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## **KEY=ASHRAE - KANE CHASE**

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### **ASHRAE HANDBOOK FUNDAMENTALS 2017**

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#### **INCH-POUND EDITION**

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#### **HANDBOOK OF SMOKE CONTROL ENGINEERING**

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*American Society of Heating Refrigerating and Air-Conditioning Engineers* "In handbook form to be useful to practicing engineers and other professionals, this book addresses smoke control design, smoke management, controls, fire and smoke control in transport tunnels, and full scale fire testing. For those getting started with computer models CONTAM and CFAST, there are simplified instructions with examples"--

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#### **MANAGING INDOOR CLIMATE RISKS IN MUSEUMS**

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*Springer* This book elaborates on different aspects of the decision making process concerning the management of climate risk in museums and historic houses. The goal of this publication is to assist collection managers and caretakers by providing information that will allow responsible decisions about the museum indoor climate to be made. The focus is not only on the outcome, but also on the equally important process that leads to that outcome. The different steps contribute significantly to the understanding of the needs of movable and immovable heritage. The decision making process to determine the requirements for the museum indoor climate includes nine steps: Step 1. The process to make a balanced decision starts by clarifying the decision context and evaluating what is important to the decision maker by developing clear objectives. In Step 2 the value of all heritage assets that are affected by the decision are evaluated and the significance of the building and the movable collection is made explicit. Step 3. The climate risks to the moveable collection are

assessed. Step 4: Those parts of the building that are considered valuable and susceptible to certain climate conditions are identified. Step 5. The human comfort needs for visitors and staff are expressed. Step 6: To understand the indoor climate, the building physics are explored. Step 7. The climate specifications derived from step 3 to 5 are weighed and for each climate zone the optimal climate conditions are specified. Step 8: Within the value framework established in Step 1, the options to optimize the indoor climate are considered and selected. Step 9: All options to reduce the climate collection risks are evaluated by the objectives established in Step 1.

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## **BACNET**

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### **THE GLOBAL STANDARD FOR BUILDING AUTOMATION AND CONTROL NETWORKS**

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*Momentum Press* This new book, by the original developer of the BACnet standards, explains how BACnet's protocols manage all basic building functions in a seamless, integrated way. BACnet is a data communication protocol for building automation and control systems, developed within ASHRAE in cooperation with ANSI and the ISO. This book explains how BACnet works with all major control systems--including those made by Honeywell, Siemens, and Johnson Controls--to manage everything from heating to ventilation to lighting to fire control and alarm systems. BACnet is used today throughout the world for commercial and institutional buildings with complex mechanical and electrical systems. Contractors, architects, building systems engineers, and facilities managers must all be cognizant of BACnet and its applications. With a real 'seat at the table,' you'll find it easier to understand the intent and use of each of the data sharing techniques, controller requirements, and opportunities for interoperability between different manufacturers' controllers and systems. Highlights include: \* A review of the history of BACnet and its essential features, including the object model, data links, network technologies, and BACnet system configurations; \* Comprehensive coverage of services including object access, file access, remote device management, and BACnet-2012's new alarm and event capabilities; \* Insight into future directions for BACnet, including wireless networking, network security, the use of IPv6, extensions for lifts and escalators, and a new set of BACnet Web Services; \* Extensive reference appendices for all objects and services; and \* Acronyms and abbreviations

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### **BUILDING ENERGY AUDITS-DIAGNOSIS AND RETROFITTING**

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*MDPI* The book "Building Energy Audits-Diagnosis and Retrofitting" is a collection of twelve papers that focus on the built environment in order to systematically collect and analyze relevant data for the energy use profile of buildings and extended for the sustainability assessment of the built

environment. The contributions address historic buildings, baselines for non-residential buildings from energy performance audits, and from in-situ measurements, monitoring, and analysis of data, and verification of energy saving and model calibration for various building types. The works report on how to diagnose existing problems and identify priorities, assess, and quantify the opportunities and measures that improve the overall building performance and the environmental quality and well-being of occupants in non-residential buildings and houses. Several case studies and lessons learned from the field are presented to help the readers identify, quantify, and prioritize effective energy conservation and efficiency measures. Finally, a new urban sustainability audit and rating method of the built environment addresses the complexities of the various issues involved, providing practical tools that can be adapted to match local priorities in order to diagnose and evaluate the current state and future scenarios towards meeting specific sustainable development goals and local priorities.

