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Infrastructure Sustainability and Design - Spiro N. Pollalis
2013-06-19

You're overseeing a large-scale project, but you're not an engineering or construction specialist, and so you need an overview of the related sustainability concerns and processes. To introduce you to the main issues, experts from the fields of engineering, planning, public health, environmental design, architecture, and landscape architecture review current sustainable large-scale projects, the roles team members hold, and design approaches, including alternative development and financing structures. They also discuss the challenges and opportunities of sustainability within infrastructural systems, such as those for energy, water, and waste, so that you know what's possible. And best of all, they present here for the first time the Zofnass Environmental Evaluation Methodology guidelines, which will help you and your team improve infrastructure design, engineering, and construction.

Quality Function Deployment for Buildable and Sustainable Construction - Singhaputtangkul Natee 2015-10-16

This book focuses on the implementation of Quality Function Deployment (QFD) in the construction industry as a tool to help building designers arrive at optimal decisions for external envelope systems with sustainable and buildable design goals. In particular, the book integrates special features into the conventional QFD tool to enhance its performance. These features include a fuzzy multi-criteria decision-making method, fuzzy consensus scheme, and Knowledge Management System (KMS). This integration results in a more robust decision support tool, known as the Knowledge-based Decision Support System QFD (KBDSS-QFD) tool. As an example, the KBDSS-QFD tool is used for the assessment of building envelope materials and designs for high-rise residential buildings in Singapore in the early design stage. The book provides the reader with a conceptual framework for understanding the development of the KBDSS-QFD tool. The framework is presented in a generalized form in order to benefit building professionals, decision makers, analysts, academics and researchers, who can use the findings as guiding principles to achieve optimal solutions and boost efficiency.

Sustainable Design and Build - Md. Faruque Hossain 2018-09-12

Sustainable Design and Build provides a complete reference for engineers and scientists who want to conduct sustainability research. The book begins with a rudimentary discussion of environmental pollution and energy that is followed by their applications for solving problems in construction processes and practices governing advanced building design, infrastructure and transportation, and water and sewage. Other topics include engineering invisible roads and bridges, smart building technology, building information modeling, energy modeling, resilience in urban and rural development, engineering invisible roads and bridges, zero emission vehicles and flying transportation technology. This book presents a valuable guide to sustainable design and construction processes and methods. Covers the latest research in the utilization of renewable energy and the implementation in construction and building system design Includes a detailed discussion on combined technology applications of energy, gas and water Covers advanced methods and technologies for constructing sustainable transportation systems, including roads, bridges, tunnels and hardscapes

Smart and Sustainable Planning for Cities and Regions - Adriano Bisello 2016-11-03

This book presents cutting-edge work on innovative planning methodologies, tools and experiences aimed at supporting the

transition of our cities and regions towards a more smart and sustainable dimension. This book comprises a selection of the best papers presented at the international conference "Smart and Sustainable Planning for Cities and Regions 2015", held in November 2015 in Bolzano, Italy. Contributions from different research fields within urban and regional planning from the scientific as well as the professional community are presented: energy planning for cities and regions, how to couple the energy-climate goals with the development or renovation of the built environment and how to tackle the vulnerability to climate change; smart and sustainable technologies, big data, integrated infrastructures and mobility management, from holistic geospatial tools to innovative apps and Internet of Things; benefits, costs and opportunities of urban transition toward a more smart and sustainable dimension, accounting and assessment of values and trade-offs within the decision making processes; governance for smart and sustainable growth, fostering place-based policy-making, active and effective stakeholders' participation, co-production and public-private partnerships; cooperation and demonstration projects: their role in fostering the adoption of new approaches and technologies, towards the development of win-win solutions.

Proceedings of 3rd International Sustainable Buildings Symposium (ISBS 2017) - Seyhan Firat 2018-03-28

This book describes the latest advances, innovations, and applications in the field of building design, environmental engineering and sustainability as presented by leading international researchers, engineers, architects and urban planners at the 3rd International Sustainable Buildings Symposium (ISBS), held in Dubai, UAE from 15 to 17 March 2017. It covers highly diverse topics, including smart cities, sustainable building and construction design, sustainable urban planning, infrastructure development, structural resilience under natural hazards, water and waste management, energy efficiency, climate change impacts, life cycle assessment, environmental policies, and strengthening and rehabilitation of structures. The contributions amply demonstrate that sustainable building design is key to protecting and preserving natural resources, economic growth, cultural heritage and public health. The contributions were selected by means of a rigorous peer-review process and highlight many exciting ideas that will spur novel research directions and foster multidisciplinary collaboration among different specialists.

