

green bim successful sustainable design with building information modeling

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Discover how green Building Information Modeling (BIM) drives successful and sustainable design projects, integrating advanced digital processes to optimize resource efficiency, reduce environmental impact, and foster truly eco-friendly architecture throughout a building's lifecycle.

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Green BIM

Meet the challenge of integrating Building Information Modeling and sustainability with this in-depth guide, which pairs these two revolutionary movements to create environmentally friendly design through a streamlined process. Written by an award-winning team that has gone beyond theory to lead the implementation of Green BIM projects, this comprehensive reference features practical strategies, techniques, and real-world expertise so that you can create sustainable BIM projects, no matter what their scale.

Building Information Modeling

This is a design guide for architects, engineers, and contractors concerning the principles and specific applications of building information modeling (BIM). BIM has the potential to revolutionize the building industry, and yet not all architects and construction professionals fully understand what the benefits of BIM are or even the fundamental concepts behind it. As part of the PocketArchitecture Series it includes two parts: fundamentals and applications, which provide a comprehensive overview of all the necessary and essential issues. It also includes case studies from a range of project sizes that illustrate the key concepts clearly and use a wide range of visual aids. Building Information Modeling addresses the key role that BIM is playing in shaping the software tools and office processes in the architecture, engineering, and construction professions. Primarily aimed at professionals, it is also useful for faculty who wish to incorporate this information into their courses on digital design, BIM, and professional practice. As a compact summary of key ideas it is ideal for anyone implementing BIM.

BIM in Small-Scale Sustainable Design

"Any architect doing small or medium scaled projects who is also vested in sustainable design but is not yet doing BIM will enjoy this book's overall focus." -Architosh.com This work is the leading guide to architectural design within a building information modeling (BIM) workflow, giving the practitioner a clear procedure when designing climate-load dominated buildings. The book incorporates new information related to BIM, integrated practice, and sustainable design, as well as information on how designers can

incorporate the latest technological tools. Each chapter addresses specific topics, such as natural ventilation for cooling, passive solar heating, rainwater harvesting and building hydrology, optimizing material use and reducing construction waste, and collaborating with consultants or other building professionals such as engineers and energy modelers.

BIM and Integrated Design

"Ready or not, it's high time to make BIM a part of your practice, or at least your vocabulary, and this book has as much to offer beginners as it does seasoned users of building information modeling software." —Chicago Architect The first book devoted to the subject of how BIM affects individuals and organizations working within the ever-changing construction industry, *BIM and Integrated Design* discusses the implementation of building information modeling software as a cultural process with a focus on the technology's impact and transformative effect—both potentially disruptive and liberating—on the social, psychological, and practical aspects of the workplace. *BIM and Integrated Design* answers the questions that BIM poses to the firm that adopts it. Through thorough research and a series of case study interviews with industry leaders—and leaders in the making out from behind the monitor—*BIM and Integrated Design* helps you learn: Effective learning strategies for fully understanding BIM software and its use Key points about integrated design to help you promote the process to owners and your team How BIM changes not only the technology, process, and delivery but also the leadership playing field How to become a more effective leader no matter where you find yourself in the organization or on the project team How the introduction of BIM into the workforce has significant education, recruitment, and training implications Covering all of the human issues brought about or exacerbated by the advent of BIM into the architecture workplace, profession, and industry, *BIM and Integrated Design* shows how to overcome real and perceived barriers to its use.

Building Information Modeling

Discover BIM: A better way to build better buildings Building Information Modeling (BIM) offers a novel approach to design, construction, and facility management in which a digital representation of the building product and process is used to facilitate the exchange and interoperability of information in digital format. BIM is beginning to change the way buildings look, the way they function, and the ways in which they are designed and built. The *BIM Handbook*, Third Edition provides an in-depth understanding of BIM technologies, the business and organizational issues associated with its implementation, and the profound advantages that effective use of BIM can provide to all members of a project team. Updates to this edition include: Information on the ways in which professionals should use BIM to gain maximum value New topics such as collaborative working, national and major construction clients, BIM standards and guides A discussion on how various professional roles have expanded through the widespread use and the new avenues of BIM practices and services A wealth of new case studies that clearly illustrate exactly how BIM is applied in a wide variety of conditions Painting a colorful and thorough picture of the state of the art in building information modeling, the *BIM Handbook*, Third Edition guides readers to successful implementations, helping them to avoid needless frustration and costs and take full advantage of this paradigm-shifting approach to construct better buildings that consume fewer materials and require less time, labor, and capital resources.

