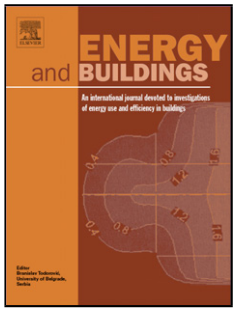

Title: The use of insulating materials based on natural fibers in combination with plant facades in building constructions

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Research Highlights:

Possibility of use of plant facades with ecological construction is unknown
Connection plant facades with ecological construction, was detailed investigated
It was shown that use of insulation material based on natural fibers is possible
Hygrothermal behaviour of hemp insulation in exterior wall with plant facade shows lower humidity content

Title:

The use of insulating materials based on natural fibers in combination with plant facades in building constructions

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Abstract:

Current trend in the field of civil engineering is building energy-saving and environmentally friendly constructions. One of ways of achieving these trends is using new, progressive construction materials, which are friendly to the environment, have good end-use properties and which are also for reasonable price. Another way is building plant facades and roofs. Plants are capable of regulating temperature and humidity in such constructions. Their advantage is positive influence on healthy living in large cities, where the beneficial properties of plants can be used, like capability of retaining fine dust particles, reducing the level of noise and protecting the structure from weather effects. The paper describes possible connection of both above mentioned modern technologies and gives results of research and development of insulation materials based on natural fibers; in particular technical hemp, flax and jute and their application into buildings with plant facades and roofs. The paper also mentions hydrothermal behavior of the developed materials, including computational simulation of behavior of the optimal hemp fiber based material after building into a structure with plant facade.

Key words: natural fibres, plant facades, insulation materials, technical hemp, flax, jute, hygrothermal behaviour, thermal conductivity.

1. Annotation

Current modern times emphasize development of new, promising, environmentally friendly materials applicable into existing and new, modern structures, materials available for the wide public, with optimal properties and ecological. Appropriate application and good function of these materials in building structures has a great influence on the condition of environment, which has considerable impact on the quality of life of the human race on the Earth. Another important trend of current times leading to improvement of conditions of