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## **PRINCIPLES OF SMOKE MANAGEMENT**

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*Amer Society of Heating*

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## **HIGH PERFORMANCE BUILDINGS: A GUIDE FOR OWNERS & MANAGERS**

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*Lulu Press, Inc* **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 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.

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## **HANDBOOK OF AIR CONDITIONING AND REFRIGERATION**

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*McGraw-Hill Professional Pub* \* **A broad range of disciplines--energy conservation and air quality issues, construction and design, and the manufacture of temperature-sensitive products and materials--is covered in this comprehensive handbook** \* Provide essential, up-to-date HVAC data, codes, standards, and guidelines, all conveniently located in one volume \* **A definitive reference source on the design, selection and operation of A/C and refrigeration systems**

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## **STRATOSPHERIC OZONE DAMAGE AND LEGAL LIABILITY**

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### **US PUBLIC POLICY AND TORT LITIGATION TO PROTECT THE OZONE LAYER**

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*Routledge* While government enforcement of laws and regulations to control the production of chlorofluorocarbons in 1987 has been hailed as exemplifying the precautionary principle, for almost two decades US companies failed to take precautionary measures to prevent chemical emissions, despite the probable risk of stratospheric ozone loss. As a result, human harms in the form of skin cancer have reached epidemic proportions globally and in the United States where, today, one person dies every hour from skin cancer. This book reviews U.S. laws, regulations, and policies, as well as case law regarding similar toxic tort cases to consider whether companies can and should be held legally liable under tort common law theories and related tort justice theories for having contributed to increased risks of skin cancer.

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## **WHOLE SYSTEM DESIGN**

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### **AN INTEGRATED APPROACH TO SUSTAINABLE ENGINEERING**

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*Taylor & Francis* Whole System Design is increasingly being seen as one of the most cost-effective ways to both increase the productivity and reduce the negative environmental impacts of an engineered system. A focus on design is critical, as the output from this stage of the project locks in most of the economic and environmental performance of the designed system throughout its life, which can span from a few years to many decades. Indeed, it is now widely acknowledged that all designers - particularly engineers, architects and industrial designers - need to be able to understand and implement a whole system design approach. This book provides a clear design methodology, based on leading efforts in the field, and is supported by worked examples that demonstrate how advances in energy, materials and water productivity can be achieved through applying an integrated approach to sustainable engineering. Chapters 1-5 outline the approach and explain how it can be implemented to enhance the established Systems Engineering framework. Chapters 6-10 demonstrate, through detailed worked examples, the application of the approach to industrial pumping systems, passenger vehicles, electronics and computer systems, temperature control of buildings, and domestic water systems. Published with The Natural Edge Project, the World Federation of Engineering Organizations, UNESCO and the Australian Government.

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## **DAMP BUILDINGS, HUMAN HEALTH, AND HVAC DESIGN**

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"Provides a summary of what is understood within ASHRAE about dampness-related health risks in buildings along with suggestions for HVAC system designers that can help avoid such risks as well as a simple

and easily recognizable description of dampness that is sufficient to increase the probability of negative health effects and practical quantitative tools and techniques that can alert managers to the risk of a building or an indoor space becoming damp to an extent that affects health in the future"--

