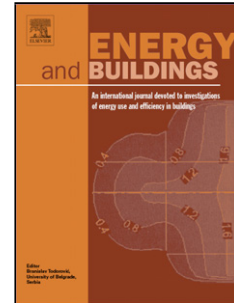


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## Automated roof window control system to address overheating on renovated houses: Summertime assessment and intercomparison

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### Highlights

- Manually controlled passive cooling system do not assure high quality environment
- Automated window system reduces overheating risk in houses of temperate climates
- Window system offers similar indoor air quality with mechanical ventilation system
- User behavior on window system is also crucial element for successful performance
- Static assessment criteria and methods fail to identify discomfort issues

### Abstract

Major and deep energy renovations on residential buildings are expected in Europe over the next several years. The current developments towards nearly-zero energy houses in building efficiency have increased the overheating occurrences indoors. For house users summer thermal discomfort is an unknown challenge that they have not faced in the past. The objectives of this study is to highlight the problem of overheating in energy renovated dwellings in temperate climates and to investigate the ability of automated roof window control systems to address the risk during the peak summer period. The assessment of the indoor environment was conducted in a typical two-storey house, close to Copenhagen. Both dynamic and static criteria were used to carry out risk evaluation.

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