Performance of hydrophobized historic solid masonry – Experimental approach

The hygrothermal conditions in historic solid masonry are expected to change for the worse, with the application of internal insulation. Nevertheless, internal insulation plays a role in a holistic energy retrofit of historic buildings. With careful considerations and correct application, hydrophobic treatment may help remedy moisture ingress from external rain loads. This study includes experimental investigations of the effect on hygrothermal performance of various hydrophobization treatments on both brick and air lime mortar. An investigation of water migration through masonry applied with imitated climatic loads is also reported. The study showed a larger efficiency of hydrophobization on specimens of brick compared to the efficiency of hydrophobization of specimens of air lime mortar, which may be problematic in cases where mortar joints are the primary means for water ingress. Silane-based treatments generally proved to be most efficient in brick, whereas a variety of other active components were most successful in air lime mortar treatment. The investigation of water migration showed a distinct effect of silane, cream hydrophobization, though most evident in the external part of the brick.

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