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## **GUIDE FOR THE CARE AND USE OF LABORATORY ANIMALS**

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### **EIGHTH EDITION**

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*National Academies Press* A respected resource for decades, the **Guide for the Care and Use of Laboratory Animals** has been updated by a committee of experts, taking into consideration input from the scientific and laboratory animal communities and the public at large. The Guide incorporates new scientific information on common laboratory animals, including aquatic species, and includes extensive references. It is organized around major components of animal use: Key concepts of animal care and use. The Guide sets the framework for the humane care and use of laboratory animals. Animal care and use program. The Guide discusses the concept of a broad Program of Animal Care and Use, including roles and responsibilities of the Institutional Official, Attending Veterinarian and the Institutional Animal Care and Use Committee. Animal environment, husbandry, and management. A chapter on this topic is now divided into sections on terrestrial and aquatic animals and provides recommendations for housing and environment, husbandry, behavioral and population management, and more. Veterinary care. The Guide discusses veterinary care and the responsibilities of the Attending Veterinarian. It includes recommendations on animal procurement and transportation, preventive medicine (including animal biosecurity), and clinical care and management. The Guide addresses distress and pain recognition and relief, and issues surrounding euthanasia. Physical plant. The Guide identifies design issues, providing construction guidelines for functional areas; considerations such as drainage, vibration and noise control, and environmental monitoring; and specialized facilities for animal housing and research needs. The Guide for the Care and Use of Laboratory Animals provides a framework for the judgments required in the management of animal facilities. This updated and expanded resource of proven value will be important to scientists and researchers, veterinarians, animal care personnel, facilities managers, institutional administrators, policy makers involved in research issues, and animal welfare advocates.

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## **GRAVIMETRIC AND DUST-SPOT PROCEDURES FOR TESTING AIR-CLEANING DEVICES USED IN GENERAL VENTILATION FOR REMOVING PARTICULATE MATTER**

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This standard establishes procedures to measure the ability of air-cleaning devices to remove dust as they become loaded with standard synthetic

dust. The dust-removal performance is measured in two ways: first by the percentage of the weight of the synthetic dust captured by the filter (ASHRAE weight arrestance) and second by comparing the blackening of targets both upstream and downstream of the air-cleaning device using ambient atmospheric dust (ASHRAE dust-spot efficiency). The procedures in this standard do not measure the ability of the air cleaner to remove particles of specific diameters. This standard is not intended for testing air cleaners exhibiting ASHRAE dust-spot efficiencies of greater than 98%.

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## **SYNTHETICS, MINERAL OILS, AND BIO-BASED LUBRICANTS**

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### **CHEMISTRY AND TECHNOLOGY, SECOND EDITION**

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*CRC Press* Highlighting the major economic and industrial changes in the lubrication industry since the first edition, *Synthetics, Mineral Oils, and Bio-Based Lubricants, Second Edition* outlines the state of the art in each major lubricant application area. Chapters cover trends in the major industries, such as the use of lubricant fluids, growth or decl

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## **TWO-PHASE HEAT TRANSFER**

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*John Wiley & Sons* A guide to two-phase heat transfer theory, practice, and applications Designed primarily as a practical resource for design and development engineers, *Two-Phase Heat Transfer* contains the theories and methods of two-phase heat transfer that are solution oriented. Written in a clear and concise manner, the book includes information on physical phenomena, experimental data, theoretical solutions, and empirical correlations. A very wide range of real-world applications and formulas/correlations for them are presented. The two-phase heat transfer systems covered in the book include boiling, condensation, gas-liquid mixtures, and gas-solid mixtures. The author a noted expert in this field also reviews the numerous applications of two-phase heat transfer such as heat exchangers in refrigeration and air conditioning, conventional and nuclear power generation, solar power plants, aeronautics, chemical processes, petroleum industry, and more. Special attention is given to heat exchangers using mini-channels which are being increasingly used in a variety of applications. This important book: Offers a practical guide to two-phase heat transfer Includes clear guidance for design professionals by identifying the best available predictive techniques Reviews the extensive literature on heat transfer in two-phase systems Presents information to aid in the design and analysis of heat exchangers. Written for students and research, design, and development engineers, *Two-Phase Heat Transfer* is a comprehensive volume that covers the theory, methods, and applications of two-phase heat transfer.

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## **HANDBOOK OF SOLAR ENERGY**

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## **THEORY, ANALYSIS AND APPLICATIONS**

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*Springer* This handbook aims at providing a comprehensive resource on solar energy. Primarily intended to serve as a reference for scientists, students and professionals, the book, in parts, can also serve as a text for undergraduate and graduate course work on solar energy. The book begins with availability, importance and applications of solar energy, definition of sun and earth angles and classification of solar energy as thermal and photon energy. It then goes on to cover day lighting parameters, laws of thermodynamics including energy and exergy analysis, photovoltaic modules and materials, PVT collectors, and applications such as solar drying and distillation. Energy conservation by solar energy and energy matrices based on overall thermal and electrical performance of hybrid system are also discussed. Techno-economic feasibility of any energy source is the backbone of its success and hence economic analysis is covered. Some important constants, such as exercises and problems increase the utility of the book as a text.

