عنوان مقاله:

Investigating the performance of trickle ventilation on residential building's energy efficiency

محل انتشار:

سومین کنفرانس بین المللی تحقیقات در عمران،معماری و شهرسازی و محیط زیست پایدار (سال: 1395)

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نویسندگان:

Adel Kabiri Koupaiee - *Master of Architecture & Energy, School of Architecture, College of Fine Arts, University of Tehran,Tehran, Iran*

Behrouz Kari - *Assistant Professor, Energy Department, Building & Housing Research Center, Tehran, Iran*

Mohammad Javad Saghafi - *Professor, School of Architecture, College of Fine Arts, University of Tehran, Tehran, Iran*

خلاصه مقاله:

Increase in energy consumption and the danger facing non-renewable energy sources emphasizes the issue of energy consumption, especially in the building sector. Today, Iran is among nations with the highest energy consumption per capita. The present study proposes an approach to control building ventilation through variable ventilation rates with the aid of trickle ventilators in relation to the number of people inside the domicile. Indeed, the ventilation of interior space is fulfilled through creating one or multiple constant flow rates in a certain range of pressure gradients by trickle ventilators. In this system, the ventilation rate would be regulated based on the number of occupants and their activity rate, those influencing indoor humidity and temperature. In addition to providing a certain amount of fresh air,trickle ventilation also prevents stuffiness, specifically in airtight buildings in winter. Computer simulations in EnergyPlus software were used to analyze the performance of trickle ventilators. Heating and cooling loads in a sample day, a sample day in summer and a sample day in winter, were simulated in Yazd City. As a result, the amount of reduction in building's annual energy consumption was simulated, and different scenarios were compared with each other. The results show using trickle ventilators with variable ventilation rates causes a .significant reduction in building's annual energy consumption

کلمات کلیدی:

Trickle ventilation, Variable ventilation rates, Energy consumption, Air-change simulation