemistry; Automotive Engineering

Target groups

Research

Product category

Monograph

Due May 2014

2014. 100 p. 40 illus., 15 in color. (SpringerBriefs in Applied Sciences and Technology) Softcover

► approx. *€ (D) 53,45 | € (A) 54,95 | sFr 66,50

► approx. € 49,95 | £44.99

ISBN 978-1-4471-6265-0



9 781447 162650

Due January 2014

2014. 200 p. Hardcover

► *€ (D) 106,99 | € (A) 109,99 | sFr 133,50

► € 99,99 | £90.00

ISBN 978-3-642-41595-1



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Due January 2014

2014. X, 10 p. 100 illus., 25 in color. Hardcover

► approx. *€ (D) 117,65 | € (A) 120,95 | sFr 147,00

► approx. € 109,95 | £99.50

ISBN 978-1-4899-8061-8



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A. A. Kiss, Arnhem, The Netherlands

Process Intensification Technologies for Biodiesel Production

Reactive Separation Processes

This book is one of the first to address novel process intensification technologies (integrated reactive separations) for biodiesel production. Biodiesel is a biodegradable and renewable fuel, emerging as a viable alternative to petroleum diesel. Conventional biodiesel processes still suffer from problems associated with the use of homogeneous catalysts (e.g. salt waste streams) and the limitations imposed by the chemical reaction equilibrium, thus leading to severe economical and environmental penalties.

Features

► Considers process intensification technologies (integrated reactive separations) for biodiesel production to provide a detailed overview of novel reactive separation processes usable in the biodiesel production ► Includes working principles, design and control of such integrated processes and a relevant overview of the process intensification opportunities for biodiesel synthesis ► Explores the integration of reaction and separation into one operating unit to overcome equilibrium limitations and provide key benefits such as low capital investment and operating costs

Contents

Biodiesel processes.- Reactive separation processes.- Reactive distillation.- Reactive absorption.- Reactive extraction.- Membrane reactors.- Concluding remarks.

Fields of interest

Energy Harvesting; Industrial and Production Engineering; Industrial Chemistry/Chemical Engineering

Target groups

Research

Product category

Brief

Due May 2014

2014. 75 p. (SpringerBriefs in Applied Sciences and Technology) Softcover

► approx. *€ (D) 53,49 | € (A) 54,99 | sFr 67,00

► approx. € 49,99 | £44.99

ISBN 978-3-319-03553-6



9 783319 035536

X. Liu, Y. Jiang, T. Zhang, Tsinghua University, Beijing, People's Republic of China

Temperature and Humidity Independent Control (THIC) of Air-conditioning System

Temperature and Humidity Independent Control (THIC) of Air-conditioning System focuses on temperature and humidity independent control (THIC) systems, which represents a new concept and new approach for indoor environmental control. This book presents the main components of the THIC systems, including dehumidification devices, high-temperature cooling devices and indoor terminal devices. Other relevant issues, such as operation and control strategy and case studies, are also included.

Features

► The innovative temperature and humidity independent control (THIC) of air-conditioning systems ► Presents the theoretical analysis, key components, design methodology and building applications of the THIC systems ► Practical and convenient reference content for researchers, designers and engineers

Contents

Characteristics of conventional air-conditioning systems.- The basic idea of the THIC air-conditioning system.- Key components of the THIC system- Indoor terminals.- Key components of the THIC system- Outdoor air handling methods.- Key components of the THIC system- Outdoor air processor using liquid desiccant.- Key components of the THIC system- High temperature cooling sources.- Design and operation of THIC systems.- Application cases of THIC systems.- Development tendencies and perspectives of the THIC systems.

Fields of interest

Energy Efficiency (incl. Buildings); Building Physics, HVAC; Thermodynamics

Target groups

Research

Product category

Monograph

Due January 2014

2014. XII, 342 p. 214 illus., 187 in color. Hardcover

► *€ (D) 139,09 | € (A) 142,99 | sFr 173,50

► € 129,99 | £117.00

ISBN 978-3-642-42221-8



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M. Mandalaki, T. Tsoutsos, Technical University of Crete, Chania, Greece

Shading Systems: Design, Performance, and Integrated Photovoltaics

This book documents in detail the thermal and daylighting properties of shading systems, examining the impact of design parameters and providing guidance on evaluation of the thermal behavior of the systems and visual comfort.

Features

► Describes the evolution of the design of shading devices up to the present day ► Includes all methods of evaluating shading systems according to thermal and visual comfort ► Focuses on integrated PV facades and PV shading systems ► Addresses engineers, architects, and designers interested in energy-efficient design

Contents

Basics of Shading Design, the evolution of shading devices through time and the methods of evaluating appropriate shading systems according to simple geometrical rules.- Geometrical and material properties of shading systems in relation to thermal gains.- Principles of Shading design in relation to both daylight quality and energy savings. Presentation of specialized requirements in the case of office buildings.- Additional parameters of energy production supported by shading systems with integrated PV.- Limitations and constraints of PV integration influencing devices' final performance and building's aesthetics.- Discussion and conclusions

Fields of interest

Energy Efficiency (incl. Buildings); Building Physics, HVAC; Building Types and Functions

Target groups

Research

Product category

Brief

Due March 2014

2014. 120 p. 30 illus. (SpringerBriefs in Energy) Softcover

► approx. *€ (D) 53,49 | € (A) 54,99 | sFr 67,00

► approx. € 49,99 | £44.99

ISBN 978-3-319-01972-7



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G. Palmer, Paltech Corporation, Knoxfield, VIC,
Australia

Energy in Australia

Peak Oil, Solar Power, and Asia's Economic Growth

With rapidly declining costs and seemingly unlimited sunshine, the choice of solar in Australia seems obvious. Yet despite its many advantages, homes with solar remain completely dependent on the electricity grid for reliable supply, which in Australia implies mostly coal-fired generation. Indeed, even countries that have invested heavily in solar, such as Spain and Germany, have been unable to deflect the trajectory of fossil fuel dependence.

Features

► Represents the first comprehensive net energy analysis of rooftop solar within a modern electricity grid ► Provides an in-depth analysis of grid integration and the use of storage ► Extends life-cycle boundaries to provide a comprehensive estimate of EROI for solar power in Australia ► Has broad implications for the potential of renewable energy sources to seamlessly substitute for fossil fuels ► Written by an experienced engineer with expertise in power systems and renewable energy

Contents

Preface.- Chapter 1: Introduction - One million solar systems.- Chapter 2: Quarry Australia – building Australia on coal.- Chapter 3: Towards optimized complexity – integrating intermittency.- Chapter 4: Electricity networks - managing peak demand.- Chapter 5: EROI of Solar PV.- Chapter 6: Driving down emissions: the role of carbon pricing.- Conclusion.- References.- Index.

Fields of interest

Renewable and Green Energy; Renewable and Green Energy; Energy Technology

Target groups

Research

Product category

Brief

Due November 2013

2014. XIII, 91 p. 26 illus., 24 in color. (SpringerBriefs in Energy / Energy Analysis) Softcover

► *€ (D) 53,49 | € (A) 54,99 | sFr 54,50

► € 49,99 | £36.99

ISBN 978-3-319-02939-9



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