Bim Building Performance Analysis Using Revit 2014 And

Originating from the 2019 International Conference on Building Information Modelling this book presents latest findings in the field. This volume presents research from a panel of experts from industry, practice and academia touching on key topics, the development of innovative solutions, and the identification future trends.

Building Performance AnalysisJohn Wiley & Sons

The selected papers in this book deal with Building Information Modelling (BIM) in Design, Construction and Operations. Application of BIM throughout the construction industry is progressing at an accelerated rate, with the development of new software tools. BIM has the potential to alter the way in which different specialities interact before, during and after the construction project. BIM carries the data set for a particular asset through its full life cycle which has important consequences for operations and maintenance as well as for infrastructure planning. BIM emergence has been the result of advanced surveying techniques, powerful computer systems, better visualisation tools and new communication infrastructures. The papers included in this book demonstrate the interdisciplinary character of BIM, bringing together contributions from experts in industry, practice and academia.

Encyclopedia of Sustainable Technologies provides an authoritative assessment of the sustainable technologies that are currently available or in development. Sustainable technology includes the scientific understanding, development and application of a wide range of technologies and processes and their environmental implications. Systems and lifecycle analyses of energy systems, environmental management, agriculture, manufacturing and digital technologies provide a comprehensive method for understanding the full sustainability of processes. In addition, the development of clean processes through green chemistry and engineering techniques are also described. The book is the first multi-volume reference work to employ both Life Cycle Analysis (LCA) and Triple Bottom Line (TBL) approaches to assessing the wide range of technologies available and their impact upon the world. Both approaches are long established and widely recognized, playing a key role in the organizing principles of this valuable work. Provides readers with a one-stop guide to the most current research in the field Presents a grounding of the fundamentals of the field of sustainable technologies Written by international leaders in the field, offering comprehensive coverage of the field and a consistent, high-quality

scientific standard Includes the Life Cycle Analysis and Triple Bottom Line approaches to help users understand and assess sustainable technologies

Lean Project Delivery and Integrated Practices in Modern Construction

Revit - Analysis

Architecture, Building Materials and Engineering Management

Structures and Architecture. A Viable Urban Perspective?

Proceedings of the 25th International Symposium on Advancement of Construction Management and Real Estate

Mastering Autodesk Revit 2020

Structures and Architecture. A Viable Urban Perspective? contains extended abstracts of the research papers and prototype submissions presented at the Fifth International Conference on Structures and Architecture (ICSA2022, Aalborg, Denmark, 6-8 July 2022). The book (578 pages) also includes a USB with the full texts of the papers (1448 pages). The contributions on creative and scientific aspects in the conception and construction of structures as architecture, and on the role of advanced digital-, industrial- and craft -based technologies in this matter represent a critical blend of scientific, technical, and practical novelties in both fields. Hence, as part of the proceedings series Structures and Architecture, the volume adds to a continuous exploration and development of the synergetic potentials of the fields of Structures and Architecture. With each volume further challenging the conditions, problems, and potentials related to the art, practice, and theory of teaching, researching, designing, and building structures as vehicles towards a viable architecture of the urban environment. The volumes of the series appear once every three years, in tandem with the conferences organized by the International Association of Structures and Architecture and are intended for a global readership of researchers, practitioners, and students, including architects, structural and construction engineers, builders and building consultants, constructors, material suppliers, planners, urban designers, anthropologists, economists, sociologists, artists, product manufacturers, and other professionals involved in the design and realization of architectural, structural, and infrastructural projects.

This proceedings volume chronicles the papers presented at the 35th CIB W78 2018 Conference: IT in Design, Construction, and Management, held in Chicago, IL, USA, in October 2018. The theme of the conference focused on fostering, encouraging, and promoting research and development in the application of integrated information technology (IT) throughout the life-cycle of the design, construction, and occupancy of buildings and related facilities. The CIB - International Council for Research and Innovation in Building Construction - was established in 1953 as an association whose objectives were to stimulate and facilitate international cooperation and information exchange between governmental research institutes in the building and construction sector, with an emphasis on those institutes engaged in technical fields of research. The conference brought together more than 200 scholars from 40 countries, who presented the innovative concepts and methods featured in this collection of papers.