Smart Architecture - A Sustainable Approach for Transparent Building Components Design - Valentina Frighi 2021-08-25

This book explores the specific role that glazing technologies play within the world of smart architecture as important components of contemporary and future sustainable architectural and technological research. Smart Architecture begins with a definition of the concept of "smart" in architecture and examines how innovative technologies and materials have shaped buildings over the years. The author then provides a supporting database of contemporary smart architecture—mapping adopted strategies, recognizing common patterns, and evaluating current and future trends in the context of smart building envelopes, energy efficiency, and the development of high-potential innovative building components. The book proceeds with a focus on the specific role that glazing technologies play in this framework and provides a systematic methodology to quantify options for the effective integration of transparent building components within advanced and innovative building envelope systems.

Material Balance - Ingrid Paoletti 2020-09-30

This book argues that we are living in an era of deep mutation,

and the anthropocentric model no longer fits our way of living and behaving on Earth. Climate change is upsetting our relationship with nature and the environment, while artificial intelligence scenarios undermine the foundations of human life. As the pressure to re-align based on new modes of living and consuming increases, the first priority should be to address the way we imagine, design, produce and construct our built environment. The highly original book explores how the relation between design technology and material cultures can underpin and drive this change. It discusses the need for a new "material balance" to develop our design practice, not only from an energy and environmental perspective, but also from a physiological, cultural and semantic one, in order to re-balance the impact of material design on society. This publication is an excellent guide to understanding in detail the theoretical framing of several crucial topics in material balance design, from computational knitting to material agency, and from new acoustic ecology to future façade technologies, bio-based design and ultimately non-anthropocentric habitats, offering insights into preferable future scenarios.

Smart Buildings - Marco Casini 2016-05-27

Smart Buildings: Advanced Materials and Nanotechnology to Improve Energy Efficiency and Environmental Performance presents a thorough analysis of the latest advancements in construction materials and building design that are applied to maximize building efficiency in both new and existing buildings. After a brief introduction on the issues concerning the design process in the third millennium, Part One examines the differences between Zero Energy, Green, and Smart Buildings, with particular emphasis placed on the issue of smart buildings and smart housing, mainly the 'envelope' and how to make it more adaptive with the new possibilities offered by nanotechnology and smart materials. Part Two focuses on the last generation of solutions for smart thermal insulation. Based on the results of extensive research into more innovative insulation materials, chapters discuss achievements in nanotechnology, bio-ecological, and phase-change materials. The technical characteristics, performance level, and methods of use for each are described in detail, as are the achievements in the field of green walls and their use as a solution for upgrading the energy efficiency and environmental performance of existing buildings. Finally, Part Three reviews current research on smart windows, with the assumption that transparent surfaces represent the most critical element in the energy balance of the building. Chapters provide an extensive review on the technical features of transparent closures that are currently on the market or under development, from so-called dynamic glazing to bio-adaptive and photovoltaic glazing. The aesthetic potential and performance limits are also be discussed. Presents valuable definitions that are given to explain the characteristics, requirements, and differences between 'zero energy', 'green' and 'smart' buildings Contains particular focus on the next generation of construction materials and the most advanced products currently entering the market Lists both the advantages and disadvantages to help the reader choose the most suitable solution Takes into consideration both design and materials aspects Promotes the existence of new advanced materials providing technical information to encourage further use and reduce costs compared to more traditional materials

Audubon House - National Audubon Society 1994-04-06

It saves its owners a projected \$100,000 dollars annually in operating expenses, and supports an extraordinarily practical, healthy, and handsome office environment.

Sustainable Construction Technologies - Vivian Y. Tam 2019-01-03

Sustainable Construction Technologies: Life-Cycle Assessment provides practitioners with a tool to help them select technologies that are financially advantageous even though they have a higher initial cost. Chapters provide an overview of LCA and how it can be used in conjunction with other indicators to manage construction. Topics covered include indoor environment quality, energy efficiency, transport, water reuse, materials, land use and ecology, and more. The book presents a valuable tool for construction professionals and researchers that want to apply sustainable construction techniques to their projects. Practitioners will find the international case studies and discussions of worldwide regulation and standards particularly useful. Provides a framework for analyzing sustainable construction technologies and economic

viability Introduces key credit criteria for different sustainable construction technologies Covers the most relevant construction areas Includes technologies that can be employed during the process of construction, or to the product of the construction process, i.e. buildings Analyzes international rating systems and provides supporting case studies

Sustainable Decision-Making in Civil Engineering, Construction and Building Technology - Edmundas Kazimieras Zavadskas

Sustainable decision-making in civil engineering, construction and building technology can be supported by fundamental scientific achievements and multiple-criteria decision-making (MCDM) theories.