BIM Handbook

This book addresses key issues across the field of sustainable urban planning, and provides a unique reference tool for planners, engineers, architects, public administrators, and other experts. The evolution of cities and communities is giving rise to pressing energy and environmental problems that demand concrete solutions. In this context, urban planning is inevitably a complex activity that requires a sound analytical interpretation of ongoing developments, multidisciplinary analysis of the available tools and technologies, appropriate political management, and the ability to monitor progress objectively in order to verify the effectiveness of the policies implemented. This book is exceptional in both the breadth of its coverage and its focus on the interactions between different elements. Individual sections focus on strategies and tools for green planning, energy efficiency and sustainability in city planning, sustainable mobility, rating systems, and the smart city approach to improving urban-scale sustainability. The authors draw on their extensive practical experience to provide operational content supplementing the theoretical and methodological elements covered in the text, and each section features informative case studies.

Green Planning for Cities and Communities

This open access book provides insight into the implementation of Life Cycle approaches along the entire business value chain, supporting environmental, social and economic sustainability related to the development of industrial technologies, products, services and policies; and the development and management of smart agricultural systems, smart mobility systems, urban infrastructures and energy for the built environment. The book is based on papers presented at the 8th International Life Cycle Management Conference that took place from September 3-6, 2017 in Luxembourg, and which was organized by the Luxembourg Institute of Science and Technology (LIST) and the University of Luxembourg in the framework of the LCM Conference Series.

Designing Sustainable Technologies, Products and Policies

"McGraw-Hill Construction conducted the 2010 Green BIM Study to assess the level and scope of use of BIM tools to help achieve sustainability and/or building performance objectives on projects as well as the expected level and scope of use in the future."--Page 52.

Green BIM

Building Information Modeling (BIM) is the process of generating and managing building data during a building's lifecycle. Today, more and more architectural firms have adopted BIM software and processes because it allows them to produce measurably more work of better quality, in shorter periods of time. Featuring case studies of firms of all sizes, this practical resource shows professionals how to implement BIM in the building industry around the globe. The book explains how BIM allows the data collected to plan, design and build projects to continue to be used and added to during the occupied life of the building. Readers also become knowledgeable about the changing role of architects within the building industry as they embed BIM in their workflow. From interoperability and open standards, knowledge sharing, and gathering data, to the BIM software suite, implementation planning, and project workflow, this authoritative volume provides a thorough understanding of key aspects of BIM that practitioners need to understand.

Implementing Successful Building Information Modeling

Content of this proceedings discusses emerging trends in structural reliability, safety and disaster management, covering topics like total quality management, risk maintenance and design for reliability. Some papers also address chemical process reliability, reliability analysis and engineering applications in chemical process equipment systems and includes a chapter on reliability evaluation models of chemical systems. Accepted papers from 2019 International Conference on Reliability, Risk Maintenance and Engineering Management (ICRRM 2019) are part of this conference proceeding. It offers useful insights to road safety engineers, disaster management professionals involved in product design and probabilistic methods in manufacturing systems.

ICSDEC 2012

Automation, a mixture of algorithms, robots, software, and avatars, is transforming all types of jobs and industries. This book responds to one critical question for the design and construction industry: "how are architects, engineers, and contractors using information technology to further automate their practices?" Addressing the use of new digital technologies, particularly parametric automation for design and construction in the building industry, this book looks at how technologically advanced architectural and engineering practices are semi-automating their design processes by using sophisticated algorithms to transform their workflows. The book also documents a set of firms that are further advancing automation by using pre-fabrication, modularization, and custom designs via robotics.