This book is the essential guide to the pedagogical and industry-inspired considerations that must shape how BIM is taught and learned. It will help academics and professional educators to develop programmes that meet the competences required by professional bodies and prepare both graduates and existing practitioners to advance the industry towards higher efficiency and quality. To date, systematic efforts to integrate pedagogical considerations into the way BIM is learned and taught remain non-existent. This book lays the foundation for forming a benchmark around which such an effort is made. It offers principles, best practices, and expected outcomes necessary to BIM curriculum and teaching development for construction-related programs across universities and professional training programmes. The aim of the book is to: Highlight BIM skill requirements, threshold concepts, and dimensions for practice; Showcase and introduce tried-and-tested practices and lessons learned in developing BIM-related curricula from leading educators; Recognise and introduce the baseline requirements for BIM education from a pedagogical perspective; Explore the challenges, as well as remedial solutions, pertaining to BIM education at tertiary education; Form a comprehensive point of reference, covering the essential concepts of BIM, for students; Promote and integrate pedagogical consideration into BIM education. This book is essential reading for anyone

involved in BIM education, digital construction, architecture, and engineering, and for professionals looking for guidance on what the industry expects when it comes to BIM competency.

The best-selling Revit guide, now more complete than ever with all-new coverage on the 2020 release Mastering Autodesk Revit 2020 is packed with focused discussions, detailed exercises, and real-world examples to help you get up to speed quickly on the latest version of Autodesk Revit. Organized according to how you learn and implement the software, this book provides expert guidance for all skill levels. Hands-on tutorials allow you to dive right in and start accomplishing vital tasks, while compelling examples illustrate how Revit for Architecture is used in every project. Available online downloads include before-and-after tutorial files and additional advanced content to help you quickly master this powerful software. From basic interface topics to advanced visualization techniques and documentation, this invaluable guide is your ideal companion through the Revit workflow. Whether you're preparing for Autodesk certification exams or just want to become more productive with the architectural design software, practical exercises and expert instruction will get you where you need to be. Understand key BIM and Revit concepts and master the Revit interface Delve into templates, work-sharing, and managing Revit projects Master modeling and massing, the Family Editor, and visualization techniques Explore documentation, including annotation, detailing, and complex structures BIM software has become a mandatory asset in today's architecture field; automated documentation updates reduce errors while saving time and money, and Autodesk's Revit is the industry leader in the BIM software space.

Construction 4.0

Case Study Strategies for Architects and Designers

Integrating Innovation in Architecture

Building Information Modelling, Building Performance, Design and Smart Construction

ITCSD 2020

BIM Teaching and Learning Handbook

Collection of selected, peer reviewed papers from the 2013 International Conference on Civil, Architecture and

Building Materials, (3rd CEABM2013), May 24-26, 2013, Jinan, China. The 580 papers are grouped as follows: Chapter 1: Architectural Design and its Theory; Chapter 2: Architectural Environment & Equipment Engineering; Chapter 3: Ecological Architecture; Chapter 4: Traditional Construction Materials; Chapter 5: Advanced Construction Materials; Chapter 6: Control of Quality Engineering; Chapter 7: Urban Planning and Design; Chapter 8: Landscape Planning and Design; Chapter 9: Project Management in Building; Chapter 10: Engineering Management and Engineering Education.

This volume contains the papers presented at IALCCE2018, the Sixth International Symposium on Life-Cycle Civil Engineering (IALCCE2018), held in Ghent, Belgium, October 28-31, 2018. It consists of a book of extended abstracts and a USB device with full papers including the Fazlur R. Khan lecture, 8 keynote lectures, and 390 technical papers from all over the world. Contributions relate to design, inspection, assessment, maintenance or optimization in the framework of life-cycle analysis of civil engineering structures and infrastructure systems. Life-cycle aspects that are developed and discussed range from structural safety and durability to sustainability, serviceability, robustness and resilience. Applications relate to buildings, bridges and viaducts, highways and runways, tunnels and underground structures, off-shore and marine structures, dams and hydraulic structures, prefabricated design, infrastructure systems, etc. During the IALCCE2018 conference a particular focus is put on the cross-fertilization between different sub-areas of expertise and the development of an overall vision for life-cycle analysis in civil engineering. The aim of the editors is to provide a valuable source of cutting edge information for anyone interested in life-cycle analysis and assessment in civil engineering, including researchers, practising engineers, consultants, contractors, decision makers and representatives from local authorities.

