

Abstract

# Phase Change Material Used for Masonry Joints: Numerical Simulation and Scale Test <sup>†</sup>

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**Abstract:** In order to effectively improve the thermal performance of the thermal insulation masonry wall, the thermal bridge effect of the grey joint on the heat transfer of the wall structure was studied. A brand-new form of phase change material walls, which used phase change materials in the wall parts to build ash joints, was carried out. The application of phase change material mortar, which was different from conventional "Hamburger" phase change material walls, was demonstrated to be a useful tool to reduce the thermal coefficient of the masonry wall. Furthermore, the scale-down test and numerical simulation of the heat transfer coefficient of the phase change material wall with different distribution of ash joints were experimented and discussed, and the feasibility of the new-form phase change material wall within the error range was verified.

**Keywords:** phase change materials; masonry



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