Ashrae Stairwell Pressurization

Office building envelopes are generally successful in meeting a range of structural, aesthetic and thermal requirements. However, poor thermal envelope performance will occur when there are discontinuities in the envelope insulation and air barrier systems, such as thermal bridges and air leakage sites. These discontinuities result from designs that do not adequately account for heat, air and moisture transmission, with many thermal defects being associated with inappropriate or inadequate detailing of the connections of envelope components. Despite the existence of these thermal envelope performance problems, information is available to design and construct envelopes that do perform well. In order to close the gap between available knowledge and current practice, the Public Buildings Service of the General Services Administration has entered into an interagency agreement with the Center for Building Technology of the National Institute of Standards and Technology to develop thermal envelope design guidelines for federal office buildings. The goal of this project is to transfer the knowledge on thermal envelope design and performance from the building research, design and construction communities into a form that will be used by building design professionals. This report describes the NIST/GSA envelope design guidelines development at the end of the first year of effort on the project. The effort to this point has consisted of a literature review of research results and technical information on thermal envelope performance and design, an assessment of existing design guidelines as they relate to the thermal envelope, and the development of a format and outline for the design guidelines.

This book presents articles from the International Conference on Sustainable Design, Engineering, Management, and Sciences (ICSDEMS 2020), held in Bali, Indonesia. It highlights recent advances in civil engineering and sustainability, bringing together researchers and professionals to address the latest, most relevant issues in these areas.

SFPE Handbook of Fire Protection Engineering

Sustainable Architecture and Building Environment

Handbook of Air Conditioning and Refrigeration

Subject Index of All Technical Material that Appeared in ASHRAE Journal, ASHRAE Transactions, Symposium Bulletins, Proceedings of Conferences Cosponsored by ASHRAE, and International Best Papers

"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"--

The Special Issue/book introduces advanced techniques and research that have helped to reduce CO2 emissions and to use CO2 for the manufacturing of valuable products. This book refers the research trends and emerging technologies contributing to the mitigation of current climate change. It covers multidisciplinary research topics such as carbon mineralization, solid waste management, and convergence technologies for sustainable solutions for climate change.

NIST Building & Fire Research Laboratory Publications

Guide to Natural Ventilation in High Rise Office Buildings

Building and Fire Research Laboratory Publications

joint hearing before the Subcommittee on Long-term Care of the House Select Committee on Aging and Subcommittee on Long-term Care of the Senate Special Committee on Aging, Ninety-fourth Congress, second session, held June 3, 1976

Data for Room Fire Model Comparisons

For the most current mechanical codes that address the design and installation of the most current mechanical systems, use the 2015 INTERNATIONAL MECHANICAL CODE SOFT COVER. Designed to provide comprehensive regulations for mechanical systems and equipment, it includes coverage of HVAC, exhaust systems, chimneys and vents, ducts, appliances, boilers, water heaters, refrigerators, hydronic piping, and solar systems. This valuable reference uses prescriptive- and performance- related provisions to establish minimum regulations for a variety of systems. This updated code includes information on condensate pumps, and the ventilation system for enclosed parking garages.

Handbook of Smoke Control EngineeringAmerican Society of Heating Refrigerating and Air-Conditioning Engineers

ASHRAE Handbook

Joint Hearing Before the Subcommittee on Long-term Care of the House Select Committee on Aging and Subcommittee on Long-term Care of the Senate Special Committee on Aging, Ninety-fourth Congress, Second Session, Held June 3, 1976

Proceedings of ICSDEMS 2020

NBS Handbook

Pedestrian and Evacuation Dynamics 2012

Tall commercial office buildings present a series of design problems that differ from those that are found in other projects in the built environment. HVAC Design Guide for Tall Commercial Buildings provides guidance in both understanding the HVAC design problems of tall commercial office buildings and in detailing their alternative solutions.

This guideline defines ventilation and then natural ventilation. It explores the design requirements for natural ventilation in the context of infection control, describing the basic principles of design, construction, operation and maintenance for an effective natural ventilation system to control infection in health-care settings.