Building Information Modelling (BIM) in Design, Construction, and Operations contains the proceedings of the first in a planned series of conferences dealing with design coordination, construction, maintenance, operation and decommissioning. The book gives details of how BIM tools and techniques have fundamentally altered the manner in which modern construction teams operate, the processes through which designs are evolved, and the relationships between conceptual, detail, construction and life cycle stages. The papers contributed by experts from industry, practice and academia, debate key topics, develop innovative solutions, and predict future trends. The interdisciplinary nature of the contents and the collaborative practices discussed, so important within the built environment, will appeal to those engaged in design, surveying, visualisation, infrastructure, real estate, construction law, insurance, and facilities management. Topics covered include: BIM in design coordination; BIM in construction operations, BIM in building operation and maintenance; BIM and sustainability; BIM and collaborative working and practices; BIM health and safety and BIM-facilities management integration, among

others.

Building Performance Evaluation (BPE) informs and enhances the usability and sustainability of building designs with lessons learned from evaluation of building performance throughout the building life cycle, from initial planning through occupancy to adaptive re-use. A key feature of BPE is that it examines design and technical performance of buildings alongside human performance criteria. That is, it seeks to examine facilities in order to determine whether they will work for the people that will use and occupy them. Rigorous BPE helps to improve design practice by providing feedback on the effectiveness of the choices made about the building to ensure that its design is optimised for stakeholders' uses. The overarching theme for Enhancing Building Performance is to present the next generation of BPE work. The book provides an updated systematic approach for BPE as well as chapters written by experts from around the world who demonstrate how to apply BPE to enhance building design. Topics covered include: evidence-based and integrative design processes, evaluation methods and tools, and education and knowledge transfer. In addition, case studies provide specific examples of how BPE has been used to study such things as the impact of workplace design on human productivity and innovation. Written primarily for design professionals and facility managers who wish to use BPE to deliver improved building performance that is responsive to the needs of stakeholders, Enhancing Building Performance will also be of great value to researchers and students across a range of architecture and construction disciplines.

Towards Sustainable Cities in Asia and the Middle East

Transforming Construction

Assessing Building Performance

Mastering Autodesk Revit 2017 for Architecture

Guidelines for Using Building Information Modeling (BIM) for Environmental Analysis of Buildings

The Building Information Modelling (BIM) is transforming the way building delivered traditionally. The Construction industry is growing rapidly and the demand for Sustainable facilities with least impact on the Environment is increasing. Sustainable development has been divided into water conservation, energy use reduction, sustainable procurement of materials, industrial development, recycling, waste reduction, climate change, transport strategies, and biodiversity. Sustainable building is one that fulfills Social, Environmental and Economic concerns in a balance way. In this study, the sustainability analysis of a hotel building is performed with the help of Building Information Modelling (BIM). It covers various aspects such as considering building sun- path, location, orientation, heating and cooling loads thermal properties of materials, Ventilation and Daylighting analysis. A systemize methodology is adopted and tools like Autodesk Insight and Autodesk Green Building Studio has been used. The Social, Environment and Economical Impact were studied and it was noted that in building information modelling, sun-path analysis, Wind analysis, heating and cooling load analysis and shading/lighting analysis can be performed with ease, along with that it also helps in

Predicting energy consumption and cost of the building Facility. The finding of the study suggest that the adaptation of BIM for sustainability analysis help in improving building performance, predicting performance throughout the lifecycle and reducing the consumption of resources. Further, Cost-Benefit Ratio (CBR), Investment grade audits can also be generated by adopting BIM technology in future.

This proceedings book focuses on innovation, cooperation, and sustainable development in the fields of construction management and real estate. The book provides a detailed analysis and description of the disciplinary frontiers in the field of building management and real estate and how they can be promoted in the context of the epidemic. A wide variety of papers provide a reference value for both scholars and practitioners. The proceedings book is the documentation of "the 25th International Symposium on Advancement of Construction Management and Real Estate" (CRIOCM 2020), which was held at the School of Public Administration, Central China Normal University, Wuhan, China, in 2020.

