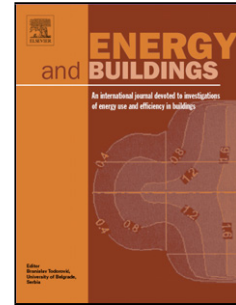


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Authors: F. Olivieri, R. Cocci Grifoni, D. Redondas, J.A. Sánchez-Reséndiz, S. Tascini

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AN EXPERIMENTAL METHOD TO QUANTITATIVELY ANALYSE THE EFFECT OF THERMAL INSULATION THICKNESS ON THE SUMMER PERFORMANCE OF A VERTICAL GREEN WALL

F. Olivieri^{a,*}, R. Cocci Grifoni^b, D. Redondas^c, J. A. Sánchez-Reséndiz^d, S. Tascini^b

^aUniversidad Politécnica de Madrid, E.T.S. Arquitectura, Department of Construction and Technology in Architecture, Avda. Juan de Herrera 4, 28040 Madrid, Spain. *Email: francesca.olivieri@upm.es*

^bSchool of Architecture and Design, University of Camerino, Via Della Rimembranza, 63100 Ascoli Piceno, Italy. *Email: roberta.coccigrifoni@unicam.it; simone.tascini@unicam.it*

^cUniversidad Politécnica de Madrid, E.T.S. Edificación, Department of Applied Mathematics, Avda. Juan de Herrera 6, 28040 Madrid, Spain. *Email: dolores.redondas@upm.es*

^dUniversidad Politécnica de Madrid, Innovation and Technology for Development Centre, Avda. Complutense, 28040, Madrid, Spain. *Email: sarjarq@gmail.com*

*Corresponding Author: E-mail: francesca.olivieri@upm.es. Fax: +34913366560. Phone: +34913364239

Highlights

- A full-scale green wall was monitored during 2 summers in a Mediterranean climate
- Different insulation thicknesses were tested during monitoring
- A new methodology to simulate the thermal performance of green walls was developed
- The methodology was experimentally validated
- The results show that the cut-off insulation thickness is 9 cm

Abstract

Green façades and walls greatly contribute to reducing solar gains and dispersion through the building envelope. This implies a lower energy load for both heating and cooling and the mitigation of thermal conditions in outdoor areas. Despite this, more studies are needed regarding the influence of these systems on the thermal behaviour of insulated façades. In this manuscript, we report the results of experimental research carried out on a vertical green wall in a continental Mediterranean climate. The main goal of the research is to establish a thickness above which the behaviour of the green façade becomes isothermal and its performance do not improve. To this end, we analyze and evaluate the effect of insulation thickness on the energy performance of a green wall using a new methodology called green façade optimization

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