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## **MANUAL OF MUSEUM PLANNING**

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### **SUSTAINABLE SPACE, FACILITIES, AND OPERATIONS**

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*Rowman Altamira* The Manual of Museum Planning has become the definitive text for museum professionals, trustees, architects, and others who are concerned with the planning, design, construction, renovation, or expansion of a public gallery or museum. This new edition has been updated to meet the needs of professional museum practice in the 21st century.

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## **AUTOMATED DIAGNOSTICS AND ANALYTICS FOR BUILDINGS**

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*CRC Press* With the widespread availability of high-speed, high-capacity microprocessors and microcomputers with high-speed communication ability, and sophisticated energy analytics software, the technology to support deployment of automated diagnostics is now available, and the opportunity to apply automated fault detection and diagnostics to every system and piece of equipment in a facility, as well as for whole buildings, is imminent. The purpose of this book is to share information with a broad audience on the state of automated fault detection and diagnostics for buildings applications, the benefits of those applications, emerging diagnostic technology, examples of field deployments, the relationship to codes and standards, automated diagnostic tools presently available, guidance on how to use automated diagnostics, and related issues.

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## **THE GREEN LIBRARY PLANNER**

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### **WHAT EVERY LIBRARIAN NEEDS TO KNOW BEFORE STARTING TO**

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## **BUILD OR RENOVATE**

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*Scarecrow Press* **The Green Library Planner** is designed for library building design teams who are not actively engaged in architecture or engineering, but need an introduction to green building. With this book, the librarian and related staff will be able to design and operate the library in the best and most efficient way possible.

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## **2009 ASHRAE HANDBOOK**

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### **FUNDAMENTALS**

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*Amer Society of Heating* **The 2009 ASHRAE Handbook-Fundamentals** covers basic principles and data used in the HVAC&R industry. The ASHRAE Technical Committees that prepare these chapters strive not only to provide new information, but also to clarify existing information, delete obsolete materials, and reorganize chapters to make the Handbook more understandable and easier to use. An accompanying CD-ROM contains all the volume's chapters in both I-P and SI units.

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## **SYNERGISTIC DESIGN OF SUSTAINABLE BUILT ENVIRONMENTS**

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

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## **ADVANCES IN SUSTAINABLE ENERGY**

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*Springer* This book reveals key challenges to ensuring the secure and sustainable production and use of energy resources, and provides corresponding solutions. It discusses the latest advances in renewable

energy generation, and includes studies on climate change and social sustainability. In turn, the book goes beyond theory and describes practical challenges and solutions associated with energy and sustainability. In particular, it addresses: · renewable energy conversion technologies; · transmission, storage and consumption; · green buildings and the green economy; and · waste and recycling. The book presents the current state of knowledge on renewable energy and sustainability, supported by detailed examples and case studies, making it not only a cutting-edge source of information for experts and researchers in the field, but also an educational tool for related undergraduate and graduate courses.

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## **HEATING AND COOLING OF BUILDINGS**

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### **DESIGN FOR EFFICIENCY, REVISED SECOND EDITION**

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*CRC Press* The art and the science of building systems design evolve continuously as designers, practitioners, and researchers all endeavor to improve the performance of buildings and the comfort and productivity of their occupants. Retaining coverage from the original second edition while updating the information in electronic form, *Heating and Cooling of Buildings: Design for Efficiency, Revised Second Edition* presents the technical basis for designing the lighting and mechanical systems of buildings. Along with numerous homework problems, the revised second edition offers a full chapter on economic analysis and optimization, new heating and cooling load procedures and databases, and simplified procedures for ground coupled heat transfer calculations. The accompanying CD-ROM contains an updated version of the Heating and Cooling of Buildings (HCB) software program as well as electronic appendices that include over 1,000 tables in HTML format that can be searched by major categories, a table list, or an index of topics. Ancillary information is available on the book's website [www.hcbcentral.com](http://www.hcbcentral.com) From materials to computers, this edition explores the latest technologies exerting a profound effect on the design and operation of buildings. Emphasizing design optimization and critical thinking, the book continues to be the ultimate resource for understanding energy use in buildings.

