

Understanding Designing Dedicated Outdoor Air Systems Doas | 2a195b85cc831bbb4abcae0f13264230

Heating and Cooling of Buildings Indoor and Outdoor Air Pollution Air-conditioning System Design Manual Net Zero Energy Design Analysis and Design of Heating, Ventilating, and Air-Conditioning Systems, Second Edition Fundamentals of Integrated Design for Sustainable Building An Introduction to Precision Measurement Laboratories Temperature and Humidity Independent Control (THIC) of Air-conditioning System Energy Efficiency Architectural Graphic Standards Sustainable Design and Construction in Africa Fusion Blueprint for Greening Affordable Housing, Revised Edition Advances in Design, Simulation and Manufacturing III Design Professional's Guide to Zero Net Energy Buildings Environmental Health Perspectives Desiccant Heating, Ventilating, and Air-Conditioning Systems Building Performance Simulation for Design and Operation HVAC Commissioning Guidebook Designing Green Networks and Network Operations Bringing Thermoelectricity into Reality Synergistic Design of Sustainable Built Environments Chemistry, Emission Control, Radioactive Pollution and Indoor Air Quality How to Design and Build a Green Office Building Net Zero Energy Buildings High Performance Buildings: A Guide for Owners & Managers Advanced Energy Design Guide for K-12 School Buildings ASHRAE Design Guide for Dedicated Outdoor Air Systems Net Zero Energy Buildings (NZEB) Libraries: A Design Manual ASHRAE Design Guide for Dedicated Outdoor Air Systems Industrial Ventilation Design Guidebook LEED Professional Accreditation Study Guide and Practice Exam New Directions in Sustainable Design Sustainable Building Design Heating, Ventilating, and Air Conditioning Mechanical and Electrical Equipment for Buildings Geothermal Heat Pump and Heat Engine Systems Energy-Efficient HVAC Design Building Systems in Interior Design

Libraries as a building type have been subjected to substantial changes in particular in the past ten years. Milestones such as Rem Koolhaas' Seattle Central Library from 2004 reinvented the typology completely and reflected a development from elitist temple of learning to a public living room. Hybrids between library and department store or theater were conceived. Today, the ubiquity of electronic devices and media needs to be taken into account by the designer: every new library has areas without any books now. This work of reference explains systematically all technological and planning requirements of library design. Special features such as RFID, signage, acoustics or specific structural load issues are explained in texts by experts from the fields of architecture and library science. Finally, approximately 40 best-practice case studies of contemporary library design are documented extensively. They are organized in four categories - national libraries, large public libraries, small public libraries, university libraries - and comprise high-profile examples such as Jo Coenen's Openbare Bibliotheek Amsterdam, Alvaro Siza's Public Library Viana do Castelo in Portugal or Mecanoo's Library of Birmingham from 2013.

High Performance Buildings: A Guide for Owners and Managers, is a template - a blueprint for action for those making decisions about how to improve the energy efficiency and performance of new or existing buildings. It is designed to have broad appeal, both for the seasoned veteran facility or energy manager and for the new manager alike, but can also be utilized as a practical desk reference by professionals such as architects, engineers, and construction managers. The full spectrum of topics relevant to achieving optimum building performance is

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addressed, including analysis of overall building energy use and performance, building commissioning, applicable codes, standards and rating systems, building envelope, onsite power generating options, optimizing performance of building mechanical and electrical equipment, and importance of effective building operation and maintenance practices. Fundamental principles are discussed and illustrated with case studies.