Lean Project Delivery and Integrated Practices in Modern Construction is the new and enhanced edition of the pioneering book Modern Construction by Lincoln H. Forbes and Syed M. Ahmed. This book provides a multi-faceted approach for applying lean methodologies to improve design and construction processes. Recognizing the wide diversity in the landscape of projects, and encompassing private and public sector activity, buildings and infrastructure, the book expands upon the detailed coverage of integrated project delivery and new lean tools and techniques to include: Greater emphasis on the importance of creating a lean culture and the initiatives required to transform the industry; Expanded discussions of the foundational writings in lean construction theory; Exploration of the synergies between "lean" and "green" initiatives; Specific procedures for modifying planning and scheduling activities to improve the performance of the project team; Expanded sections on quality, and topics that have become a part of the lean lexicon, such as Choosing by Advantages, "line of balance"/location-based scheduling, virtual design teams, takt time planning and set-based design; Discussion questions for beginners and advanced lean practitioners; and Improved cross-referencing within the text to help the reader navigate the frameworks, techniques and tools to support the application of lean principles. The techniques described here enhance the use of resources, reducing waste, minimizing delays, increasing quality and reducing overall costs. They enable practitioners to improve the quality of the built environment, secure higher levels of customer/owner satisfaction, and simultaneously improve their profitability. This book is essential reading for all those wanting to be at the forefront of construction management and lean thinking.

The bright future and exciting possibilities of BIM Many architects and engineers regard BIM as a disruptive force, changing the way building professionals design, build, and ultimately manage a built structure. With its emphasis on continuing advances in BIM research, teaching, and practice, Building Information Modeling: BIM in Current and Future Practice encourages readers to transform disruption to opportunity and challenges them to reconsider their preconceptions about BIM. Thought leaders from universities and professional practice composed essays exploring BIM's potential to improve the products and processes of architectural design including the structure and content of the tools themselves. These authors provide insights for assessing the current practice and research directions of BIM and speculate about its future. The twenty-six chapters are thematically grouped in six sections that present complementary and sometimes incompatible positions: Design Thinking and BIM BIM Analytics Comprehensive BIM Reasoning with BIM Professional BIM BIM Speculations Together, these authors provide stimulating ideas regarding new directions in building information modeling.

Building Information Modelling (BIM) in Design, Construction and Operations

Proceedings of the 1st GeoMEast International Congress and Exhibition, Egypt 2017 on Sustainable Civil Infrastructures

Building Information Modelling (BIM) Based Sustainability Analysis for a Construction Project

Implementation for Students and Educators

Sustainable Built Environment (SBE) Regional Conference Zurich 2016

Encyclopedia of Sustainable Technologies

This book results from a Special Issue published in Energies, entitled "Building Thermal Envelope". Its intent is to identify emerging research areas within the field of building thermal envelope solutions and contribute to the increased use of more energy-efficient solutions in new and refurbished buildings. Its contents are organized in the following sections: Building envelope materials and systems envisaging indoor comfort and energy efficiency; Building thermal and energy modelling and simulation; Lab test procedures and methods of field measurement to assess the performance of materials and building solutions; Smart materials and renewable energy in building envelope; Adaptive and intelligent building envelope; and Integrated building envelope technologies for high performance buildings and cities.

Offering critical insights to the state-of-the-art in Building Information Modeling (BIM) research and development, this book outlines the prospects and challenges for the field in this era of digital revolution. Analysing the contributions of BIM across the construction industry, it provides a comprehensive survey of global BIM practices.

The 27th EG-ICE International Workshop 2020 brings together international experts working at the interface between advanced computing and modern engineering challenges. Many engineering tasks require open-world resolutions to support multi-actor collaboration, coping with approximate models, providing effective engineer-computer interaction, search in multi-dimensional solution spaces, accommodating uncertainty, including specialist domain knowledge, performing sensor-data interpretation and dealing with incomplete knowledge. While results from computer science provide much initial support for resolution, adaptation is unavoidable and most importantly, feedback from addressing engineering challenges drives fundamental computer-science research. Competence and knowledge transfer goes both ways. Der 27. Internationale EG-ICE Workshop 2020 bringt internationale Experten zusammen, die an der Schnittstelle zwischen fortgeschrittener Datenverarbeitung und modernen technischen Herausforderungen arbeiten. Viele ingenieurwissenschaftliche Aufgaben erfordern Open-World-Resolutionen, um die Zusammenarbeit mehrerer Akteure zu unterstützen, mit approximativen Modellen umzugehen, eine effektive Interaktion zwischen Ingenieur und Computer zu ermöglichen, in mehrdimensionalen Lösungsräumen zu suchen, Unsicherheiten zu berücksichtigen, einschließlich fachspezifischen Domänenwissens, Sensordateninterpretation durchzuführen und mit unvollständigem Wissen umzugehen. Während die Ergebnisse aus der Informatik anfänglich viel Unterstützung für die Lösung bieten, ist eine Anpassung unvermeidlich, und am wichtigsten ist, dass das Feedback aus der Bewältigung technischer Herausforderungen die computer-wissenschaftliche Grundlagenforschung vorantreibt. Kompetenz und Wissenstransfer gehen in beide Richtungen.