Technology and Management for Sustainable Buildings and Infrastructures - Sunkuk Kim 2021-09-23

A total of 30 articles have been published in this special issue, and it consists of 27 research papers, 2 technical notes, and 1 review paper. A total of 104 authors from 9 countries including Korea, Spain, Taiwan, USA, Finland, China, Slovenia, the Netherlands, and Germany participated in writing and submitting very excellent papers that were finally published after the review process had been conducted according to very strict standards. Among the published papers, 13 papers directly addressed words such as sustainable, life cycle assessment (LCA) and CO₂, and 17 papers indirectly dealt with energy and CO₂ reduction effects. Among the published papers, there are 6 papers dealing with construction technology, but a majority, 24 papers deal with management techniques. The authors of the published papers used various analysis techniques to obtain the suggested solutions for each topic. Listed by key techniques, various techniques such as Analytic Hierarchy Process (AHP), the Taguchi method, machine learning including Artificial Neural Networks (ANNs), Life Cycle Assessment (LCA), regression analysis, Strength-Weakness-Opportunity-Threat (SWOT), system dynamics, simulation and modeling, Building Information Model (BIM) with schedule, and graph and data analysis after experiments and observations are identified.

Pathways to Urban Sustainability - National Research Council 2013-01-28

The workshop was convened to explore the region's approach to urban sustainability, with an emphasis on building the evidence base upon which new policies and programs might be developed. Participants examined how the interaction of various systems (natural and human systems; energy, water, and transportation systems) affected the region's social, economic, and environmental conditions. The objectives of the workshop were as follows: - Discuss ways that regional actors are approaching sustainability- specifically, how they are attempting to merge environmental, social, and economic objectives. - Share information about ongoing activities and strategic planning efforts, including lessons learned. - Examine the role that science, technology, and research can play in supporting efforts to make the region more sustainable. - Explore how federal agency efforts, particularly interagency partnerships, can complement or leverage the efforts of other key stakeholders. *Pathways to Urban Sustainability: A Focus on the Houston Metropolitan Region: Summary of a Workshop* was designed to explore the complex challenges facing sustainability efforts in the Houston metropolitan region and innovative approaches to addressing them, as well as performance measures to gauge success and opportunities to link knowledge with action. In developing the agenda, the planning committee chose topics that were timely and cut across the concerns of individual institutions, reflecting the interests of a variety of stakeholders. Panelists were encouraged to share their perspectives on a given topic; however, each panel was designed to provoke discussion that took advantage of the broad experience of the participants.

The Changing Shape of Practice - Michael U. Hensel 2016-04-14 Architectural practices worldwide have to deal with increasingly complex design requirements. How do practices acquire the ability to do so? The Changing Shape of Practice provides a handbook of examples for practices that wish to integrate more research into their work and a reference book for students that seek to prepare themselves for the changing shape of practice in architecture. It addresses the increasing integration of research undertaken in

architectural practices of different sizes ranging from small to very large practices from the UK, USA, Europe and Asia. The book is organized according to the size of the practices which is significant in that it addresses the different structures and resourcing requirements that are enabled by specific practice sizes, as this determines and constrains the type, scope and modes of research available to a given practice. The practices covered include: Woods Bagot Perkins + Will White AECOM UN Studio Shop Architects PLP Architecture Kieran Timberlake 3XN ONL AZPML Thomas Herzog + Partners Herreros Arquitectos Spacescape OCEAN Design Research Association By taking stock of the current shape of practice, the book provides essential information for professional architects who are integrating research into their practice.

Sustainable Architecture and Urbanism - Dominique Gauzin-Müller 2002-07-01

Since the mid-1980s, and in particular the 1992 environmental summit in Rio de Janeiro, sustainability has become a global issue and the subject of international debate. In the context of architecture sustainability implies the use of intelligent technology, innovative construction methods, ecologically friendly materials and use of environmentally-friendly energy resources. This book begins with an overview of the various approaches and developments in sustainable architecture, followed by an in-depth section on urbanism looking at several European towns. In the third section the technologies, materials and methods of ecological architecture are examined. Concluding the volume are 23 sophisticated and innovative European case studies. The author and architect Dominique Gauzin-Müller has specialised on energy and environmental issues and ecological architecture for over 15 years.

Encyclopedia of Renewable and Sustainable Materials - 2020-01-09

Encyclopedia of Renewable and Sustainable Materials provides a comprehensive overview, covering research and development on all aspects of renewable, recyclable and sustainable materials. The use of renewable and sustainable materials in building construction, the automotive sector, energy, textiles and others can create markets for agricultural products and additional revenue streams for farmers, as well as significantly reduce carbon dioxide (CO₂) emissions, manufacturing energy requirements, manufacturing costs and waste. This book provides researchers, students and professionals in materials science and engineering with tactics and information as they face increasingly complex challenges around the development, selection and use of construction and manufacturing materials. Covers a broad range of topics not available elsewhere in one resource Arranged thematically for ease of navigation Discusses key features on processing, use, application and the environmental benefits of renewable and sustainable materials Contains a special focus on sustainability that will lead to the reduction of carbon emissions and enhance protection of the natural environment with regard to sustainable materials