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## **FUNDAMENTALS OF HVAC SYSTEMS**

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### **SI EDITION**

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*Academic Press* Everything that new HVAC & R engineers will be expected to learn, from the leading industry body - ASHRAE.

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## **ICE-HOUSES**

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### **ENERGY, ARCHITECTURE, AND SUSTAINABILITY**

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*Academic Press* *Ice-Houses: Energy, Architecture and Sustainability* presents new and novel technologies and approaches surrounding daily and

seasonal ice storage, along with discussions on passive cooling and natural technologies using different methods, including heat pumps. The book covers different aspects of ice-houses and cold energy production, storage and utilization. By addressing various issues connected to the technology and structure of traditional ice-houses and natural and artificial ice making, this references looks at new technological approaches for the reduction of electrical energy consumption in buildings. Users will find this to be a comprehensive overview of ice house storage that includes worked examples and global case studies. It is an essential resource for researchers and engineers looking to advance their understanding of this method of thermal storage. Includes worked examples which calculate and determine the amounts of different parameters to help better understand the problem-solving process Provides a comprehensive literature review on the history and architecture of ice-houses, along with different ice production and storage methods Contains recent developments related to cold energy production and storage through ice making to reduce electricity demand

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## **CLAY'S HANDBOOK OF ENVIRONMENTAL HEALTH**

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*Routledge* Clay's Handbook of Environmental Health, since its first publication in 1933, has provided a definitive guide for the environmental health practitioner, or reference for the consultant or student. This 21th edition continues as a first point of reference, reviewing the core principles, techniques and competencies, and then outlining the specialist subjects. It has been refocused on the current curriculum of the UK's Chartered Institute of Environmental Health but should also readily suit the generalist or specialist working outside the UK.

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## **ASHRAE HANDBOOK 2015**

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### **HEATING, VENTILATING, AND AIR-CONDITIONING APPLICATIONS: INCH-POUND EDITION**

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The 2015 ASHRAE Handbook--HVAC Applications comprises more than 60 chapters covering a broad range of facilities and topics, written to help engineers design and use equipment and systems described in other Handbook volumes. Main sections cover comfort, industrial, energy-related, general applications, and building operations and management. ASHRAE Technical Committees in each subject area have reviewed all chapters and revised them as needed for current technology and design practice. An accompanying CD-ROM contains all the volume's chapters in both I-P and SI units.

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## **MY HOUSE IS KILLING ME!**

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## **A COMPLETE GUIDE TO A HEALTHIER INDOOR ENVIRONMENT**

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*Johns Hopkins University Press* This book is a must for all home occupants as well as perfect for those contemplating moving to or purchasing a property.

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## **UNDERSTANDING PSYCHROMETRICS**

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*Amer Society of Heating* "Updates the second edition to provide readers a reference that agrees with the latest international standards. The third edition also includes a revised equation for the adiabatic saturation process, an summary of the 2009 RP-1485 ASHRAE research, as well as minor edits to the text"

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## **STANDARD METHODS FOR THERMAL COMFORT ASSESSMENT OF CLOTHING**

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*CRC Press* Providing detailed analysis of the thermal comfort assessment of clothing as the basis for developing standards, this book discusses the thermal protective role of clothing as a way of modelling heat transfer from the body, general thermal regulation of humans, and the importance of globally accepted test methods and standards to improve quality. New materials and discoveries in the study of thermal comfort necessitate the need for standard improvements and update. The development of international standards and the unification of testing methods is of crucial significance to ensure cost reduction and health protection. The book promotes instruments, methods, implementation of unified specifications, and the definition of standards so that a clear quality management system can be established, for both production systems and testing methods. It discusses standards in ergonomics of the thermal environment, clothing thermal characteristics, and subjective assessment of thermal comfort, which allows for systematic control of the measuring methods and the services and final products that are distributed on the global market. This book is aimed at industry professionals, researchers, and advanced students working in textile and clothing engineering, comfort testing, and ergonomics.