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.
Computer-Aided Architectural Design. Design Imperatives: The Future is Now
3rd International Conference on Innovative Technologies for Clean and Sustainable Development
Design, Methods and Technology for Progressive Practice and Research
Building Performance Analysis
ICRRM 2019 – System Reliability, Quality Control, Safety, Maintenance and Management
Green BIM

Case Study Strategies for Architects and Designers explains methods in evidence-based design, also called practice-based research, to show you the value of research to your designs. Topics covered pertain to data collection and analysis techniques, including surveys, interviews, fieldwork, participatory design, occupancy evaluations, and memory sketching. Integrative data evaluation, theoretical sampling, triangulation, pattern matching logic, and analytical generalization are also discussed. Global research precedents, exercises, further reading, section summaries, sidebars, more than 30 black and white images and tables will help you conduct empirical inquiries in real-life contexts.

Construction projects involve a complex set of relationships, between parties with different professional backgrounds trying to achieve a very complex goal. Under these difficult circumstances, the quality of information on which projects are based should be of the highest possible standard. The line-based, two dimensional drawings on which conventional construction is based render this all but impossible. This is the source of some major shortcomings in the construction industry, and this book focuses on the two most fundamental of these: the failure to deliver projects predictably: to the required quality, on time and within budget; and the failure of most firms in the industry to make a survivable level of profit. By transforming the quality of information used in building, BIM aims to transform construction completely. After describing and explaining these problems, the way in which BIM promises to provide solutions is examined in detail. A discussion of the theory and practice of BIM is also provided, followed by a review of various recent surveys of BIM usage in the US, UK and selected European economies. The way in which other industries, including retail and manufacturing, have been transformed by information are explored and compared with current developments in the deployment of BIM in construction. Five case studies from the UK show how BIM is being implemented, and the effects it is having on architects and contractors. This book is perfect for any construction professional interested in improving the efficiency of their business, as well as undergraduate and postgraduate students

wishing to understand the importance of BIM.

Building Information Modeling (BIM) efficiently integrates environmental analysis into the design and delivery of high-performance buildings. Building Energy Modeling (BEM), a subset of BIM, employs various simulation tools for predicting the environmental performance of buildings. As the demand for high-performance buildings has increased, BEM has facilitated the delivery of buildings that meet expected performance requirements. The research objectives were to: 1) evaluate various BEM tools, and 2) develop guidelines for using BEM tools in design and delivery of high- performance buildings. Twelve BEM tools were evaluated using four criteria: interoperability, user-friendliness, available inputs, and available outputs. The top three programs were selected based on this evaluation and used in the case study to simulate energy consumption, daylighting, and natural ventilation for two buildings, one LEED certified and one non-LEED certified. The results of the case study were used to compare the environmental performance of the two buildings and to develop guidelines for using BEM tools to analyze building environmental performance.

Building Information Modeling (BIM) menciptakan metode sekaligus standar baru dalam proses desain dan dokumentasi bangunan, menggantikan dokumentasi oleh CAD. Autodesk Revit merupakan salah satu software BIM yang sangat powerful dari Autodesk.Model BIM yang dihasilkan Revit dapat digunakan untuk berbagai keperluan mulai dari dokumentasi gambar kerja, visualisasi, pembuatan RAB, analisis performa bangunan, sampai memfasilitasi kerja sama antar disiplin yang berbeda dalam suatu proyek. Dalam buku ini, kita akan mengupas tuntas pemanfaatan BIM untuk Building Performance Analysis mulai dari teori fisika bangunan, konsep desain pasif, workflow/ alur kerja, cara penggunaan tools, dan contoh/ soal latihan. Topik pembahasan pada buku ini didasarkan pada fitur-fitur yang terdapat pada Revit 2015 – 2021.