Heating and Cooling of Buildings: Principles and Practice of Energy Efficient Design, Third Edition is structured to provide a rigorous and comprehensive technical foundation and coverage to all the various elements inherent in the design of energy efficient and green buildings. Along with numerous new and revised examples, design case studies, and homework problems, the third edition includes the HCB software along with its extensive website material, which contains a wealth of data to support design analysis and planning. Based around current codes and standards, the Third Edition explores the latest technologies that are central to design and operation of today's buildings. It serves as an up-to-date technical resource for future designers, practitioners, and researchers wishing to acquire a firm scientific foundation for improving the design and performance of buildings and the comfort of their occupants. For engineering and architecture students in undergraduate/graduate classes, this comprehensive textbook:

The disproportionate use of fossil fuels has turned into a serious environmental issue. Thus, we are encountering one of the biggest challenges of the twenty-first century, satisfying the energy demand with respect to the environment. Thermoelectricity is an emerging technology, which contributes to reducing the impact of the use of traditional technologies, harvesting the waste heat, and eliminating the use of refrigerants. The book Bringing Thermoelectricity into Reality covers the current thermoelectric investigations: the study of novel thermoelectric materials, the development of computational models, the design of proper assemblies, and the optimization of thermal designs, as well as novel thermoelectric generators, coolers, and heating applications. This book looks for the definitive thermoelectric applications applied to everyday life.

This book brings together new and emerging perspectives on sustainability. Combining a series of well know authors in contemporary philosophy with established practitioners of sustainable design, it develops a coherent theoretical framework for how a philosophy of sustainability might engage with the growing practice of sustainable design.

This book provides readers with essential knowledge enabling the successful design of today's new energy efficient HVAC systems. The author introduces important concepts such as Knowledge Categorization, Performance Based Design Standards, and Quantification of Uncertainty in Energy Modeling for Buildings. Pivotal topics that all HVAC and architectural engineers must master in order to navigate the green building renaissance are given focused attention, including the role of renewables, air quality, automatic controls, and thermal comfort. Relevant ASHRAE standards, as well as sustainability scoring systems such as BREEAM, HQE, LEED and CASBEE are explained in depth. Armed with the material contained in this practical reference, students and practitioners alike will become more effective and prepared for engineering success.

Air pollutants are continuously released from numerous sources into the atmosphere. Several studies have been carried out on the quantification of pollutants and their consequences on public health. Identification of the source characteristics of air pollution is an important step in the development of regional air quality control strategies. Air quality is a measure of the degree of ambient atmospheric pollution. Deterioration and damage to both public health and

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environment due to poor air quality have been recognized at a legislative and international level. In consequence, indoor and outdoor air quality must also be considered. This book tries to reveal different points of view of the wide concept of air quality in two different sections. In this context, there will be an initial introductory chapter on the main concepts of air quality, following which there will be real case studies on outdoor and indoor air quality with an aim to provide a guideline for future standards and research works.

"This book represents the most complete guidance on the design, installation, and operation and management of DOAS in nonresidential applications. With this book, any HVAC designer will be able to optimally incorporate a DOAS into their design. Architectural designers, building developers and owners, maintenance professionals, students, teachers, and researchers may also find the contents useful"--

A twenty-first century renaissance is emerging in architecture. After a century of building designs characterized by high energy demand, low quality lighting and poor thermal comfort, the fundamental questions must be asked again: is there a better path to designing the most energy efficient, comfortable, functional and beautiful buildings for a sustainable future? While seeking solutions for the future, are there lessons to be learned from the best buildings of the past? Sustainable Building Design explores outstanding buildings and building designs of the twenty-first century, with an emphasis on the artistry of masters of architecture who came before. By dissecting and analyzing great public buildings of the nineteenth and twenty-first centuries, materials, techniques, and methods are discovered. This book presents the reader with clues and suggestions that will reveal the secrets of these buildings and by doing so provides the reader with a thorough understanding of how these architectural masterpieces work. Using photographs, drawings, sections, plans and diagrams which are painstakingly redrawn for consistency and clarity based on a wide range of documentation, Vidar Lerum compares works of architecture from the nineteenth and twenty-first centuries. The reader is presented with a careful analysis of each building, providing a compelling sourcebook of ideas for students and professional architects alike.

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.