Sustainability in Energy and Buildings - Anne Hakansson 2013-03-29

This volume contains the proceedings of the Fourth International Conference on Sustainability in Energy and Buildings, SEB12, held in Stockholm, Sweden, and is organized by KTH Royal Institute of Technology, Stockholm, Sweden in partnership with KES International. The International Conference on Sustainability in Energy and Buildings focuses on a broad range of topics relating to sustainability in buildings but also encompassing energy sustainability more widely. Following the success of earlier events in the series, the 2012 conference includes the themes Sustainability, Energy, and Buildings and Information and Communication Technology, ICT. The SEB'12 proceedings include invited participation and paper submissions across a broad range of renewable energy and sustainability-related topics relevant to the main theme of Sustainability in Energy and Buildings. Applicable areas include technology for renewable energy and sustainability in the built environment, optimization and modeling techniques, information and communication technology usage, behavior and practice, including applications.

Strategies for Sustainable Architecture - Paola Sassi 2006

This guide introduces and illustrates sustainable design principles

through detailed case studies of sustainable buildings in Europe, North America and Australia. The sections of the book are divided into design issues relating to sustainable development, including site and ecology.

Sustainable Construction - Charles J. Kibert 2012-10-03

The classic reference for high-performance green building delivery systems No longer just a buzzword, sustainable construction is going mainstream and soon will be the norm. Revised to reflect the latest developments of the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system and other tools, *Sustainable Construction: Green Building Design and Delivery*, Third Edition guides construction and design professionals through the process of developing commercial and institutional high-performance green buildings in today's marketplace. Charles Kibert provides an introduction to green building, covering the theory, history, and state of the industry as well as best practices in building procurement and delivery systems. From green building and Green Globes assessments to building hydrological systems and materials and product selection, this comprehensive text covers all of the factors involved with sustainable construction. In a clear and accessible writing style, Kibert addresses issues so that the reader can think critically and independently as part of the cutting edge in green building. The Third Edition includes up-to-date coverage of: The latest developments leading up to LEED version 4 Carbon neutral design and carbon accounting Green Globes and international building assessment systems The Living Building Challenge Environmental product declarations (EPDs) as the norm for green building products The trends in net-zero energy building design and policies Broad enough to cover the needs of faculty and students and detailed enough to serve as a professional reference, *Sustainable Construction*, Third Edition is a must for the builder/owner and construction manager looking to take advantage of the opportunities in this rapidly evolving field, the designer looking to be LEED certified, or anyone interested in sustainability.

Environmental Challenges in Civil Engineering - Zbigniew Zembaty 2021-03-14

This book gathers a selection of papers presented at the 4th International Scientific Conference "Environmental Challenges in Civil Engineering", ECCE 2020, , Opole, Poland, held on April 20-22, 2020, in Opole, Poland. The chapters, written by an international group of experts, report on advanced finding in structural material behaviour, and novel construction technologies and procedures, with a focus on strategies to foster sustainable civil engineering. Offering a good balance of theory and practice, and covering both technical, as well as legal and organization aspects in civil engineering and architectural projects, this book offers extensive information on the state-of-the art and a timely snapshot of current challenges in planning construction projects and structural interventions in accordance with the principles of environmental protection

Good Design Practices for GMP Pharmaceutical Facilities - Terry Jacobs 2016-08-19

This revised publication serves as a handy and current reference for professionals engaged in planning, designing, building, validating and maintaining modern cGMP pharmaceutical manufacturing facilities in the U.S. and internationally. The new edition expands on facility planning, with a focus on the ever-growing need to modify existing legacy facilities, and on current trends in pharmaceutical manufacturing which include strategies for sustainability and LEED building ratings. All chapters have been re-examined with a fresh outlook on current good design practices.

Materials for Energy Efficiency and Thermal Comfort in Buildings - Matthew R Hall 2010-04-21

Almost half of the total energy produced in the developed world is inefficiently used to heat, cool, ventilate and control humidity in buildings, to meet the increasingly high thermal comfort levels demanded by occupants. The utilisation of advanced materials and passive technologies in buildings would substantially reduce the energy demand and improve the environmental impact and carbon footprint of building stock worldwide. *Materials for energy efficiency and thermal comfort in buildings* critically reviews the advanced building materials applicable for improving the built

environment. Part one reviews both fundamental building physics and occupant comfort in buildings, from heat and mass transport, hygrothermal behaviour, and ventilation, on to thermal comfort and health and safety requirements. Part two details the development of advanced materials and sustainable technologies for application in buildings, beginning with a review of lifecycle assessment and environmental profiling of materials. The section moves on to review thermal insulation materials, materials for heat and moisture control, and heat energy storage and passive cooling technologies. Part two concludes with coverage of modern methods of construction, roofing design and technology, and benchmarking of façades for optimised building thermal performance. Finally, Part three reviews the application of advanced materials, design and technologies in a range of existing and new building types, including domestic, commercial and high-performance buildings, and buildings in hot and tropical climates. This book is of particular use to, mechanical, electrical and HVAC engineers, architects and low-energy building practitioners worldwide, as well as to academics and researchers in the fields of building physics, civil and building engineering, and materials science. Explores improving energy efficiency and thermal comfort through material selection and sustainable technologies Documents the development of advanced materials and sustainable technologies for applications in building design and construction Examines fundamental building physics and occupant comfort in buildings featuring heat and mass transport, hygrothermal behaviour and ventilation

