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A quantitative Analysis of Impact of Potential Variables on the Energy Performance of Old and New Buildings in China

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Abstract : Currently, there are two types of heating systems in Chinese residential buildings, with respect to the controllability of the heating system, one is an old heating system without any possibility of controlling room temperature and another is a new heating system that provides temperature control of individual rooms. This paper is aiming to evaluate the impact of potential variables on the energy performance of old and new buildings respectively in China, and to explore how the use of individual room temperature control would change occupants' heating behaviour and thermal comfort in Chinese residential buildings and its impact on the building energy performance. In the study, two types of residential buildings have been chosen, the new building install personal control on the heating system, together with 'pay for what you use' tariffs. The old building comprised uncontrolled heating with payment based on floor area. The studies were carried out in each building, with a longitudinal monitoring of indoor air temperature, outdoor air temperature, window position. The occupants' behaviour and thermal sensation were evaluated by questionnaires. Finally, use the simulated analytic method to identify the impact of influence variables on energy use for both types of buildings.

Keywords : residential buildings, China, design parameters, energy efficiency, simulation analytics method
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