Net Zero Energy Buildings (NZEB): Concepts, Frameworks and Roadmap for

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Project Analysis and Implementation provides readers with the elements they need to understand, combine and contextualize design decisions on Net Zero Energy Buildings. The book is based on learned lessons from NZEB design, construction, operation that are integrated to bring the most relevant topics, such as multidisciplinary, climate sensitivity, comfort requirements, carbon footprints, construction quality and evidence-based design. Chapters introduce the context of high performance buildings, present overviews of NZEB, cover the performance thresholds for efficient buildings, cover materials, micro-grid and smart grids, construction quality, performance monitoring, post occupancy evaluation, and more. Offers a roadmap for engaging in energy efficiency in high performance buildings projects Combines solid grounding in core concepts, such as energy efficiency, with a wider context that includes the technical, socio-cultural and environmental dimensions Covers key areas for decision-making Provides a logical framework to analyze projects in the context of environmental change Presents worldwide examples and cases for different climates and societies

This book is one of the most comprehensive and up-to-date books written on Energy Efficiency. The readers will learn about different technologies for energy efficiency policies and programs to reduce the amount of energy. The book provides some studies and specific sets of policies and programs that are implemented in order to maximize the potential for energy efficiency improvement. It contains unique insights from scientists with academic and industrial expertise in the field of energy efficiency collected in this multi-disciplinary forum.

The 'Architect's Bible' since 1932, updated with the latest codes and standards Architectural Graphic Standards is the written authority for architects, designers, and building contractors. It provides comprehensive guidance on the visual representation of materials, products, systems, and assemblies. Updated to reflect the most current codes and standards, this new 12th edition features over 300 new drawings, tables, and designs and twenty-five percent new content. In response to architects' feedback and overwhelming demand for a more graphics-heavy format, this edition employs shorter, more accessible texts and more images of the standards and evolution of design and construction. New coverage includes building resiliency and the building envelope, expert discussion on the fundamentals of design and construction documentation, and new examination of environmental factors and material properties and performance. Sustainable Design is no longer separated, but incorporated throughout, and extensive appendices keep useful data right at your fingertips. Graphic standards are essential to building design. They cover everything from door frames and roof designs to air ducts and outdoor sports facilities. This meticulous resource provides a compendium of planning standards, optimum dimensions, and normative construction details. The book is organized into three core sections covering: design and documentation, materials, and building elements. Architectural Graphic Standards features: Key architectural design and production processes—functional planning, environmental assessment, building resiliency, and architectural construction documentation Through coverage of materials: concrete, masonry, metals, wood, plastics, composites, and glass An exhaustive survey of building elements—substructures, shells, services, equipment, furnishings, special structures, and siteworks Comprehensive appendixes filled with pertinent data such as: classic architectural elements, mathematical data, and structural calculations Endorsed by the American Institute of Architects, this book has an enduring and unsurpassed reputation for high-quality illustration, text, and graphic design. For crucial information in a user-friendly format, Architectural Graphic Standards is the go-to reference on building design and construction.

Analysis and Design of Heating, Ventilating, and Air-Conditioning Systems, Second Edition, provides a thorough and modern overview of HVAC for commercial and

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industrial buildings, emphasizing energy efficiency. This text combines coverage of heating and air conditioning systems design with detailed information on the latest controls technologies. It also addresses the art of HVAC design along with carefully explained scientific and technical content, reflecting the extensive experience of the authors. Modern HVAC topics are addressed, including sustainability, IAQ, water treatment and risk management, vibration and noise mitigation, and maintainability from a practical point of view.

A unique approach to the study of geothermal energy systems This book takes a unique, holistic approach to the interdisciplinary study of geothermal energy systems, combining low, medium, and high temperature applications into a logical order. The emphasis is on the concept that all geothermal projects contain common elements of a "thermal energy reservoir" that must be properly designed and managed. The book is organized into four sections that examine geothermal systems: energy utilization from resource and site characterization; energy harnessing; energy conversion (heat pumps, direct uses, and heat engines); and energy distribution and uses. Examples are provided to highlight fundamental concepts, in addition to more complex system design and simulation. Key features: Companion website containing software tools for application of fundamental principles and solutions to real-world problems. Balance of theory, fundamental principles, and practical application. Interdisciplinary treatment of the subject matter. Geothermal Heat Pump & Heat Engine Systems: Theory and Practice is a unique textbook for Energy Engineering and Mechanical Engineering students as well as practicing engineers who are involved with low-enthalpy geothermal energy systems.

