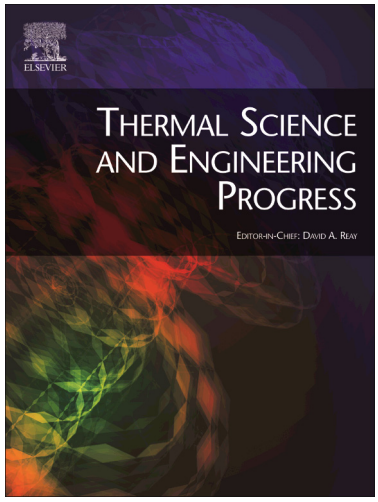

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Energy efficient setting of supply air temperature in dual-duct dual-fan ventilation systems with extract air recirculation

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Abstract

This work shows that there are still opportunities for reducing energy demand for air treatment in dual-duct dual-fan ventilation systems. Methods of energy conservation in systems with extract air recirculation are proposed. The yearly energy demand for treatment of the supply air depends both on the preliminary treatment of the total airflow and the individual treatments of hot and cold air. The control of air recirculation contributes to the energy demand for the supply air treatment. This influence is particularly pronounced in transient conditions, which differ during the summer and winter periods. The proposed design solution involving the use of a separate individual recirculation of extract air for warm and cold air installations allows limiting of the energy demand for both warm and cold air temperature settings. This reduction of the energy demand is achieved under transient external air parameters.

Keywords: ventilation, dual duct system, dual fan, supply air temperature, efficient, energy reduction, recirculation

1. Introduction

Ventilation systems are installed in buildings to ensure occupants comfort by providing a continuous supply of fresh external air and maintaining a room

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