ICRRM 2019 – System Reliability, Quality Control, Safety, Maintenance and Management

Sustainable Buildings and Structures: Building a Sustainable Tomorrow collects the contributions presented at the 2nd International Conference on Sustainable Buildings and Structures (Suzhou, China, 25-27 October 2019). The papers aim at sharing the state-of-the-art on sustainable approaches to engineering design and construction, and cover a wide range of topics: Sustainable Construction Materials Sustainable Design in Built Environment Green and Low Carbon Buildings Smart Construction and Construction Management Sustainable Buildings and Structures: Building a Sustainable Tomorrow will be of interest to academics, professionals, industry representatives and local government

officials involved in civil engineering, architecture, urban planning, structural engineering, construction management and other related fields.

Post-Parametric Automation in Design and Construction

Focusing on office buildings, this book explores how Green Building (GB) development can be managed to achieve successful project outcomes. The book starts by highlighting the special requirements of GBs which distinguish them from traditional buildings. The book then presents a detailed discussion of the success conditions for GB projects. Highlighting 73 success conditions which have been categorised within 20 broad themes, the book reports on the findings from interviews with GB stakeholders from Australia, Hong Kong, Pakistan, Singapore, the United Arab Emirates, and the United Kingdom. The book demonstrates how the complexity, design methodology, and team collaboration prevalent in the delivery of successful GB set them apart from traditional building projects. The book also demonstrates that success in GB delivery is generally associated with socio-technical conditions. The research reported in this book will allow project decision-makers such as clients and project team members to consider the wide range of identified success conditions to optimise project performance across its development stages and achieve successful project outcomes. Theoretically, the findings can inform future research focused on GB development, resulting in the more efficient development of GB projects that can reduce the effects of climate change and resource depletion.

Sustainable Buildings and Structures: Building a Sustainable Tomorrow

Building Product Models thoroughly presents the concepts, technology, and methods now used to work out what will become the building product model - a new, digital representation for architecture, civil engineering, and building construction. Organized into three sections (history, current tools and concepts, and existing efforts and research issues), this resource provides the field of building product modeling with a standard reference as well as a single, comprehensive text for university courses. Until now, all the efforts in building modeling have been reported in research journals and conference proceedings or been made available as draft standards on the Internet. Building Product Models is the only book available on this vital field, bringing together essential aspects of major efforts from the early 1970s to the present.

Successful Development of Green Building Projects

Handbook of Green Building Design and Construction: LEED, BREEAM, and Green Globes, Second Edition directly addresses the needs of building professionals interested in the evolving principles, strategies, and concepts of green/sustainable design. Written in an easy to understand style, the book is updated to reflect new standards to LEED. In addition, readers will find sections that cover the new standards to BREEAM that involve new construction Infrastructure, data centers, warehouses, and existing buildings. Provides vital information and penetrating insights into three of the top Green Building Codes and Standards applied Internationally Includes the latest updates for complying with LEED v4 Practices and BREEAM Presents case studies that draws on over 35 years of personal experience from across the world

Building Product Models

The integration of sustainability requires a paradigm shift in the lifecycle of buildings. By using the BIM method, aspects of sustainable construction can be increasingly integrated into processes and workflows. Information is captured consistently and in a structured way across the lifecycle and made available to all stakeholders. This Essential presents the current status quo of possible applications of the BIM method in sustainable construction. The aim is to promote a fusion of BIM and sustainability by highlighting essential requirements for BIM processes and models, workflows and their added value.

Handbook of Green Building Design and Construction

The book is addressed to architects and civil engineers. Design and research are areas connecting their activities. The contents of the book confirm the fact that the interface between architecture and engineering is multidimensional. The ways of finding points of contact between the two industries are highlighted. This is favored by the dynamically changing reality, supported by new design paradigms and new research techniques. The multithreaded subject matter of the articles is reduced to six sections: Research Scopes, Methods, Design Aspects, Context, Nature of Research, and Economy

and Cost Calculation. Each of the articles in these six blocks has its weight. And so, in the Nature of Research section, the following areas have been underscored: laboratory tests, in situ research, field investigations, and street perception experiments. The section Design Aspects includes design-oriented thinking, geometrical forms, location of buildings, cost prediction, attractor and distractor elements, and shaping spatial structures. The new design and research tools are an inspiration and a keystone bonding architects and engineers.

