

ABSTRACT

Numerical – experimental analysis of external partitions in a light steel frame construction

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The paper presents a numerical and experimental session of external partitions made in the technology of a light steel skeleton as a result of the action of flood waters forcing layered images and the influence of moisture in the partition materials on its thermal and humidity. In terms of the aim of the work, an extensive review of the latest literature on the subject was made. The first part of the work on the mechanics of the structure referred to the influence of the partial disassembly of the shell of the external partition of the structure on the general stability of the building body and the research of non-free torsion of thin-walled open profiles type C, taking into account the original development of a stiffening insert made in 3D printing technology. It has been shown that the developed stiffening insert is an effective method of increasing the rigidity of torsion of thin-walled steel C-profiles. The second part of the work in the field of building physics concerned the influence of flood waters on the subsequent thermal and moisture properties of external partitions. The research focused on the evaluation of the thermal and humidity properties of the structural materials of the outer partition immersed in water (as a result of flooding the building) and the drying process. On the basis of the conducted tests, the time needed to dry an and the suitability for further use of the materials included in the external partition were estimated.