Journal of Research of the National Bureau of Standards

Rules of Thumb

Handbook of Smoke Control Engineering

NBSIR.

The tragedy of nursing home fires, the need for a national commitment for safety

Stairwells are essential to occupant exiting from tall (high-rise) buildings. In order to maintain tenable environments in the stairwells, modeling building and fire codes allow the use of a stair pressurization system to pressurize the shaft in order to keep smoke and toxic gases from entering the exit stairwell. Thus, allowing building occupants to exit the facility in a safe manner. Model building and fire codes require that stair pressurization systems are sized for all stairwell doors being closed, when during an actual emergency one or multiple doors could be open for various periods of time during a building evacuation. This research project will look at the impact of open stairwell doors on the stair pressurization system fan size based on experimental criteria reported in two American Society of Heating Refrigerating and Air Conditioning Engineers (ASHRAE) projects, RP-1203 and RP-1447, along with some additional modeling methods.

Rules of Thumb are general principles derived from practice and experience rather than precise theory. The 5th edition of Rules of Thumb has been created by referencing various contemporary sources in the building services industry and can reasonably be held to reflect current design practices.

NFPA 92 Standard for Smoke Control Systems

Emerging Technologies and Solutions for the Sustainable Climate Change Challenges

Design of Smoke Control Systems for Buildings

ASHRAE Journal

Natural Ventilation for Infection Control in Health-care Settings

"Evacuation from Fires, Volume II" in this important new series was developed because of the fundamental importance of removing occupants from harm's way during building fires and the need to demonstrate new analytical techniques and tools for the design and evaluation of exit requirements during fire emergencies. The corollary issue of elevator transport for evacuation and fire fighter use during fire emergencies is also discussed in this volume.

Tall buildings are not the only solution for achieving sustainability through increased density in cities but, given the scale of current population shifts, the vertical city is increasingly being seen as the most viable solution for many urban centers. However, the full implications of concentrating more people on smaller plots of land by building vertically - whether for work, residential or leisure functions - needs to be better researched and understood. It is generally accepted that we need to reduce the energy equation – in both operating and embodied terms – of every component and system in the building as an essential element in making it more sustainable. Mechanical HVAC systems (Heating, Ventilation and Air-Conditioning) in tall office buildings typically account for 30-40 percent of overall building energy consumption. The increased efficiency (or possibly even elimination) of these mechanical systems – through the provision of natural ventilation – could thus be argued to be the most important single step we could make in making tall buildings more sustainable. This guide sets out recommendations for every phase of the planning, construction and operation of natural ventilation systems in these buildings, including local climatic factors that need to be taken into account, how to plan for seasonal variations in weather, and the risks in adopting different implementation strategies. All of the recommendations are based on analysis of the research findings from richly-illustrated international case studies. Tried and tested solutions to real-life problems make this an essential guide for anyone working on the design and operation of tall buildings anywhere in the world. This is the first technical guide from the Council on Tall Buildings and Urban Habitat's Tall Buildings & Sustainability Working Group looking in depth at a key element in the creation of tall buildings with a much-reduced environmental impact, while taking the industry closer to an appreciation of what constitutes a sustainable tall building, and what factors affect the sustainability threshold for tall.

The Tragedy of Nursing Home Fires, the Need for a National Commit Ment for Safety

Fire Technology Abstracts

Hearings Before the Subcommittee on Science, Research, and Technology of the Committee on Science and Technology, U.S. House of Representatives, Ninety-seventh Congress, First Session, February 25, March 4, 11, 1981