Application of the BIM Method in Sustainable Construction

This book comprises select peer-reviewed papers presented at the International Conference on Sustainable Development through Engineering Innovations (SDEI) 2020. It presents recent advances, new directions, and opportunities for sustainable and resilient approaches to design and protect the built-environment through engineering innovations & interventions. The topics covered are highly diverse and include all civil engineering and construction-related aspects such as construction and environmental Issues, durability and survivability under extreme conditions, design of new materials for sustainability, eco-efficient and ultra-high performance cementitious materials, embedded structural and foundation systems and environmental geomechanics. The book will be of potential interest to the researchers and students in the fields of civil engineering, architecture and sustainable development.

Architecture and Engineering

This authoritative new resource provides a comprehensive review of the current approaches to the design and construction of sustainable buildings. This hand-on guide features global case studies with practical examples of both successful and unsuccessful designs. The whole system approach to integrated design is clearly presented. This book includes insight into designing for the future, including design quality and future proofing, intelligent buildings, and whole life value. Nature inspired sustainable designs that can be mimicked in the construction industry are presented. Technical challenges such as energy efficiency, design, and computer modeling are explored along with various construction phase opportunities.

Sustainable Development Through Engineering Innovations

The integration of nature in architecture is a key concern of sustainability. However, all too often sustainable design is reduced to improving the energetic performance of buildings and the ornamental application of natural green. Dense + Green explores new architectural typologies that emerge from the integration of green components such as sky terraces, vertical parks and green facades, in high-density buildings. The book describes green strategies in a comparison across different design tasks and climate conditions. In-depth case studies on the most relevant building types, consistently presented with analytical drawings made exclusively for this book, are complemented by expert essays that demonstrate the current paradigm shift in the sustainable urban environment. From the Contents:

- Dense + Green Building Types, by Thomas Schröpfer, architect, Singapore University of Technology and Design
- Dense + Green Building Technology, by Atelier Ten, environmental design consultants and building services engineers, New York, NY
- Dense + Green Landscape Design, by Herbert Dreiseitl, landscape architect, Atelier Dreiseitl/Rambøll Liveable Cities Lab, Überlingen/Singapore/Portland, OR
- Dense + Green Botanical Design, by Jean Yong, plant eco-physiologist, Singapore University of Technology and Design
- Dense + Green Urbanism, by Kees Christiaanse, urban planner, ETH Zurich
- 25 in-depth case studies from Europe, Asia and the USA
- Practice Reports by Foster + Partners, WOHA, Ken Yeang, MVRDV and others

A Whole-System Approach to High Performance Green Buildings

This book explores the latest advances in the field of building management. Several chapters use new technologies such as the BIM methodology for collecting life cycle information and managing the maintenance of existing buildings, sharing valid historical and architectural heritage data, energy analysis of building envelopes, and planning new buildings or sustainable building practices. In addition, other tools are presented that focus on improving access to BIM information, open-source governance, mobile applications to accelerate information transfer, the use of blockchain, lean design methods, and open-source software to solve critical path problems. Some contributions feature the assessment of occupational risks in construction, as it is necessary to plan preventive measures based on risk assessments integrated throughout the construction process, which is another important element for the management of this sector.

Dense + Green

Everything you need to make the most of building information modeling If you're looking to get involved in the world of BIM, but don't quite know where to start, *Building Information Modeling For Dummies* is your one-stop guide to collaborative building using one coherent system of computer models rather than as separate sets of drawings. Inside, you'll find an easy-to-follow introduction to BIM and hands-on guidance for understanding drivers for change, the benefits of BIM, requirements you need to get started, and where BIM is headed. The future of BIM is bright—it provides the industry with an increased understanding of predictability, improved efficiency, integration and coordination, less waste, and better value and quality. Additionally, the use of BIM goes beyond the planning and design phase of the project, extending throughout the building life cycle and supporting processes, including cost management, construction management, project management, and facility operation. Now heavily adopted in the U.S., Hong Kong, India, Singapore, France, Canada, and countless other countries, BIM is set to become a mandatory practice in building work in the UK, and this friendly guide gives you everything you need to make sense of it—fast. Demonstrates how BIM saves time and waste on site Shows you how the information generated from BIM leads to fewer errors on site Explains how BIM is based on data sets that describe objects virtually, mimicking the way they'll be handled physically in the real world Helps you grasp how the integration of BIM allows every stage of the life cycle to work together without data or process conflict Written by a team of well-known experts, this friendly, hands-on guide gets you up and running with BIM fast.

