

MANSARD RESIDENTIAL BUILDINGS ROOF INCREASING THE ENERGY
EFFICIENCY OF CONSTRUCTIONS METHODS

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Abstract: This article analyzes the issues of preventing heat loss in roof structures of buildings, ways to increase energy efficiency of buildings by using modern building materials and local materials.

Key words: heat loss, roof structure, reeds, outer wall, heat-insulating materials, heating layer.

Heat loss in buildings is door-window, outer wall, roof and floor occurs through structures, which depends on the dimensions of their surfaces. Heat loss in the building through the window is much higher than the amount of heat loss through wall constructions the total surface of windows is much less than the surface of walls and roofs. Due to the surface of walls and roofs, most of the heat is lost through them, and in mansard buildings, the total surface of the roof structure is wall and window since they are much larger than their surfaces, it is necessary to provide to

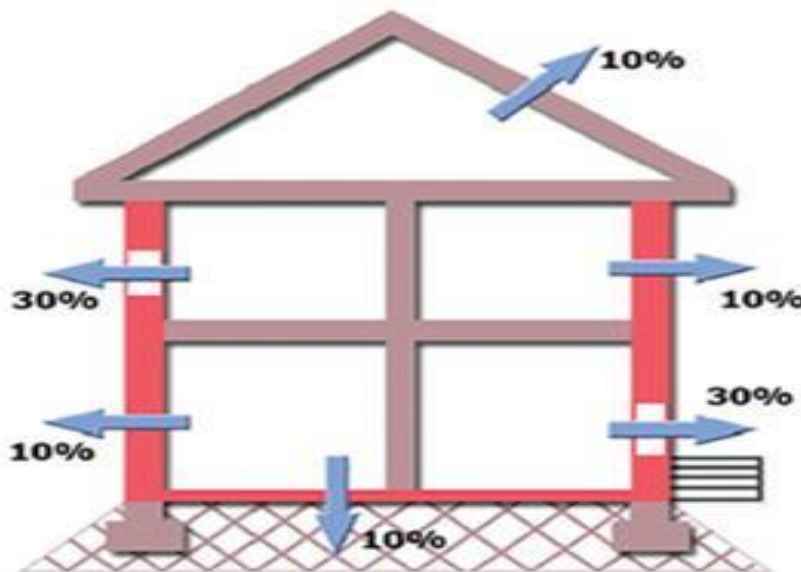


Figure 1 Heat loss from the building

provide them with the required amount of heat transfer. One of the heating systems is chosen for heating the building, and at the same time, it is necessary to choose a complex of heating works for the facade and roof structure, which should be implemented later (Fig. 1).

Previously, keeping buildings warm was achieved by increasing the thickness of the walls, but now, with the advent of modern and local heat-preserving materials, it is no longer needed.

These materials - light, materials with a high degree of frost resistance and a low degree of heat transfer - are used not only in the construction of new buildings, but also in the repair of existing buildings. Heating buildings with modern materials allows not only to reduce heat loss and, in turn, to save money on heating. Covering with heat-insulating materials protects buildings from the effects of precipitation and temperature changes and allows to significantly increase the period of their use. It is necessary to carry out quality work on heating of buildings. Violation of technological processes can lead to a number of problems, in particular: the formation of cold bridges, wetting of walls and the formation of a fungal layer. As a result, the efficiency of the work will decrease significantly, the heating service and the life of the building will be shortened, which, in turn, will lead to additional costs.

Due to the fact that the roof structure in the attic buildings is larger than the size of the walls and windows, in order to provide sufficient heat inside the building, a large part of the heat is lost through them due to the large surface of the wall and roof structures.

To carry out heating work, the following must be done:

- building "Cold bridges" - the largest amount of heat is released inspection of the building in order to determine its location.

- determination of the method of heating the building [4].

Wall heating can be done from the inside and outside of the room.

Despite the fact that it is technically easy to perform work on heating from the inside of the building, this method is not widely used for a number of reasons. In this way, the area of the building's rooms is reduced, the walls are not warmed, due to temperature changes, they are destroyed in due time, even if the problem of heat loss is solved, the problem of protecting the building from the effects of climatic conditions is not completely solved.

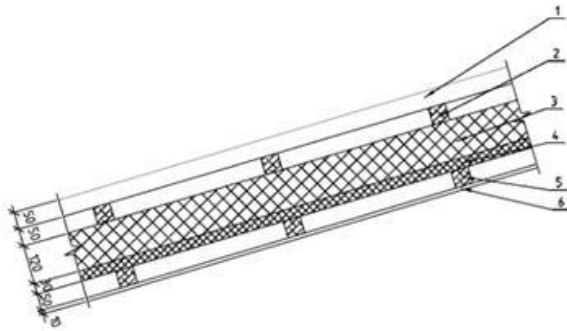
Condensate of water vapor accumulates on the walls, which leads to the appearance of fungus and mold, which can be achieved by using a thick heating layer, which leads to a further reduction of the room area.

The advantages of heating the building wall from the outside are as follows:

- walls are reliably protected from seasonal and daily temperature changes, which are the main causes of their damage;

- the dew point removed from the wall structure prevents condensation, moisture ingress and the subsequent formation of a fungal layer [5].

To reduce the heat transfer of the roof structure, the following construction is proposed (Fig. 2).



(Fig. 2). The construction of the roof structure to reduce heat transfer 1st moisture protection layer (asbestos-cement sheet or metal tile); 2-, 5-obreshetka (50x50 reka); 3-reed plate (thickness 120 mm); 4-foam polystyrene (30 mm thick); 6-Gypsum cardboard.

In addition, along with heating the building and protecting it from precipitation, the noise level of the building also increases [3].

In buildings constructed in recent years, ready-made three-layer sandwich-panels of thermal protection materials produced at the factory are used on the inside. New types of modern heat protection devices are widely used in construction and in improving the energy efficiency of existing buildings.

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