Sustainable Buildings and Infrastructure - Annie R. Pearce
2017-12-14

The second edition of *Sustainable Buildings and Infrastructure* continues to provide students with an introduction to the principles and practices of sustainability as they apply to the construction sector, including both buildings and infrastructure systems. As a textbook, it is aimed at students taking courses in construction management and the built environment, but it is also designed to be a useful reference for practitioners involved in implementing sustainability in their projects or firms. Case studies, best practices and highlights of cutting edge research are included throughout, making the book both a core reference and a practical guide.

Materials for Architects and Builders - Arthur Lyons
2019-08-28

Materials for Architects and Builders provides a clear and concise introduction to the broad range of materials used within the construction industry and covers the essential details of their manufacture, key physical properties, specification and uses. Understanding the basics of materials is a crucial part of undergraduate and diploma construction or architecture-related courses, and this established textbook helps the reader to do just that with the help of colour photographs and clear diagrams throughout. This new sixth edition has been completely revised and updated to include the latest developments in materials research, new images, appropriate technologies and relevant legislation. The ecological effects of building construction and lifetime use remain an important focus, and this new edition includes a wide range of energy-saving building components.

Global Sustainability in Energy, Building, Infrastructure, Transportation, and Water Technology - Md. Faruque Hossain
2021-02-04

This book focuses on holistic approaches to sustainability in all sectors of building, infrastructure, and energy to achieve a best-balanced global energy, building, infrastructure, transportation, and water technology (EBITW) system using a series of innovative research and implementation solutions. The goal of this book is to define the context for proactive consideration of scientific theories and practical technical applications of sustainable development, following main seven themes: Renewable Energy Technology, Advanced Building Design Technology, Innovative Infrastructure and Transportation Engineering, Clean Water and Sanitation, Sustainable Urban and Rural Development, Clean Environment, and Sustainable Planet; which are very much interconnected to secure the global equilibrium. The book is prepared for a wide audience including researchers, field engineers, and students.

Rethinking Building Skins - Eugenia Gasparri 2021-12-05

Rethinking Building Skins: Transformative Technologies and

Research Trajectories provides a comprehensive collection of the most relevant and forward-looking research in the field of façade design and construction today, with a focus on both product and process innovation. The book brings together the expertise, creativity, and critical thinking of more than fifty global innovators from both academia and industry, to guide the reader in translating research into practice. It identifies new opportunities for the construction sector to respond to present challenges, towards a more sustainable, efficient, connected, and safe future. Introduces the reader to the role of façades with respect to the main challenges ahead; Provides an overview of the major façade technological advancements throughout history and identifies prospective research trajectories; Includes interviews with key industry players from different backgrounds and expertise; Showcases a comprehensive range of leading research topics in the field, organised by product and process innovation; Covers major innovations across the value chain including façade design, fabrication, construction, operation and maintenance, and end-of-life; Contributes towards the definition of an international research agenda and identifies emerging market opportunities for the façade industry.

Construction 4.0 - Marco Casini 2021-12-01

At the beginning of the Fourth Industrial Revolution, the advent of digitalization, innovative technologies and materials, and new construction techniques have begun transforming the way that infrastructure, real estate, and other built assets can be designed, constructed, and operated in order to create a more attractive, energy-efficient, comfortable, affordable, safe, and sustainable built environment. Developments in materials and cutting-edge technologies (such as artificial intelligence, robotics, nanotechnology, 3D printing, and biotechnology) have finally started to move the construction towards a new era. Massive changes are occurring as a result of the possibilities created by big data and the Internet of Things, along with the technological advances that are driving down the cost of sensors, data storage, and computer services. *Construction 4.0: Advanced Technology, Tools and Materials for the Digital Transformation of the Construction Industry* presents a thorough review of developments in materials, emerging trends, cutting-edge technologies, and strategies in the fields of smart building design, construction, and operation, providing the reader with a comprehensive guideline on how to exploit the new possibilities offered by the digital revolution. It will be an essential reference resource for academic researchers, material scientists, and civil engineers, undergraduate and graduate students, and other professionals working in the fields of smart eco-efficient construction and cutting-edge technologies applied to construction. Features discussions on how nanomaterials, bio-based materials, and recycled materials are applied in the construction of buildings Analyzes the lifecycle of materials, buildings and design and construction operations Covers new methodologies and construction processes Provides case studies on cutting-edge digital technology such as AI and machine learning Examines all aspects of sustainability, including end-of-life of buildings