Introductory technical guidance for professional engineers interested in design and construction of precision measurement laboratories. Here is what is discussed:
1. FUNCTIONAL REQUIREMENTS 2. GENERAL DESIGN CRITERIA 3. EXTERIOR DESIGN 4. INTERIOR DESIGN AND CONSTRUCTION 5. SITE DESIGN AND ORGANIZATION 6. ANTITERRORISM 7. SERVICES 8. SUSTAINABLE DESIGN 9. SPECIFIC DESIGN CRITERIA.

Based on the most recent standards from ASHRAE, the sixth edition provides complete and up-to-date coverage of all aspects of heating, ventilation, and air conditioning. The latest load calculation procedures, indoor air quality procedures, and issues related to ozone depletion are covered. New to this edition is the inclusion of additional realistic, interactive and in-depth examples available on the book website (www.wiley.com/college/mcquiston) that enable students to simulate various scenarios to apply concepts from the text. Also integrated throughout the text are numerous worked examples that clearly show students how to apply the concepts in realistic scenarios. The sixth edition has also been revised to be more accessible to students for easier comprehension. Suitable for one or two semester, Junior/Senior/Graduate course in HVAC taught in Mechanical Engineering, Architectural Engineering, and Mechanical Engineering Technology departments.

In this book, you will learn how to protect the building occupants' health, improve employee productivity, use resources more efficiently, reduce your impact on the environment, select a site for a new building, protect and maintain the current landscape, use recycled content and natural lighting, install high-efficiency lighting systems, select heating and cooling systems and materials, and use dimensional planning and material efficiency strategies. You will also learn everything you need to know about water savings, energy efficiency, environmentally friendly building materials, indoor environmental quality, building shape and orientation, alternative energy sources, dual plumbing, green building guidelines, gray water systems, water-conserving fixtures, the costs and financial benefits of building green, foundations, floors, and roofing.

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The atmosphere may be our most precious resource. Accordingly, the balance between its use and protection is a high priority for our civilization. While many of us would consider air pollution to be an issue that the modern world has resolved to a greater extent, it still appears to have considerable influence on the global environment. In many countries with ambitious economic growth targets the acceptable levels of air pollution have been transgressed. Serious respiratory disease related problems have been identified with both indoor and outdoor pollution throughout the world. The 25 chapters of this book deal with several air pollution issues grouped into the following sections: a) air pollution chemistry; b) air pollutant emission control; c) radioactive pollution and d) indoor air quality.

"Provides guidance for using ANSI/ASHRAE/IESNA Standard 90.1-1999, Energy Standards for Buildings Except Low-Rise Residential Buildings, as a benchmark to build new schools that are 30% more energy efficient"--Provided by publisher.

This book presents the necessary fundamental knowledge in the research, development, design, selection, and application of desiccant heating, ventilating, and air-conditioning systems. It covers the established installations in different climatic conditions and building types. In addition, advanced performance evaluation techniques are presented, covering thermodynamic, economic, and environmental aspects. Hence, the book is an important resource for undergraduate and graduate students, design and installation engineers, researchers and scientists, building owners and occupants, and energy and environmental policy makers.

Résumé : Guided by the information in this comprehensive book, HVAC system designers will be able to optimally incorporate DOAS into their projects. --

This book presents 18 in-depth case studies of net zero energy buildings—low-energy building that generate as much energy as they consume over the course of a year—for a range of project types, sizes, and U.S. climate zones. Each case study describes the owner's goals, the design and construction process, design strategies, measurement and verification activities and results, and project costs. With a year or more of post-occupancy performance data and other project information, as well as lessons learned by project owners and developers, architects, engineers, energy modelers, constructors, and operators, each case study answers the questions: What were the challenges to achieving net zero energy performance, and how were these challenges overcome? How would stakeholders address these issues on future projects? Are the occupants satisfied with the building? Do they find it comfortable? Is it easy to operate? How can other projects benefit from the lessons learned on each project? What would the owners, designers, and constructors do differently knowing what they know now? A final chapter aggregates processes to engage in and pitfalls to avoid when approaching the challenges peculiar to designing, constructing, and owning a net zero energy building. By providing a wealth of comparable information, this book which will flatten the learning curve for designing, constructing, and owning this emerging building type and improve the effectiveness of architectural design and construction.