New Advances in Building Information Modeling and Engineering Management

Sustainable design is a collective process whereby the built environment achieves unprecedented levels of ecological balance through new and retrofit construction, with the goal of long-term viability and humanization of architecture. Focusing on the environmental context, sustainable design merges the natural, minimum resource conditioning solutions of the past (daylight, solar heat, and natural ventilation) with the innovative technologies of the present. The desired result is an integrated “intelligent” system that supports individual control with expert negotiation for resource consciousness. International experts in the field address the fundamental questions of sustainable design and landscape management: How should the sustainability of landscapes and buildings be evaluated? Which targets have to be set and which thresholds should not be exceeded? What forms of planning and governance structures exist and to what extent do they further the goals of sustainability? Gathering 30 peer-reviewed entries from the *Encyclopedia of Sustainability Science and Technology*, *Sustainable Built Environments* provides comprehensive, multidisciplinary coverage of these issues and other aspects of sustainable building and landscape design.

Building Information Modeling For Dummies

This third edition of *Green Buildings Pay* presents new evidence and new arguments concerning the institutional and business case that can be made for green design. The green argument has moved a long way forward since the previous edition, and this fully updated book addresses the key issues faced by architect, engineer and client today. *Green Buildings Pay: Design, Productivity and Ecology* examines, through a range of detailed case studies, how different approaches to green design can produce more sustainable patterns of development. These cases are examined from three main perspectives: that of the architect, the client and the user. Completely revised with all new chapters, cases, sections and introductory material the third edition presents: over 20 new researched

case studies drawn from the UK, Europe and the USA, written in collaboration with the architects, engineers, clients and user groups examples of office and educational buildings of high sustainable and high architectural quality an exploration of the architectural innovations that have been driven by environmental thinking, such as the new approaches to the design of building facades, roofs, and atria cases which demonstrate current practice in the area of energy/eco-retrofits of existing buildings documentation of the benefit impact assessment schemes such as LEED and BREEAM have had upon client expectations and on design approaches over the past decade beautiful full color illustrations throughout. In the fast evolving arena of green building, the book shows how architects are reshaping their practices to deal with ever more demanding energy standards and better informed users and corporate clients.

Sustainable Built Environments

A career guide for professionals in sustainable architecture, design, planning, development, and related consulting For those considering a new career or a career change focused on green and sustainable building and design, *Becoming a Green Building Professional* offers practical information on educational requirements, career options, guidance and tips, and first-hand interviews with green building professionals. Perfect for underemployed architects and other building and design professionals who want to reinvent and renew their careers, as well as students considering such a career, this is a vital and informative guide to a growing field.

5 Must-Know A/E Lessons in Green Building

This book is a printed edition of the Special Issue "Sustainability in Construction Engineering" that was published in *Sustainability*

Green Buildings Pay

Paves the path for the adoption and effective implementation of BIM by design firms, emphasizing the design opportunities that this workflow affords This book expands on BIM (Building Information Modeling), showing its applicability to a range of design-oriented projects. It emphasizes the full impact that a data modeling tool has on design processes, systems, and the high level of collaboration required across the design team. It also explains the quantitative analysis opportunities that BIM affords for sustainable design and for balancing competing design agendas, while highlighting the benefits BIM offers to designing in 3D for construction. The book concludes with a deep look at the possible future of BIM and digitally-enhanced design. Through clear explanation of the processes involved and compelling case studies of design-oriented projects presented with full-color illustrations, *BIM for Design Firms: Data Rich Architecture at Small and Medium Scales* proves that the power of BIM is far more than an improved documentation and sharing environment. It offers chapters that discuss a broad range of digital design, including problems with BIM, how readers can leverage BIM workflows for complex projects, the way BIM is taught, and more. Helps architects in small and medium design studios realize the cost and efficiency benefits of using BIM Demonstrates how the use of BIM is as relevant and beneficial for a range of projects, from small buildings to large and complex commercial developments Highlights the quantitative analysis opportunities of data-rich BIM models across design disciplines for climate responsiveness, design exploration, visualization, documentation, and error detection Includes full-color case studies of small to medium projects, so that examples are applicable to a range of practice types Features projects by Arca Architects, ARX Portugal Arquitectos, Bearth & Deplazes, Durbach Block Jagers, Flansburgh Architects, and LEVER Architecture *BIM for Design Firms* is an excellent book for architects in small and medium-sized studios (including design departments within large firms) as well as for architecture students.