Advances in Urban Engineering and Management Science Volume 1 - Rashwan Khalil 2022-12-12

Advances in Urban Engineering and Management Science contains the selected papers resulting from the 2022 3rd International Conference on Urban Engineering and Management Science (ICUEMS 2022). Covering a wide range of topics, the Proceedings of ICUEMS 2022 presents the latest developments in: (i) Architecture and Urban Planning (Architectural design and its theory, Urban planning and design, Building technology science, Urban protection and regeneration, Urban development strategy, Ecological construction and intelligent control, Sustainable infrastructure); (ii) Logistics and supply chain management (Warehousing and distribution, Logistics outsourcing, Logistics automation, Production and material flow, Supply chain management technology, Supply chain risk management, Global service supply chain management, Supply Chain Planning and Inventory Management, Coordination and collaboration of supply chain networks, Governance and regulatory aspects affecting supply chain management); (iii) Urban traffic management (Smart grid management, Belt and Road Development, Intelligent traffic analysis and planning management, Big data and transportation

management). The Proceedings of ICUEMS 2022 will be useful to professionals, academics, and Ph.D. students interested in the above-mentioned fields. Emphasis was put on basic methodologies, scientific development and engineering applications. ICUEMS 2022 is to provide a platform for experts, scholars, engineers and technical researchers engaged in the related fields of urban engineering management to share scientific research achievements and cutting-edge technologies, understand academic development trends, broaden research ideas, strengthen academic research and discussion, and promote the industrialization cooperation of academic achievements. Experts, scholars, business people and other relevant personnel from universities and research institutions at home and abroad are cordially invited to attend and exchange.

Energy, People, Buildings - Judit Kimpian 2021-03-01

Energy performance feedback is an essential tool in addressing the current climate crisis. However, this is not simply another theoretical text about energy performance in buildings. This book is for anyone who wants to better understand how energy is used in buildings, and how to drive down operational energy use – whether you're an architect, student, client, building services engineer, contractor, building operator or other stakeholder. Focusing on evidence from feedback on buildings in use, it explains what it takes to get them to perform as expected, as well as the reasons why they often fail. *Energy, People, Buildings* draws extensively on the findings of studies, UK government-funded building performance evaluations and on original research into seven case studies from across the UK and abroad that have achieved exemplary energy use through building performance feedback. Providing a clear roadmap to understanding aspects that impact building users' comfort and satisfaction, it also outlines the factors behind energy use and how to track it across the life of a project to ensure that your building performs as intended. Case studies include: the Everyman Theatre, Liverpool; Rocky Mountain Institute Innovation Center, Colorado; and Carrowbreck Meadow, Norwich. Featured architects: AHMM, AHR, Architype, Hamson Barron Smith, Haworth Tompkins, Henning Larsen Architects and ZGF Architects.

Green and Smart Buildings - Nilesh Y. Jadhav 2016-10-01

This book highlights the various technologies that are currently available or are now being developed for the green and smart buildings of the future. It examines why green building performance is important, and how it can be measured and rated using appropriate benchmarking systems. Lastly, the book provides an overview of the state-of-the-art in green building technologies and the trend towards zero energy or net positive energy buildings in the future.

Green Building - Michael Bauer 2009-12-03

An important consideration for energy-efficient buildings is their primary energy requirements over the entire life cycle. How to determine this? What integrative factors influence the performance of a healthy and sustainable building? This, while it may be important for clients and architects to know, is frequently not very transparent. This book has been written to assist with clarifying target criteria and expanding horizons when it comes to ecological buildings. It is meant as a handbook and source of reference for clients, architects, planners and building operators, to provide them with pertinent information about their design, construction and operation: how to do this in the most energy-efficient and economical manner? Also, there is feedback and documentation about prominent buildings like the Hamburg Dockland or the Landesbank Baden-Wuerttemberg in Stuttgart. They provide excellent architectural examples for detailed construction and design solutions. Further, there are insightful interviews with architects and clients about many important buildings, which help turn this book into an integrated source of reference for sustainable architecture. - A Guideline for Planning, Construction and Operation of sustainable Buildings - A source of reference for clients, architects, planners and building operators - Innovative architectural examples with sustainable concepts and design

