

A Modeling Study of Ventilation in Manufactured Houses

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ABSTRACT

The design of mechanical ventilation systems for small, tightly sealed buildings is a complex task. This paper presents a modeling study of ventilation in manufactured houses. The study involves the use of a computer program to simulate the airflow and contaminant concentrations in a house with various ventilation systems. The results show that the design of the ventilation system is critical to the health and comfort of the occupants. The study also shows that the use of mechanical ventilation can significantly improve the indoor air quality in manufactured houses.

INTRODUCTION

The design of mechanical ventilation systems for small, tightly sealed buildings is a complex task. This paper presents a modeling study of ventilation in manufactured houses. The study involves the use of a computer program to simulate the airflow and contaminant concentrations in a house with various ventilation systems. The results show that the design of the ventilation system is critical to the health and comfort of the occupants. The study also shows that the use of mechanical ventilation can significantly improve the indoor air quality in manufactured houses.

The first problem in the design of mechanical ventilation systems is the determination of the required ventilation rate. This is typically done by using a standard method, such as the ASHRAE 62.1-1989 standard. However, this method is based on a number of assumptions that may not be valid for all buildings. For example, the standard assumes that the building is tightly sealed, which may not be the case for manufactured houses. Therefore, it is important to consider the specific characteristics of the building when determining the required ventilation rate.

The second problem in the design of mechanical ventilation systems is the selection of the ventilation system. There are a number of different types of ventilation systems, each with its own advantages and disadvantages. The selection of the ventilation system should be based on a number of factors, including the building characteristics, the required ventilation rate, and the budget.

Once the ventilation system has been selected, the next step is to design the system. This involves determining the size and location of the ventilation components, such as the fans, ducts, and filters. The design should take into account the airflow requirements and the pressure drops in the system. It is also important to consider the maintenance requirements of the system.

- The design of mechanical ventilation systems for small, tightly sealed buildings is a complex task.
- This paper presents a modeling study of ventilation in manufactured houses.
- The study involves the use of a computer program to simulate the airflow and contaminant concentrations in a house with various ventilation systems.
- The results show that the design of the ventilation system is critical to the health and comfort of the occupants.
- The study also shows that the use of mechanical ventilation can significantly improve the indoor air quality in manufactured houses.

Keywords: mechanical ventilation, manufactured houses, indoor air quality, modeling, airflow, contaminant concentrations.

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A Modeling Study of Ventilation in Manufactured Houses Andrew K. Persily, Samuel R. Martin, National Institute of Standards and Technology (U.S.), United States. Department of Housing and Urban Development. Office of Policy Development and Research, 2001-10-01 The Dept of Housing and Urban Development Manufactured Home Construction and Safety Standards MHCSS Part 3280 1994 contain requirements intended to provide adequate levels of outdoor air ventilation in manufactured homes mobile homes In the implementation of these standards questions have arisen regarding the impact and significance of these requirements which this report addresses Chapters introduction and background on MHCSS ventilation requirements description of house model airflow characteristics and ventilation systems simulation approach cases analyzed air tightness and ventilation and energy results and summary and discussion Charts and tables **A Handbook of Sustainable Building Design and Engineering** Dejan Mumovic, Mat Santamouris, 2013-06-17 The combined challenges of health comfort climate change and energy security cross the boundaries of traditional building disciplines This authoritative collection focusing mostly on energy and ventilation provides the current and next generation of building engineering professionals with what they need to work closely with many disciplines to meet these challenges A Handbook of Sustainable Building Engineering covers how to design engineer and monitor a building in a manner that minimises the emissions of greenhouse gases how to adapt the environment fabric and services of existing and new buildings to climate change how to improve the environment in and around buildings to provide better health comfort security and productivity and provides crucial expertise on monitoring the performance of buildings once they are occupied The authors explain the principles behind built environment engineering and offer practical guidance through international case studies **Urban Research Monitor** ,1998 **Monthly Catalog of United States Government Publications** ,2000 Building and Fire Research Laboratory Publications Building and Fire Research Laboratory (U.S.),1991 **NIST Building & Fire Research Laboratory Publications** ,1992 Hydraulic Model Studies of Navajo Dam Diversion and Outlet Works Structure G. L. Beichley,1960 *Publications of the National Institute of Standards and Technology ... Catalog* National Institute of Standards and Technology (U.S.), National Institute of Standards and Technology (U.S.). Information Resources and Services Division,1994 Airflow Performance of Building Envelopes, Components, and Systems Mark P. Modera, Andrew K. Persily,1995 Discusses the measurement and control of air moving inside buildings and between the inside and outside in 17 papers and discussions from a symposium in Dallas Fort Worth in October 1993 After an overview of the subject covers air movement ventilation and indoor air quality window air leakage *NIST Special Publication* ,1994 Vernacular Architecture: Towards a Sustainable Future C. Mileto, F. Vegas, L. García Soriano, V. Cristini, 2014-08-28 Sustainability is a concept that has monopolised a large number of the scientific debates in a wide range of spheres connected not only with architecture urban planning and construction but also with the product market tourism culture etc However sustainability is

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