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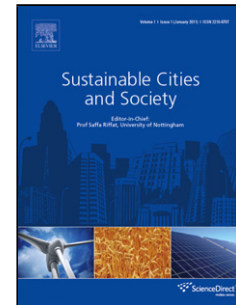
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# THERMAL PERFORMANCE OF A RESIDENTIAL HOUSE EQUIPPED WITH A COMBINED SYSTEM: A DIRECT SOLAR FLOOR AND AN EARTH–AIR HEAT EXCHANGER

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## Highlights

- The thermal performance of a residential house equipped with a combined system, DSF, EAHE and free cooling is investigated.
- The DSF is combined with the EAHE while the EAHE is alternated with the free cooling.
- A control strategy is adopted to synergize these systems, whether for heating or cooling.
- A thermal model of the house integrated with these systems is developed and simulated.
- A sensitive study on the contribution of each system in reducing the annual energetic requirements of the house and increasing thermal comfort is conducted.

## Abstract

Combining solar and geothermal technologies for heating and cooling spaces is the most appropriate means to ensure an acceptable level of thermal comfort all year round with optimum energy consumption. This paper investigates the efficiency of a combined heating and cooling system integrated in a residential

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