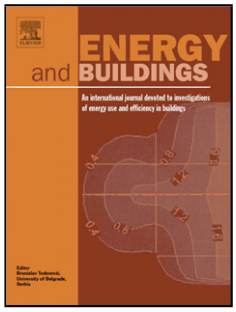

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Cost-effective analysis for selecting energy efficiency measures for refurbishment of residential buildings in Catalonia

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HIGHLIGHTS

- Cost effective evaluation for energy renovation of residential buildings
- Energy, comfort and economic criteria for choosing energy efficiency measures
- Building simulation including detailed characterization of the user interaction
- Effect of passive strategies as natural ventilation and solar protections

ABSTRACT

This paper presents the results of a detailed method for developing cost-optimal studies for the energy refurbishment of residential buildings. The method takes part of an innovative approach: two-step evaluation considering thermal comfort, energy and economic criteria. The first step, the passive evaluation, was presented previously [1] and the results are used to develop the active evaluation, which is the focus of this paper. The active evaluation develops a cost-optimal analysis to compare a set of passive and active measures for the refurbishment of residential buildings. The cost-optimal methodology follows the European Directives and analysed the measures from the point of view of non-renewable primary energy consumption and the global costs over 30 years. The energy uses included in the study are heating, domestic hot water, cooling, lighting and appliances. In addition, the results have been represented following the energy labelling