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

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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.

Green buildings have become common in India and other countries in Asia. However, there is a concern regarding the performance of green buildings failing to meet the expectations of clients during the operation. One of the key reasons for this is poorly commissioned HVAC systems. In this publication we provide tools and knowhow for more efficient HVAC commissioning. It gives answers for four major questions: why commissioning is needed, how to perform proper commissioning, which key performance issues of common HVAC equipment need to be considered, and what kind of checklists are used during commissioning? It covers the entire commissioning process beginning with the owner's project requirements and commissioning design reviews. Then, it explains procedures during installation and start-up of equipment followed by the functional performance testing, seasonal commissioning and 10 months' operation review. This publication is developed by Indian Society of Heating, Refrigeration and Air Conditioning Engineers ISHRAE for Indian and Asian requirements in conjunction with the Federation of European HVAC Associations REHVA. The process steps described in this publication are in line with all major international building standards and green building certification schemes. Note: T&F does not sell or distribute the Hardback in India, Pakistan, Nepal, Bhutan, Bangladesh and Sri Lanka.

In recent years, socio-political trends toward environmental responsibility and the pressing need to reduce Run-the-Engine (RTE) costs have resulted in the concept of Green IT. Although a significant amount of energy is used to operate routing, switching, and transmission equipment, comparatively less attention has been paid to Green Networking. A

Synergistic Design of Sustainable Built Environments introduces and illustrates a novel systems approach that fosters both design excellence and a leap toward a more biocentric (ecologically sustainable) design paradigm. The book provides a deeper understanding of the theories and principles of biocentric design and offers detailed descriptions of the synergistic design process of integrating theories and principles into practice. It also presents extensive thermal and visual built environment design strategies, along with qualitative and quantitative information that designers can use to generate feasible solutions in response to varying climate and occupant comfort. Features: Examines the principles and practices of the synergistic design (a fusion of anthropocentric and biocentric) of sustainable built environments and how they relate to practical applications. Presents climatic data and its analysis along with sun-path diagrams for numerous cities to aid in the design of sustainable built environments in multiple regional contexts. Includes numerous case studies of sustainable built environments in varying climatic zones. Explains how renewable energy (solar, wind, biomass, geothermal, hydro, fuel cells) can be successfully integrated in the built environment. This

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forward-thinking and highly illustrated book will be an invaluable reference to all those concerned with sustainable built environments and related architectural issues.

The definitive guide to the design of environmental control systems for buildings—now updated in its 13th Edition Mechanical and Electrical Equipment for Buildings is the most widely used text on the design of environmental control systems for buildings—helping students of architecture, architectural engineering, and construction understand what they need to know about building systems and controlling a building's environment. With over 2,200 drawings and photographs, this 13th Edition covers basic theory, preliminary building design guidelines, and detailed design procedure for buildings of all sizes. It also provides information on the latest technologies, emerging design trends, and updated codes. Presented in nine parts, Mechanical and Electrical Equipment for Buildings, Thirteenth Edition offers readers comprehensive coverage of: environmental resources; air quality; thermal, visual, and acoustic comfort; passive heating and cooling; water design and supply; daylighting and electric lighting; liquid and solid waste; and building noise control. This book also presents the latest information on fire protection, electrical systems; and elevator and escalator systems. This Thirteenth Edition features: Over 2,200 illustrations, with 200 new photographs and illustrations All-new coverage of high-performance building design Thoroughly revised references to codes and standards: ASHRAE, IES, USGBC (LEED), Living Building Challenge, WELL Building Standard, and more Updated offering of best-in-class ancillary materials for students and instructors available via the book's companion website Architect Registration Examination® (ARE®) style study questions available in the instructor's manual and student guide Mechanical and Electrical Equipment for Buildings, has been the industry standard reference that comprehensively covers all aspects of building systems for over 80 years. This Thirteenth Edition has evolved to reflect the ever-growing complexities of building design, and has maintained its relevance by allowing for the conversation to include "why" as well as "how to."

