

RECONSTRUCTION OF FACADES OF EXISTING BRICK MULTI-STOREY BUILDINGS ON THE BASIS OF MODERN BUILDING ENERGY SAVING TECHNOLOGIES

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Introduction

Monitoring the energy efficiency of brick multi-storey buildings in operation revealed significant heat losses from the surface of their external walls. They were determined using a radiation pyrometer and at an average temperature of the heating season of about 4 °C amounted to approximately 0.316 kW / m² a value comparable to the total solar radiation. So the houses warm the urban atmosphere like the sun. Therefore,

Formulation of the problem

A rational solution is to increase the thermal insulation properties of the facade system of buildings, which is practiced mainly on the own initiative of the residents of individual apartments of these buildings. So, warming of external walls is carried out by polyfoam 50 or 100 mm thick. According to the authors, this reduces heat loss from the insulated surface by 1.84% and 2.17%, respectively, will reduce proportionally fuel consumption and emissions of environmentally hazardous pollutants into the atmosphere by the boiler that supplies heat. However, the fragmentary reconstruction on a private initiative is less than 10% of the surfaces of the facades, so we have an energy-ecological effect of an order of magnitude less, is about 0.2%

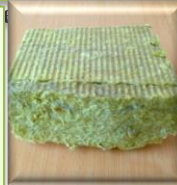


Fig.1 a



Fig.1 b

The proposed technology

For the reconstruction of existing facades, it is proposed to use current industrial technologies for insulation of facades used in new buildings. They are based on the use of mineral wool, in particular ISOVER-plaster, which is supplied in the form of plates with a similar thickness of foam (Fig. 1)

Advantages of the proposed reconstruction

ISOVER-plaster has advantages in comparison with polyfoam: - thermal conductivity - 0.034 W / m * K, against 0.048 W / m * K, so when using plates with a thickness of 100 mm is expected to reduce heat loss to approximately 2.8%, against 2.17% obtained for foam; - installation of mineral wool mats is performed with the use of adhesives, ie do not require metal screws - self-tapping screws, as in the case of attaching foam, which looks more technological and does not harm the brick wall; - environmental friendliness and slightly lower cost, due to the fact that the raw material for the production of mineral wool is mainly natural stones, rather than polystyrene - a product of other environmentally hazardous chemical production.

Conclusion

Thus, taking into account the above advantages, large-scale reconstruction of existing facades of brick houses should be performed using mineral wool, while obtaining a higher energy efficiency by about 29% compared to the use of polystyrene.