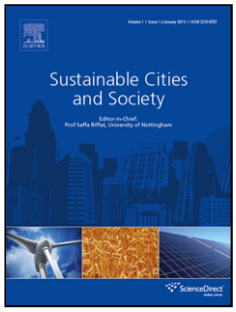

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Assessment of Ventilation Effectiveness in Exiting Residential Building in Mediterranean Countries: Case Study, Existing Residential Building in Portugal

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Highlights

- The ventilation effectiveness of existing residential building has been investigated.
- The effect of different ventilation strategies on the ventilation effectiveness is analyzed.
- The numerical results have been validated by experimental/measurement results.
- The ACE of the buildings vary from 0.17 to 0.58.
- The stack ventilation acts better due to the existing condition of the building and urban area.

Abstract

Natural ventilation as a part of a building´s function that has a strong effect on human comfort. The reduction of natural ventilation and infiltration, as a part of the ventilation system in the old existing buildings, due to intervention actions, have been causing a reduction in indoor air quality and an increment of relative humidity levels in the indoor environment.

Providing optimal indoor condition is not only related to the renewal of the air but also with its distribution. Hence airflow patterns in historical buildings influence interior comfort conditions. The aim of this work is to assess the effectiveness of the existing natural ventilation system in the old and historical buildings by different natural ventilation strategies.

To achieve the proposed objective, the research was developed resorting to in-situ measurements and simulation methods. The simulation was performed with the Design-Builder software and the main goal was answering to the following question:

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