Earthquake and Fire Act Authorization

Fire Safety for Very Tall Buildings

Revised and significantly expanded, the fifth edition of this classic work offers both new and substantially updated information. As the definitive reference on fire protection engineering, this book provides thorough treatment of the current best practices in fire protection engineering and performance-based fire safety. Over 130 eminent fire engineers and researchers contributed chapters to the book, representing universities and professional organizations around the world. It remains the indispensible source for reliable coverage of fire safety engineering fundamentals, fire dynamics, hazard calculations, fire risk analysis, modeling and more. With seventeen new chapters and over 1,800 figures, the this new edition contains: Step-by-step equations that explain engineering calculations Comprehensive revision of the coverage of human behavior in fire, including several new chapters on egress system design, occupant evacuation scenarios, combustion toxicity and data for human behavior analysis Revised fundamental chapters for a stronger sense of context Added chapters on fire protection system selection and design, including selection of fire safety systems, system activation and controls and CO2 extinguishing systems Recent advances in fire resistance design Addition of new chapters on industrial fire protection, including vapor clouds, effects of thermal radiation on people, BLEVEs, dust explosions and gas and vapor explosions New chapters on fire load density, curtain walls, wildland fires and vehicle tunnels Essential reference appendices on conversion factors, thermophysical property data, fuel properties and combustion data, configuration factors and piping properties “Three-volume set; not available separately”

"Contains papers presented at a symposium held in Phoenix, Ariz. on Dec. 5, 1988 and sponsored by ASTM Committee E-5 on Fire Standards."-- Foreword. - "ASTM publication code number (PCN) 04-010820-31."--t.p. verso. - "ASTM Special Technical Publication 1081. - Includes bibliographical references and indexes. - Electronic reproduction; W. Conshohocken, Pa; ASTM International; 2011; Mode of access: World Wide Web; System requirements: Web browser; Access may be restricted to users at subscribing institutions.

2015 International Mechanical Code

Hearings, Reports and Prints of the Senate Special Committee on Aging

Evacuation from Fires

Heat Vent and Air Conditioning Design Guide for Tall Commercial Buildings

Characterization and Toxicity of Smoke

Presents the types of analyses that can be used to examine large-scale room fire test data to prepare the data for comparison with zone-based fire models. The base of experimental data

ranges in complexity from one room tests with individual furniture items to a series of tests conducted in a multiple story hotel equipped with a zoned smoke control system. Graphs and diagrams.

* 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

Principles of Smoke Management

Design of Buildings for Fire Safety

Guidelines for Building Services

Engineering Guide

Modeling Pressurized Stairwells with Open Doors

The 6th International Conference on Pedestrian and Evacuation Dynamics (PED2012) showcased research on human locomotion. This book presents the proceedings of PED2012. Humans have walked for eons; our drive to settle the globe began with a walk out of Africa. However, much remains to discover. As the world moves toward sustainability while racing to assess and accommodate climate change, research must provide insight on the physical requirements of walking, the dynamics of pedestrians on the move and more. We must understand, predict and simulate pedestrian behaviour, to avoid dangerous situations, to plan for emergencies, and not least, to make walking more attractive and enjoyable. PED2012 offered 70 presentations and keynote talks as well as 70 poster presentations covering new and improved mathematical models, describing new insights on pedestrian behaviour in normal and emergency cases and presenting research based on sensors and advanced observation methods. These papers offer a starting point for innovative new research, building a strong foundation for the next conference and for future research.

This Guide provides information on special topics that affect the fire safety performance of very tall buildings, their occupants and first responders during a fire. This Guide addresses these topics as part of the overall building design process using performance-based fire protection engineering concepts as described in the SFPE Engineering Guide to Performance Based Fire Protection. This Guide is not intended to be a recommended practice or a document that is suitable for adoption as a code. The Guide pertains to “super tall,” “very tall” and “tall” buildings. Throughout this Guide, all such buildings are called “very tall buildings.” These buildings are characterized by heights that impose fire protection challenges; they require special attention beyond the protection features typically provided by traditional fire protection methods. This Guide does not establish a definition of buildings that fall within the scope of this document.

ASHRAE Transactions

Design of Smoke Management Systems

NBS Special Publication

Handbook of Mechanical and Electrical Systems for Buildings

Development of Thermal Envelope Design Guidelines for Federal Office Buildings