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## **WORLD HERITAGE AND CLIMATE CHANGE**

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### **IMPACTS AND ADAPTATION**

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*MDPI* Natural World Heritage sites, such as the Serengeti, or Natural and Cultural Heritage sites, such as the Historic Centre of Rome, have the common feature of being a treasured resource of global importance. The 1121 properties on the World Heritage (WH) list have permanent recognized value for humankind. Most of those >1000 locations are at some risk from changes in climate. Globally, scholars and managers seek to understand current and future climatic stresses, mitigation and adaptation opportunities. There is a strong need for the "So What?" in

World Heritage studies. The invited papers in this volume address natural, cultural and mixed WH sites, and each offers a fresh perspective on assessing the degree of risk from changing climate and guidance on acting to mitigate and adapt to climate changes to provide new awareness and tools to improve their state of conservation for the future.

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## **ASHRAE HANDBOOK 2019**

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### **HEATING, VENTILATING, AND AIR-CONDITIONING APPLICATIONS, SI EDITION**

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### **2014 ASHRAE HANDBOOK--REFRIGERATION**

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*Amer Society of Heating* **The 2014 ASHRAE Handbook--Refrigeration covers the refrigeration equipment and systems for applications other than human comfort. This volume includes data and guidance on cooling, freezing, and storing food; industrial and medical applications of refrigeration; and low-temperature refrigeration. The 2014 ASHRAE Handbook--Refrigeration CD, in both I-P and SI editions, contains PDFs of chapters easily viewable using Adobe Reader. This product must be installed on user's computer. Product cannot be read directly from CD and is not compatible with mobile devices. Opened software cannot be returned for refund or credit.**

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## **WHO GUIDELINES FOR INDOOR AIR QUALITY**

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### **SELECTED POLLUTANTS**

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*World Health Organization* **This book presents WHO guidelines for the protection of public health from risks due to a number of chemicals commonly present in indoor air. The substances considered in this review, i.e. benzene, carbon monoxide, formaldehyde, naphthalene, nitrogen dioxide, polycyclic aromatic hydrocarbons (especially benzo[a]pyrene), radon, trichloroethylene and tetrachloroethylene, have indoor sources, are known in respect of their hazardousness to health and are often found indoors in concentrations of health concern. The guidelines are targeted at public health professionals involved in preventing health risks of environmental exposures, as well as specialists and authorities involved in the design and use of buildings, indoor materials and products. They provide a scientific basis for legally enforceable standards.**

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## **ENCYCLOPEDIA OF ENVIRONMENTAL MANAGEMENT, FOUR VOLUME SET**

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*CRC Press* **Winner of an Outstanding Academic Title Award from CHOICE Magazine Encyclopedia of Environmental Management gives a comprehensive overview of environmental problems, their sources, their assessment, and their solutions. Through in-depth entries and a topical table of contents, readers will quickly find answers to questions about**

specific pollution and management issues. Edited by the esteemed Sven Erik Jørgensen and an advisory board of renowned specialists, this four-volume set shares insights from more than 500 contributors—all experts in their fields. The encyclopedia provides basic knowledge for an integrated and ecologically sound management system. Nearly 400 alphabetical entries cover everything from air, soil, and water pollution to agriculture, energy, global pollution, toxic substances, and general pollution problems. Using a topical table of contents, readers can also search for entries according to the type of problem and the methodology. This allows readers to see the overall picture at a glance and find answers to the core questions: What is the pollution problem, and what are its sources? What is the "big picture," or what background knowledge do we need? How can we diagnose the problem, both qualitatively and quantitatively, using monitoring and ecological models, indicators, and services? How can we solve the problem with environmental technology, ecotechnology, cleaner technology, and environmental legislation? How do we address the problem as part of an integrated management strategy? This accessible encyclopedia examines the entire spectrum of tools available for environmental management. An indispensable resource, it guides environmental managers to find the best possible solutions to the myriad pollution problems they face. Also Available Online This Taylor & Francis encyclopedia is also available through online subscription, offering a variety of extra benefits for researchers, students, and librarians, including: Citation tracking and alerts Active reference linking Saved searches and marked lists HTML and PDF format options Contact us to inquire about subscription options and print/online combination packages. US: (Tel) 1.888.318.2367 / (email) e-reference@taylorandfrancis.com International: (Tel) +44 (0) 20 7017 6062 / (email) online.sales@tandf.co.uk