Life Cycle Analysis and Assessment in Civil Engineering: Towards an Integrated Vision

Proceedings of the 2nd GeoMEast International Congress and Exhibition on Sustainable Civil Infrastructures, Egypt 2018 – The Official International Congress of the Soil-Structure Interaction Group in Egypt (SSIGE)

Application of Intelligent Systems in Multi-modal Information Analytics

Research Companion to Building Information Modeling

Building Performance Simulation for Design and Operation

The 4th International Conference on Multi-modal Information Analytics (ICMMIA 2022), Volume 2

This volume presents innovative work on innovative methods, tools and practices aimed at supporting the transition of Asian and Middle Eastern cities and regions towards a more smart and sustainable dimension. The role of the built and urban environment are becoming more pronounced in Asia and Middle East as the regions continues to experience rapid

increase in population and urbanisation, which have only led to an increase in environmental degradation but also rise in energy consumption and emissions. Individual chapters covers timely topics such as sustainable infrastructure, transportation, renewable energy, water and methods supporting an innovative and sustainable development of urban areas. Real-world examples are presented to highlight recent developments and advancements in design, construction and transportation infrastructures. The volume is based on the best contributions to the 2nd GeoMEast International Congress and Exhibition on Sustainable Civil Infrastructures, Egypt 2018 – The official international congress of the Soil-Structure Interaction Group in Egypt (SSIGE).

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
The building performance evaluation (BPE) framework emphasizes an evaluative stance throughout the six phases of the building delivery and life cycle: (1) strategic planning/needs analysis; (2) program review; (3) design review; (4) post-construction evaluation/review; (5) post-occupancy evaluation; and, (6) facilities management review/adaptive reuse. The lessons learned from positive and negative building performance are fed into future building delivery cycles. The case studies illustrate how this basic methodology has been adapted to a range of cultural contexts, and indicates the positive results of building performance assessment in a wide range of situations. 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.

Utilizing Bim-Based Performance Analysis to Support the Design of Nearly Zero-Energy Dwellings

19th International Conference, CAAD Futures 2021, Los Angeles, CA, USA, July 16–18, 2021, Selected Papers

Seri Building Information Modeling – Autodesk Revit

Successful Sustainable Design with Building Information Modeling

Proceedings of the Future Technologies Conference (FTC) 2021, Volume 3

Building Information Modelling (BIM) in Design, Construction and Operations III

The ultimate guide to Revit Architecture just got even better Mastering Autodesk Revit 2017 for Architecture is the bestselling guide for Revit Architecture users of all levels, with focused discussions, detailed exercises, and compelling real-world examples. This new edition has been completely revamped based on reader and Revit Architecture instructor feedback to be more useful, more complete, and more approachable than ever. Organized by real-world workflow, practical tutorials guide you through each phase of a project to help you understand BIM concepts and quickly start accomplishing vital Revit Architecture tasks. From templates, work-sharing, and project management, to modeling, documentation, annotation, and complex structures, this book provides full coverage of essential Revit Architecture tools and processes. The companion website features before-and-after tutorials, additional advanced content, and an hour of video instruction to help you quickly master crucial techniques. Learn up-to-date Revit Architecture workflows and processes Master modeling, massing, and other visualization techniques Work with complex structural elements and advanced detailing Prepare for Autodesk certification exams Building information modeling pairs the visual design representation with a parametric database that stores all geometry, spatial relationships, materials, and other data generated by the design process. Design changes instantly update all documentation, and it's this efficiency that makes BIM the new permanent paradigm. Whether you're studying for a certification exam or navigating the switch from CAD, Mastering Autodesk Revit 2017 for Architecture is your number-one guide to getting up and running quickly.

This book constitutes selected papers of the 19th International Conference on Computer-Aided Architectural Design Futures, CAAD Futures 2021, held in Los Angeles, CA, USA, in July 2021. The 33 revised full papers presented were carefully reviewed

and selected from 97 submissions. The papers are organized in topical sections on ?past futures and present futures: research and pedagogy; past futures and present futures: aesthetics and ethics of space; architectural automations and augmentations: design; architectural automations and augmentations: fabrication; architectural automations and augmentations: environment; architectural automations and augmentations: spatial computing.