Blueprint for Greening Affordable Housing is the most comprehensive resource on how green building principles can be incorporated into affordable housing design, construction, and operation. In this fully revised edition, Walker Wells and Kimberly Vermeer capture the rapid evolution of green building practices and make a compelling case for integrating green building in affordable housing. The Blueprint offers guidance on innovative practices, green building certifications for affordable housing, and the latest financing strategies. The completely new case studies share detailed insights on how the many elements of a green building are incorporated into different housing types and locations. Every affordable housing project can achieve the fundamentals of good green building design. The Blueprint gives project teams what they need to push for excellence.

Industrial Ventilation Design Guidebook, Volume 2: Engineering Design and Applications brings together researchers, engineers (both design and plants), and scientists to develop a fundamental scientific understanding of ventilation to help engineers implement state-of-the-art ventilation and contaminant control technology. Now in two volumes, this reference contains extensive revisions and updates as well as a unique section on best practices for the following industrial sectors: Automotive; Cement; Biomass Gasifiers; Advanced Manufacturing; Industrial 4.0); Non-ferrous Smelters; Lime Kilns; Pulp and Paper; Semiconductor Industry; Steelmaking; Mining. Brings together global researchers and engineers to solve complex ventilation and contaminant control problems using state-of-the-art design equations Includes an expanded section on modeling and its practical applications based on recent advances in research Features a new chapter on best practices for specific industrial sectors

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This book explores topics at the interface between mechanical and chemical engineering, with a focus on design, simulation, and manufacturing. Covering recent developments in the mechanics of solids and structures; numerical simulation of coupled problems, including wearing, compression, detonation and collision; and chemical process technologies, including ultrasonic technology, capillary rising process, pneumatic classification, membrane electrolysis and absorption processes, it reports on developments in the field of heat and mass transfer, energy-efficient technologies, and industrial ecology. Part of a two-volume set based on the 3rd International Conference on Design, Simulation, Manufacturing: The Innovation Exchange (DSMIE-2020), held on June 9-12, 2020, in Kharkiv, Ukraine, this book provides academics and professionals with extensive information on the latest trends, technologies and challenges in the field as well as practical lessons learned.

Building Systems in Interior Design takes an entirely new approach to teaching this essential topic for Architects, Designers and Building Engineers. Written to prepare students for the real world and packed with practical examples, the book will foster an understanding of specific issues that are critical to those features of technical systems that most directly affect design. The book stresses the ever-present nature of these systems: they are everywhere, all the time. Taking a design oriented view, it outlines what can and cannot be done, and provides the student with the know-how and confidence to defend and promote their design intent when working with other industry professionals. Covering lighting, HVAC, plumbing and much more, the book is packed with key features to aid learning including: Numerous illustrations, plans and photographs Key terms defined in an extensive glossary Chapter introductions that identify key concepts and chapter summaries to re-visit those key concepts Professional design tips And a detailed bibliography and web links This book is not only a core text for interior design, building systems engineering and architecture students but will become an essential working reference through their careers.

*The Air Conditioning Manual assists entry-level engineers in the design of air-conditioning systems. It is also usable - in conjunction with fundamental HVAC&R resource material - as a senior- or graduate-level text for a university course in HVAC system design. The manual was written to fill the void between theory and practice - to bridge the gap between real-world design practices and the theoretical calculations and analytical procedures or on the design of components. This second edition represents an update and revision of the manual. It now features the use of SI units throughout, updated references and the editing of many illustrations. * Helps engineers quickly come up with a design solution to a required air conditioning system. * Includes issues from comfort to cooling load calculations. * New sections on "Green HVAC" systems deal with hot topic of sustainable buildings.*

