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## **INVESTIGATION OF THE EFFECT OF MOISTURE IN THE TIME LAG OF BUILDING WALLS WITH DIFFERENT INSULATING MATERIALS**

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### **Abstract**

The thermal and water insulation of buildings is extremely important. Currently, the most applied insulation materials in the building sector are plastic foams and fibrous materials. Different types of polystyrene materials are used as water and thermal insulators, e.g., expanded polystyrene (EPS) and extruded polystyrene (XPS). The differences between the different polystyrene materials is found in their manufacturing processes and thus in their microstructure. Our research focuses on the analysis of heat conductivity and sorption properties of insulating materials because these two physical properties are the most important from the energy saving point of view. In this paper, the change of the time lag of concrete and brick walls insulated by different slabs as a function of the moisture content of the insulation materials was studied. Brick and concrete walls, each of thickness of 0.3 m, were chosen as substrates, and a 0.1-m thick insulating layer of different materials of EPS 30 and 200, extruded polystyrene and mineral wool were applied. The water content data taken from our previous measurements results were used for predicting the change of the time lag of building structures.

*Key words:* brick, concrete, insulators, moisture content, time lag

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