Integrating Innovation in Architecture - Ajla Aksamija 2017-03-13

Today's design professionals are faced with challenges on all fronts. They need not only to keep in step with rapid technological changes and the current revolution in design and construction

processes, but to lead the industry. This means actively seeking to innovate through design research, raising the bar in building performance and adopting advanced technologies in their practice. In a constant drive to improve design processes and services, how is it possible to implement innovations? And, moreover, to assimilate them in such a way that design, methods and technologies remain fully integrated? Focusing on innovations in architecture, this book covers new materials and design methods, advances in computational design practices, innovations in building technologies and construction techniques, and the integration of research with design. Moreover, it discusses strategies for integrating innovation into design practices, risks and economic impacts. Through numerous case studies, it illustrates how innovations have been implemented on actual architectural projects, and how design and technical innovations are used to improve building performance, as well as design practices in cutting-edge architectural and engineering firms. Projects of all scales and building types are discussed in the book, ranging from small-scale installations, academic and commercial buildings to large-scale mixed-use, healthcare, civic, academic, scientific research and sports facilities. Work from design firms around the globe and of various scales is discussed in the book, including for example Asymptote Architecture, cepezed, CO Architects, Consarc Architects, FAAB Architektura, Gerber Architekten, HOK, IDOM-ACXT, MAD Architects, Morphosis Architects, SDA | Synthesis Design + Architecture, Studiotrope, Perkins+Will, Richter Dahl Rocha & Associés, Snøhetta, Rob Ley Studio, Trahan Architects, UNStudio and Zaha Hadid Architects, among many others.

Environmental Technology Resources Handbook - Daniel W. Gottlieb 2002-09-27

This handbook guides the user to hundreds of technologies, practices, partnership opportunities, and funding resources. Presented in non-technical language, it covers hundreds of publicly available resources for pollution prevention, control, remediation, and assessment. *Environmental Technology Resources Handbook* will help you: REDUCE-time, effort, and money to search for innovative technologies LOCATE-federal dollars to support development of innovative technologies ANTICIPATE-environmental compliance problems by early adoption of technology UNDERSTAND-the process of forming partnerships to develop or market your "green" products or solutions PARTICIPATE-in verifying technologies under development. The Handbook is a highly cost-effective tool for environmental policymakers, corporate EHS personnel, engineers, consultants, governmental program managers, technology vendors, international development assistance professionals, and academics teaching environmental courses. *Environmental Technology Resources Handbook* indexes information by key words, 12 technology and environmental media areas, 15 types of resources offered, and major industry and government sectors. Contacts, including URLs, e-mail addresses, and phone and fax numbers allow you to access more detailed information.

Advanced Building Technologies for Sustainability - Asif Syed 2012-06-07

Practical solutions for sustainability In this timely guide, one of the world's leaders in advanced building technology implementation shows architects and engineers proven and practical methods for implementing these technologies in sustainably-designed buildings. Because of the very limited time architects are given from being awarded a project to concept design, this book offers clear and workable solutions for implementing solar energy, radiant heating and cooling floors, displacement ventilation, net zero, and more. It provides helpful tips and suggestions for architects and engineers to work together on implementing these technologies, along with many innovative possibilities for developing a truly integrated design. This book also explores and explains the many benefits of advanced technologies, including reduced greenhouse gas emissions, lower operating costs, noise reduction, improved indoor air quality, and more. In addition, *Advanced Building Technologies for Sustainability*: Offers detailed coverage of solar energy systems, thermal energy storage, geothermal systems, high-performance envelopes, chilled beams, under-floor air distribution, displacement induction units, and much more Provides case studies of projects using advanced

technologies and demonstrates their implementation in a variety of contexts and building types Covers the implementation of advanced technologies in office towers, large residential buildings, hospitals, schools, dormitories, theaters, colleges, and more Complete with a clear and insightful explanation of the requirements for and benefits of acquiring the U.S. Green Building Council's LEED certification, *Advanced Building Technologies for Sustainability* is an important resource for architects, engineers, developers, and contractors involved in sustainable projects using advanced technologies.

Buildings and Environment - Miloš Kalousek 2017

The volume was collected by results of Conference "Buildings and Environment" (enviBUILD 2016, 22nd - 23rd September 2016, Brno, Czech Republic). This volume presents scientific works in the field of building technologies and quality of indoor environment. Also included are works describing new advanced materials and technologies and sustainable construction. Most of the presented works focus on the built environment of the Central Europe Region but however their results are universally applicable. Building Structures, Building Materials, Energy Performance of Buildings, Revitalization of Buildings, Sustainability, Environmental Assessment, Building Environment, Acoustics, Daylighting Industrial Engineering.