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## **HVAC DESIGN MANUAL FOR HOSPITALS AND CLINICS**

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*Ashrae* "Provides in-depth design recommendations and proven, cost effective, and reliable solutions for health care HVAC design that provide low maintenance cost and high reliability based on best practices from consulting and hospital engineers with decades of experience in the design, construction, and operation of health care facilities"--

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## **HEALTHY BUILDINGS**

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## **HOW INDOOR SPACES DRIVE PERFORMANCE AND PRODUCTIVITY**

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*Harvard University Press* "This book should be essential reading for all who commission, design, manage, and use buildings—indeed anyone who is interested in a healthy environment." —Norman Foster A forensic investigator of "sick buildings" and Director of Harvard's Healthy Buildings Program teams up with a CEO-turned-Harvard Business School professor to reveal the secrets of a healthy building—and unlock one of the greatest

business opportunities of our time. By the time you reach eighty, you will have spent seventy-two years of your life indoors. Like it or not, humans have become an indoor species. This means that the people who design, build, and maintain our buildings can have a major impact on our health. Ever feel tired during a meeting? That's because most offices and conference rooms are not bringing in enough fresh air. When that door opens, it literally breathes life back into the room. But there is a lot more acting on your body that you can't feel or see. From our offices and homes to our schools and hospitals, the indoor spaces where we work, learn, play, eat, and heal have an outsized influence on our performance and wellbeing. They affect our creativity, focus, and problem-solving ability and can make us sick—dragging down profits in the process. Charismatic pioneers of the healthy building movement who have paired up to combine the cutting-edge science of Harvard's School of Public Health with the financial know-how of the Harvard Business School, Joseph Allen and John Macomber lay out the science of healthy buildings and make the business case for owners, developers, and CEOs. They reveal the 9 Foundations of a Healthy Building, and show how tracking health performance indicators with smart technology can boost performance and create economic value. While the "green" building movement tackled energy, waste, and water, the new healthy building movement focuses on the most important (and expensive) asset of any business: its people.

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## **PROCEDURES FOR COMMERCIAL BUILDING ENERGY AUDITS**

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*Amer Society of Heating* **Procedures for Commercial Building Energy Audits** provides purchasers and providers of energy audit services with a complete definition of good procedures for an energy survey and analysis. It also provides a format for defining buildings and their energy use that will allow data to be shared in meaningful ways. This publication specifically avoids a "cookbook" approach, recognizing that all buildings are different and each analyst needs to exercise a substantial amount of judgment. Instead, Procedures sets out generalized procedures to guide the analyst and the building owner, and provides a uniform method of reporting basic information. Different levels of analysis are organized into the following categories: Preliminary Energy Use Analysis Level I Analysis "Walk-Through Analysis Level II Analysis" Energy Survey and Analysis Level III Analysis "Detailed Analysis of Capital-Intensive Modifications The book comes with a CD that provides more than 25 guideline forms, with explanatory material, to illustrate the content and arrangement of a complete, effective energy analysis report. The CD provides these forms in both PDF and Word format, enabling you to customize and print each form. For the downloadable version, the PDF of the book and the guideline forms are included in a single .zip file. You will need WinZip or an equivalent program to open the file. ASHRAE Research Project 669 and ASHRAE Special Project 56.

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**ENCYCLOPEDIA OF THERMAL PACKAGING, SET 3: THERMAL PACKAGING APPLICATIONS (A 3-VOLUME SET)**

