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Abstract

Numerical Performance of Thermodynamic Behavior of Shipping-Container Architecture †

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Abstract: The reuse of shipping containers in architecture has grown in global popularity. However, few studies focus on understanding its thermodynamic behavior. The present study addresses, through numerical simulations, the transitory behavior of a typical house built with containers under different climates, both cold and warm. We examined container with different build construction and observed their effect, from completely naked to those that are coated with materials of different insulation and thermal inertia. Additionally, orientation and other design resources, such as height with respect to the ground, shadow elements, and the position of the windows, were considered. With all these multiparametric studies, quantitative conclusions were obtained that can be considered in design.

Keywords: shipping-container architecture; thermodynamic behavior; passive architecture; numerical simulation