Becoming a Green Building Professional

Computing the Environment presents practical workflows and guidance for designers to get feedback on their design using digital design tools on environmental performance. Starting with an extensive state-of-the-art survey of what top international offices are currently using in their design projects, this book presents detailed descriptions of the tools, algorithms, and workflows used and discusses the theories that underlie these methods. Project examples from Transsolar Klimaengineering, Buro Happold's SMART Group, Behnisch Behnisch Architects, Thomas Herzog, Autodesk Research are contextualized with quotes and references to key thinkers in this field such as Eric Winsberg, Andrew Marsh, Michelle Addington and Ali Malkawi.

Sustainability in Construction Engineering

"Due to the increase in construction activities worldwide and in Australia, the generation rate of construction and demolition (C&D) waste has significantly grown in recent years. In Australia, construction projects (i.e. housing, buildings and transport infrastructure) are being delivered at an unprecedented rate. Between 2009 and 2019, the annual average growth rate in this industry was 3.33%. The industry is identified as the fourth largest contributor to Australia's growth domestic product (GDP). Unsurprisingly, this quantity of construction brings about a considerable quantity of waste. In 2019, the construction industry generated 27 million tons (or megatonnes) of waste from construction and demolition activities in Australia. Given the size of the construction market and waste generated in this industry, any change will create huge impacts. The adequate management of such a quantity has now become a priority for policymakers around the world. A holistic national approach is required to handle the growing issue of C&D waste management in Australia. Therefore, this book identifies discrepancies and inconsistencies related to C&D waste management in different Australian jurisdictions. The included chapters discuss regulations governing the C&D waste stream, discrepancies in defining waste, Australia's place in the worldwide C&D waste market, opportunities for reducing C&D waste, and the perception among C&D waste stakeholders on relevant issues and proposed reforms, among other topics. Overall, the book contributes to the Australian understanding of effective management of C&D waste by providing a clear picture of C&D waste state of play. The book can benefit policymakers and whoever is interested in C&D waste to better plan for innovative and efficient C&D waste resulting in the further diversion of C&D waste from landfills"--

BIM for Design Firms

The practical reference guide on the integration of sustainable, high performance design covers major sustainability issues on an introductory level. Newly updated, this edition emphasizes the project process, cost implications, case studies, and lessons learned from HOK's wide range of project experiences. You'll find: Coverage of issues and design strategies related to site planning and design, energy and water conservation, materials selection and specification, and interior environmental quality. Concise checklists of issues to consider at each stage of the design process, accompanied by detailed how-to guidance. New chapters on post occupancy evaluations and greening your practice. A detailed glossary of terms. Order your copy today!

Computing the Environment

This book charts the path toward high performance sustainable buildings and the smart dwellings of the future. The volume clearly explains the principles and practices of high performance design, the uses of building information modelling (BIM), and the materials and methods of smart construction. Power Systems, Architecture, Material Science, Civil Engineering and Information Systems are all given consideration, as interdisciplinary endeavours are at the heart of this green building revolution.