Evaluation of Selected Energy Options for a Sustainable Campus in Texas - Kathryn Elaine Clingenpeel 2010

This thesis examines ways to reduce energy consumption in university buildings. Occupancy based controls and other advanced building technologies being studied at the Intelligent Workplace (IW) at Carnegie Mellon University were examined to see if they could be applied in at Texas A & M International University (TAMIU). Additionally, a sustainability assessment for the current TAMIU campus was performed with an analysis of the potential for TAMIU to obtain LEED certification from the US Green Building Council. First, occupancy-based controls that would shut off lighting, utilize power management features on computer equipment, and reduce airflow when a space is unoccupied were examined. An estimated annual savings of \$525 could be obtained in the test office at Texas A & M by implementing these controls. If same controls were applied to the proposed green building at TAMIU, approximately \$203,422 could be saved annually. Secondly, advanced building technologies used at the IW were examined to see if they are feasible in the new green building at TAMIU. Biodiesel cogeneration was found to be economically infeasible as a main power supply using the loads calculated for the building. A feasibility calculation for a radiant heating and cooling system with ventilation was performed and it was estimated that using one of these systems could have potential at TAMIU if the building envelope is designed correctly. Displacement ventilation could be implemented for research purposes in the test bed, but should not be implemented on a broader basis until more is known about the performance of these systems in hot and humid climates. Daylighting should be used in the new building whenever its implementation will not significantly increase solar loads. Thirdly, a sustainability assessment of the current TAMIU campus was performed. Several good practices and areas for improvement were identified in nine sustainability-related areas. The current TAMIU campus was examined to see what scope of work would be required to achieve LEED certification from the US Green Building Council. It was found that 39 credits, which is enough to achieve LEED certification, are either achievable as-is, achievable with a policy change, or achievable with a minor retrofit scope.

Energy Efficient Technologies for Sustainability - International Conference on Energy Efficient Technologies for Sustainability 2013-01-10

Energy is the major driving force for the economy of any nation. The challenge for continuous generation of power to meet the ever growing demand is a daunting task, especially due to limited resources. This collection of peer reviewed papers contains original research articles in different areas of energy efficient technologies such as: Alternate Energy, Building Technologies, Automotive Technologies, Modeling and Design, Manufacturing

Systems and Power Systems. We hope that the novel ideas presented in these papers will trigger more application oriented research in relation with latest technology to conserve and sustain energy.

Renewable-Energy-Driven Future - Jingzheng Ren 2020-09-16

In order to promote the sustainable development of renewable energy and renewable-energy-driven technologies, *Renewable-Energy-Driven Future: Technologies, Modelling, Applications, Sustainability and Policies* provides a comprehensive view of the advanced renewable technologies and the benefits of utilizing renewable energy sources. Discussing the ways for promoting the sustainable development of renewable energy from the perspectives of technology, modelling, application, sustainability and policy, this book includes the advanced renewable-energy-driven technologies, the models for renewable energy planning and integration, the innovative applications of renewable energy sources, decision-support tools for sustainability assessment and ranking of renewable energy systems, and the regulations and policies of renewable energy. This book can benefit the researchers and experts of renewable energy by helping them to have a holistic view of renewable energy. It can also benefit the policymakers and decision-makers by helping them to make informed decisions. Presents the advanced renewable-energy-driven technologies and the innovative applications of renewable energy sources Develops the models for the efficient use of renewable energy, decision-making and the investigation of its climate and economic benefits Investigates the sustainability of renewable energy systems Features the regulations and policies of renewable energy

Multi-Objective and Multi-Attribute Optimisation for Sustainable Development Decision Aiding - Samarjit Kar 2019-09-20

Optimization is considered as a decision-making process for getting the most out of available resources for the best attainable results. Many real-world problems are multi-objective or multi-attribute problems that naturally involve several competing objectives that need to be optimized simultaneously, while respecting some constraints or involving selection among feasible discrete alternatives. In this Reprint of the Special Issue, 19 research papers co-authored by 88 researchers from 14 different countries explore aspects of multi-objective or multi-attribute modeling and optimization in crisp or uncertain environments by suggesting multiple-attribute decision-making (MADM) and multi-objective decision-making (MODM) approaches. The papers elaborate upon the approaches of state-of-the-art case studies in selected areas of applications related to sustainable development decision aiding in engineering and management, including construction, transportation, infrastructure development, production, and organization management.

Advanced Biofuels - Kalam Abul Azad 2019-06-09

Advanced Biofuels: Applications, Technologies, and Environmental Sustainability presents recent developments and applications of biofuels in the field of internal combustion engines, with a primary focus on the recent approaches of biodiesel applications, low emission alternative fuels, and environmental sustainability. Editors Dr. Azad and Dr. Rasul, along with their team of expert contributors, combine a collection of extensive experimental investigations on engine performance and emissions and combustion phenomena using different types of oxygenated fuel with in-depth research on fuel applications, an analysis of available technologies and resources, energy efficiency improvement methods, and applications of oxygenated fuel for the sustainable environment. Academics, researchers, engineers and technologists will develop a greater understanding of the relevant concepts and solutions to the global issues related to achieving alternative energy application for future energy security, as well as environmental sustainability in medium and large-scale industries. Fills a gap in the literature on alternative fuel applications with in-depth research and experimental investigations of different approaches, technologies and applications Considers the important issue of sustainability using case studies to deepen understanding Includes energy security within various industries, including aviation and transport