Conveniently organized and packed with robust technical content and clear explanations of key principles Written by an architect who is the director of sustainability at a global architecture firm, Net Zero Energy Design is a practical guide for architects and related construction professionals who want to design and build net zero energy commercial architecture. It offers no-nonsense strategies, step-by-step technical analysis, and valuable examples, in addition to developed case studies. With a focus on application in a variety of building types and scales, the book also develops a broad-based understanding of all the integrated principles involved in achieving net zero energy. This book is an indispensable resource for anyone venturing into net zero energy design, construction, and operation, and it also serves as an excellent resource on a variety of sustainable design topics. Important features include: Organization based upon the commercial building delivery process Robust technical content for use in actual project applications Analysis examples that demonstrate key technical principles

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Plenty of design data for use as a valuable design resource Abundant and sophisticated information graphics and color illustrations and photographs A distinct design focus on the content that inspires adoption of principles into projects

This book addresses some of the countless challenges faced by developing countries when adopting sustainable design and construction and offers suggestions for the way forward for African development projects. The authors argue that the pervasive non-consideration of the interrelationship between the elements of sustainable design and construction is the reason for the current failures in sustainable design and construction in developed countries. By treating sustainability as a complex system, the authors provide the missing link between the design and construction of projects in a sustainable way with a view to improving industry and project performance. In doing so the book posits the need for improved sustainability practice in developing countries, lessons for developing countries from the successes and failures of sustainability adoption by developed nations, factors influencing adoption of sustainability and effects of sustainable designs and construction on productivity, human health and the environment at large. This book will be of interest to construction researchers, practitioners, professional bodies, housing policy makers and government institutions as well as training and funding providers in these areas.

Temperature and Humidity Independent Control (THIC) of Air-conditioning System focuses on temperature and humidity independent control (THIC) systems, which represents a new concept and new approach for indoor environmental control. This book presents the main components of the THIC systems, including dehumidification devices, high-temperature cooling devices and indoor terminal devices. Other relevant issues, such as operation and control strategy and case studies, are also included. This book is intended for air-conditioning system designers and engineers as well as researchers working with indoor environments. Xiaohua Liu is an associate professor at the Building Energy Research Center, Tsinghua University, China. Yi Jiang is a member of the Chinese Academy of Engineering, the director of the Building Energy Research Center, Tsinghua University, China and the director of the China-USA Joint Research Center on Clean Energy. Tao Zhang is a Ph.D. candidate at the Building Energy Research Center, Tsinghua University, China.

In the Design Professional's Guide to Zero Net Energy Buildings, Charles Eley draws from over 40 years of his own experience, and interviews with other industry experts, to lay out the principles for achieving zero net energy (ZNE) buildings, which produce as much energy as they use over the course of a year. Eley emphasizes the importance of building energy use in achieving a sustainable future; describes how building energy use can be minimized through smart design and energy efficiency technologies; and presents practical information on how to incorporate renewable energy technologies to meet the lowered energy needs. The book shows the reader through examples and explanations that these solutions are viable and cost effective.

In this first monograph, award-winning firm Payette demonstrates its engagement with architecture that balances cutting-edge design, extraordinary efficiency, and humane values. Fusion: The Architecture of Payette explores the integration of high design and performance as the two drivers creating architecture that is rational, humane, and beautiful. The recipient of the 2019 AIA Architecture Firm Award, Payette embodies practices that are crucial to bettering our built environment. Founded eighty-five years ago, the hospitals and laboratories that Payette has designed introduced advances that continue through today, while never compromising on aesthetic and use value. With primary sections illuminating core principles of the firm--Identity and Transformation, Materiality

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and Craft, Taming Complexity, and Measuring Performance--the book presents detailed portraits of recent projects that manifest these principles. Sympathetic to their cultural settings, incorporating nature, socially rich, and legibly ordered, these projects stand as models not only for the state of the art of hospital and laboratory architecture, but also for how architecture improves people's lives every day. Rooted in the conviction that beautiful buildings should perform beautifully--not just in environmental and use terms, but also socially and culturally--Payette in this book provides insight into how dispelling the artificial dichotomy between performance and design creates a holistic architecture for the twenty-first century.

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