The best-selling Revit guide, now more complete than ever with all-new coverage on the 2018 release Mastering Autodesk Revit 2018 for Architecture is packed with focused discussions, detailed exercises, and real-world examples to help you get up to speed quickly on the latest version of Autodesk Revit for Architecture. Organized according to how you learn and implement the software, this book provides expert guidance for all skill levels. Hands-on tutorials allow you to dive right in and start accomplishing vital tasks, while compelling examples illustrate how Revit for Architecture is used in every project. Available online downloads include before-and-after tutorial files and additional advanced content to help you quickly master this powerful software. From basic interface topics to advanced visualization techniques and documentation, this invaluable guide is your ideal companion through the Revit Architecture workflow. Whether you're preparing for Autodesk certification exams or just want to become more productive with the architectural design software, practical exercises and expert instruction will get you where you need to be. Understand key BIM and Revit concepts and master the Revit interface Delve into templates, work-sharing, and managing Revit projects Master modeling and massing, the Family Editor, and visualization techniques Explore documentation, including annotation, detailing, and complex structures BIM software has become a mandatory asset in today's architecture field; automated documentation updates reduce errors while saving time and money, and Autodesk's Revit is the industry leader in the BIM software space.

Bachelor Thesis from the year 2017 in the subject Energy Sciences, grade: B, Institute of Technology Carlow (Department of Built Environment), course: BSc Energy Management (Buildings), language: English, abstract: In response to climate change mitigation, the EU has implemented challenging regulatory targets in relation to reducing energy consumption in newly-built dwellings. The introduction of the proposed NZEB standard for newly-built dwellings indicates the requirements needed to achieve such standard. By utilizing technologies, such as Building Information Modelling, NZEB dwelling design can be achieved more easily than traditional 2D drafting methods. This thesis investigates the use and accuracy of BIM-based performance analysis technologies in the design of new build NZEB dwellings in Ireland. The background to this research is discussed in the first chapter and in the second chapter energy efficient design strategies along with the fundamentals of BIM and related software are discussed. A NZEB fieldwork case study is investigated in order to gain knowledge into the building requirements required to achieve the proposed NZEB standard. Finally, a NZEB design is implemented using a design framework methodology from conceptual design through to detailed design and compliance checking. It was found that the BIM energy analysis results were 95% accurate in comparison to the official Irish compliance checking software.

Expanding Boundaries: Systems Thinking in the Built Environment

Advanced Technology, Tools and Materials for the Digital Transformation of the Construction Industry

Mastering Autodesk Revit 2018

Advances in Informatics and Computing in Civil and Construction Engineering

EG-ICE 2020 Workshop on Intelligent Computing in Engineering

Applications to Civil, Mechanical and Chemical Engineering

Consuming over 40% of total primary energy, the built environment is in the centre of worldwide strategies and measures towards a more sustainable future. To provide resilient solutions, a simple optimisation of individual technologies will not be sufficient. In contrast, whole system thinking reveals and exploits connections between parts. Each system interacts with others on different scales (materials, components, buildings, cities) and domains (ecology, economy and social). Whole-system designers optimize the performance of such systems by understanding interconnections and identifying synergies. The more complete the design integration, the better the result. In this book, the reader will find the proceedings of the 2016 Sustainable Built Environment (SBE) Regional Conference in Zurich. Papers have been written by academics and practitioners from all continents to bring forth the latest understanding on systems thinking in the built environment.

This book provides comprehensive coverage of the latest advances and trends in information technology, science and engineering. Specifically, it addresses a number of broad themes, including multi-modal informatics, data mining, agent-based and multi-agent systems for health and education informatics, which inspire the development of intelligent information technologies. The book covers a wide range of topics such as AI applications and innovations in health and education informatics; data and knowledge management; multi-modal application management; and web/social media mining for multi-modal informatics. Outlining promising future research directions, the book is a valuable resource for students, researchers and professionals and a useful reference guide for newcomers to the field. This book is a compilation of the papers presented in the 4th International Conference on Multi-modal Information Analytics, held online, on April 23, 2022.