Construction and Demolition Waste Management in Australia

In this fourth edition, Bryan Lawson continues his discussion, trying to understand how designers think. He does this by mapping out the issues concerned with the design process, with design problems and solutions and design thinking. This edition adds to the previous debates by including a new chapter on 'Design as Conversation' reflecting on how designers, either consciously or unconsciously, monitor, reflect on, control and change their thinking. It also includes a new series of case studies on notable designers including the racing car designer Gordon Murray, product designer James Dyson, and architects such as Edward Cullinan and Glenn Murcott. * A unique look at the psychology of

the designer that provides a greater insight to the process of design * 'Demystifies' the complexity of the subject and uncovers new ways that design can be done * Conclusions are drawn from years of research and provide the very latest debate on the subject

The HOK Guidebook to Sustainable Design

Scientific Principles to Guide Sustainable Design Decisions From thermodynamics to fluid dynamics to computational chemistry, this book sets forth the scientific principles underlying the need for sustainable design, explaining not just the "hows" of sustainable design and green engineering, but also the "whys." Moreover, it provides readers with the scientific principles needed to guide their own sustainable design decisions. Throughout the book, the authors draw from their experience in architecture, civil engineering, environmental engineering, planning, and public policy in order to build an understanding of the interdisciplinary nature of sustainable design. Written to enable readers to take a more scientific approach to sustainable design, the book offers many practical features, including: Case studies presenting the authors' firsthand accounts of actual green projects Lessons learned from Duke University's Smart House Program that demonstrate the concepts and techniques discussed in the book Exercises that encourage readers to use their newfound knowledge to solve green design problems Figures, tables, and sidebars illustrating key concepts and summarizing important points For architects, designers, and engineers, this book enables them to not only implement green design methods, but also to choose these methods based on science. With its many examples, case studies, and exercises, the book is also an ideal textbook for students in civil and environmental engineering, construction, and architectural engineering.

Building simply two

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Building Information Modelling, Building Performance, Design and Smart Construction

The Fully Updated, Indispensable Study of Sustainable Design Principles Fundamentals of Integrated Design for Sustainable Building is the first textbook to merge principles, theory, and practice into an integrated workflow. This book introduces the technologies and processes of sustainable design and shows how to incorporate sustainable concepts at every design stage. This comprehensive primer takes an active learning approach that keeps students engaged. This book dispenses essential information from practicing industry specialists to provide a comprehensive introduction to the future of design. This new second edition includes: Expansive knowledge—from history and philosophy to technology and practice Fully updated international codes, like the CAL code, and current legislations Up-to-date global practices, such as the tools used for Life-Cycle Assessment Thorough coverage of critical issues such as climate change, resiliency, health, and net zero energy building Extensive design problems, research exercise, study questions, team projects, and discussion questions that get students truly involved with the material Sustainable design is a responsible, forward-thinking method for building the best structure possible in the most efficient way. Conventional resources are depleting and building professionals are thinking farther ahead. This means that sustainable design will eventually be the new standard and everyone in the field must be familiar with the concepts to stay relevant.

Fundamentals of Integrated Design for Sustainable Building is the ideal primer, with complete coverage of the most up to date information.

How Designers Think

The optimal approach to design, build, operate, and maintain buildings With this strategic guide to building information modeling (BIM), you'll learn how to implement this new technology as part of a comprehensive systems approach to the design, construction, management, operation, maintenance, and use of buildings. The authors, among the leading experts and pioneers in BIM, show you how BIM supports more streamlined, integrated, and efficient business processes throughout the life cycle of buildings, from their initial conception through their eventual retirement or reuse. The result is better quality buildings, lower construction and operating costs, shorter project turnaround times, and a higher quality of building information to support better business decisions. Moreover, they set forth a plan for incorporating BIM into every organization's existing workflows, enabling you to take full advantage of all the benefits that BIM offers. Everything you need to implement a BIM approach is set forth in detail, including: The business case for BIM, demonstrating how it can improve collaboration, facilitate better design and construction, optimize workflow, and help reduce risk Guidance for meeting the challenges of BIM such as an entrenched business culture, the proliferation of BIM tools, and the uneven rates of BIM adoption The "big picture" view showing how your organization can work with business partners and fit into the building life cycle in a BIM-enabled industry Throughout the book, sample documents and figures help you better understand the principles of BIM and how it works in practice. In addition, first-hand accounts show you exactly how adopters of BIM have gained a competitive edge. Architects, engineers, constructors, building owners, and facility managers can turn to this book to realize the full potential of BIM and radically improve the way buildings are designed, built, operated, and maintained.

Sustainable Design

BIM Handbook