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**SET 3: THERMAL PACKAGING APPLICATIONS (A 3-VOLUME SET)**

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*World Scientific* Thermal and mechanical packaging — the enabling technologies for the physical implementation of electronic systems — are responsible for much of the progress in miniaturization, reliability, and functional density achieved by electronic, microelectronic, and nanoelectronic products during the past 50 years. The inherent inefficiency of electronic devices and their sensitivity to heat have placed thermal packaging on the critical path of nearly every product development effort in traditional, as well as emerging, electronic product categories. Successful thermal packaging is the key differentiator in electronic products, as diverse as supercomputers and cell phones, and continues to be of pivotal importance in the refinement of traditional products and in the development of products for new applications. The Encyclopedia of Thermal Packaging, compiled in four multi-volume sets (Set 1: Thermal Packaging Techniques, Set 2: Thermal Packaging Tools, Set 3: Thermal Packaging Applications, and Set 4: Thermal Packaging Configurations) provides a comprehensive, one-stop treatment of the techniques, tools, applications, and configurations of electronic thermal packaging. Each of the author-written volumes presents the accumulated wisdom and shared perspectives of a few luminaries in the thermal management of electronics. The four sets in the Encyclopedia of Thermal Packaging will provide the novice and student with a complete reference for a quick ascent on the thermal packaging 'learning curve,' the practitioner with a validated set of techniques and tools to face every challenge, and researchers with a clear definition of the state-of-the-art and emerging needs to guide their future efforts. This encyclopedia will, thus, be of great interest to packaging engineers, electronic product development engineers, and product managers, as well as to researchers in thermal management of electronic and photonic components and systems, and most beneficial to undergraduate and graduate students studying mechanical, electrical, and electronic engineering. Set 3: Thermal Packaging Applications The third set in the Encyclopedia includes two volumes in the planned focus on Thermal Packaging Applications and a single volume on the use of Phase Change Materials (PCM), a most important Thermal Management Technique, not previously addressed in the Encyclopedia. Set 3 opens with Heat Transfer in Avionic Equipment, authored by Dr Boris Abramzon, offering a comprehensive, in-depth treatment of compact heat exchangers and cold plates for avionics cooling, as well as discussion on recent developments in these heat transfer units that are widely used in the thermal control of military and civilian airborne electronics. Along with a detailed presentation of the relevant thermofluid physics and governing equations, and the supporting mathematical design

and optimization techniques, the book offers a practical guide for thermal engineers designing avionics cooling equipment, based on the author's 20+ years of experience as a thermal analyst and a practical design engineer for Avionics and related systems. The Set continues with *Thermal Management of RF Systems*, which addresses sequentially the history, present practice, and future thermal management strategies for electronically-steered RF systems, in the context of the RF operational requirements, as well as device-, module-, and system-level electronic, thermal, and mechanical considerations. This unique text was written by 3 authors, Dr John D Albrecht, Mr David H Altman, Dr Joseph J Maurer, with extensive US Department of Defense and aerospace industry experience in the design, development, and fielding of RF systems. Their combined efforts have resulted in a text, which is well-grounded in the relevant past, present, and future RF systems and technologies. Thus, this volume will provide the designers of advanced radars and other electronic RF systems with the tools and the knowledge to address the thermal management challenges of today's technologies, as well as of advanced technologies, such as wide bandgap semiconductors, heterogeneously integrated devices, and 3D chipsets and stacks. The third volume in Set 3, *Phase Change Materials for Thermal Management of Electronic Components*, co-authored by Prof Gennady Ziskind and Dr Yoram Kozak, provides a detailed description of the numerical methods used in PCM analysis and a detailed explanation of the processes that accompany and characterize solid-liquid phase-change in popular basic and advanced geometries. These provide a foundation for an in-depth exploration of specific electronics thermal management applications of Phase Change Materials. This volume is anchored in the unique PCM knowledge and experience of the senior author and placed in the context of the extensive solid-liquid phase-change literature in such diverse fields as material science, mathematical modeling, experimental and numerical methods, and thermofluid science and engineering.

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## **SOLAR ENGINEERING OF THERMAL PROCESSES**

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*Wiley* The updated, cornerstone engineering resource of solar energy theory and applications. Solar technologies already provide energy for heat, light, hot water, electricity, and cooling for homes, businesses, and industry. Because solar energy only accounts for one-tenth of a percent of primary energy demand, relatively small increases in market penetration can lead to very rapid growth rates in the industry???which is exactly what has been projected for coming years as the world moves away from carbon-based energy production. *Solar Engineering of Thermal Processes, Third Edition* provides the latest thinking and practices for engineering solar technologies and using them in various markets. This Third Edition of the acknowledged leading book on solar engineering features: Complete coverage of basic theory, systems design, and applications Updated

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