Explores and brings together the existent body of knowledge on building performance analysis Building performance is an important yet surprisingly complex concept. This book presents a comprehensive and systematic overview of the subject. It provides a working definition of building performance, and an in-depth discussion of the role building performance plays throughout the building life cycle. The book also explores the perspectives of various stakeholders, the functions of buildings, performance requirements, performance quantification (both predicted and measured), criteria for success, and the challenges of using performance analysis in practice. Building Performance Analysis starts by introducing the subject of building performance:

its key terms, definitions, history, and challenges. It then develops a theoretical foundation for the subject, explores the complexity of performance assessment, and the way that performance analysis impacts on actual buildings. In doing so, it attempts to answer the following questions: What is building performance? How can building performance be measured and analyzed? How does the analysis of building performance guide the improvement of buildings? And what can the building domain learn from the way performance is handled in other disciplines? Assembles the current body of knowledge on building performance analysis in one unique resource Offers deep insights into the complexity of using building performance analysis throughout the entire building life cycle, including design, operation and management Contributes an emergent theory of building performance and its analysis Building Performance Analysis will appeal to the building science community, both from industry and academia. It specifically targets advanced students in architectural engineering, building services design, building performance simulation and similar fields who hold an interest in ensuring that buildings meet the needs of their stakeholders.

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.

Proceedings of the Fifth International Conference on Structures and Architecture (ICSA 2022), July 6-8, 2022, Aalborg, Denmark

Building Information Systems in the Construction Industry

Proceedings of the Sixth International Symposium on Life-Cycle Civil Engineering (IALCCE 2018), 28-31 October 2018, Ghent, Belgium

Project Management and BIM for Sustainable Modern Cities

Proceedings of the 35th CIB W78 2018 Conference: IT in Design, Construction, and Management

Building Thermal Envelope

When used appropriately, building performance simulation has the potential to reduce the environmental impact of the built environment, to improve indoor quality and productivity, as well as to facilitate future innovation and technological progress in construction. Since publication of the first edition of Building Performance Simulation

for Design and Operation, the discussion has shifted from a focus on software features to a new agenda, which centres on the effectiveness of building performance simulation in building life cycle processes. This new edition provides a unique and comprehensive overview of building performance simulation for the complete building life cycle from conception to demolition, and from a single building to district level. It contains new chapters on building information modelling, occupant behaviour modelling, urban physics modelling, urban building energy modelling and renewable energy systems modelling. This new edition keeps the same chapter structure throughout including learning objectives, chapter summaries and assignments. Moreover, the book: • Provides unique insights into the techniques of building performance modelling and simulation and their application to performance-based design and operation of buildings and the systems which service them. • Provides readers with the essential concepts of computational support of performance-based design and operation. • Provides examples of how to use building simulation techniques for practical design, management and operation, their limitations and future direction. It is primarily intended for building and systems designers and operators, and postgraduate architectural, environmental or mechanical engineering students.

This volume presents innovative work on innovative methods, tools and practices aimed at supporting the transition of Asian and Middle Eastern cities and regions towards a more smart and sustainable dimension. The role of the built and urban environment are becoming more pronounced in Asia and Middle East as the regions continues to experience rapid increase in population and urbanisation, which have only led to an increase in environmental degradation but also rise in energy consumption and emissions. Individual chapters covers timely topics such as sustainable infrastructure, transportation, renewable energy, water and methods supporting an innovative and sustainable development of urban areas. Real-world examples are presented to highlight recent developments and advancements in design, construction and transportation infrastructures. This volume is part of the proceedings of the 1st GeoMEast International Congress and Exhibition on Sustainable Civil Infrastructures, Egypt 2017.

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.

This book gathers peer-reviewed contributions presented at the 3rd International Conference on Innovative Technologies for Clean and Sustainable Development, held in Chandigarh, India, on February 19-21, 2020. The respective papers focus on sustainable materials science and cover topics including the durability and sustainability of concrete, green materials in construction, economics of cleaner production, environmental impact mitigation, innovative materials for sustainable construction, performance and sustainability of special concrete, renewable energy infrastructure, sustainability in road construction, sustainable concrete, sustainable construction materials, waste minimization & management, prevention and management of water pollution, and zero-energy buildings.

BIM in Current and Future Practice
The Impact of Building Information Modelling
Building Information Modeling
Integrative Data Research Methods
Enhancing Building Performance