

Why do we use building insulation?

House warming is an important element of energy saving. Well-made insulation helps to use heat and cool effectively, contributing to saving money and increasing comfort. The reduction of thermal losses in a building allows to significantly reduce costs, regardless of the fuel used or the method of heating or cooling.

What materials to use?

The basic method of reducing the bills for heat and cold is the proper insulation of the building. A lot of heat is lost through leaky windows, walls, roofs and flat roofs, and ceilings of uninsulated basements and floors set on the ground. It is important to - when carrying out modernizations related to insulation - choose the right materials to minimize heat loss. Special attention should be paid to the appropriate selection of heat transfer coefficient (often marked with the letter U) or thermal conductivity of materials (often marked with the letter λ) and the thickness of the insulation. The higher the value of heat transfer coefficient and thermal conductivity, the higher the heat loss to the environment. Therefore, good insulating materials are characterized by low thermal conductivity, and well-constructed barriers with low values of heat transfer coefficient.

How to plan modernization effectively?

The effectiveness of building insulation depends not only on the materials used, but also on the quality of workmanship. It is important to pay attention to the selection of professionals who will reliably carry out insulation of the building. It is worth using the services of people with the appropriate certificate confirming their skills and qualifications.

Long-term programme

Appropriate insulation of the building will result in less demand for energy from the source (e.g. gas boiler), therefore when planning the replacement of the heat source it is worth first to consider the possibility of using additional insulation to avoid so-called blocking effect.

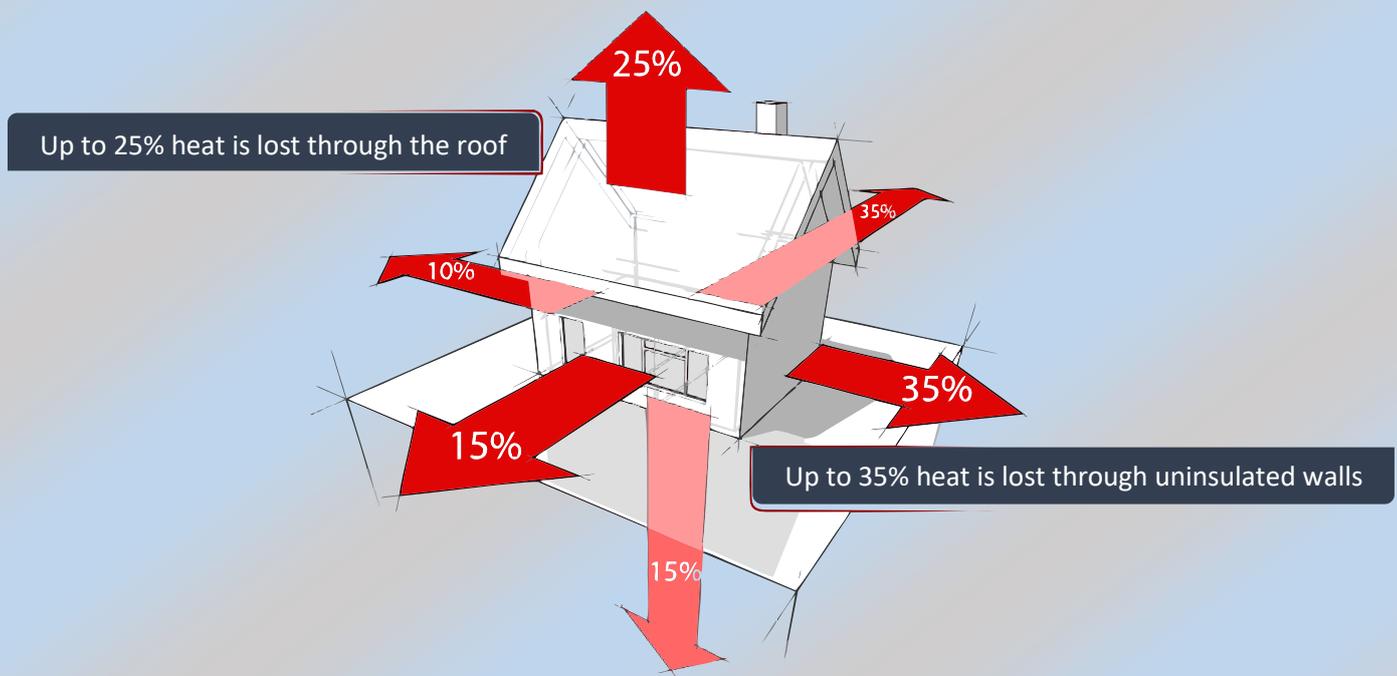
This effect may adversely affect the use of energy, because if after replacing the heat source we decide to additionally insulate the building, it may turn out that previously optimally selected heat source will work, with reduced parameters, and therefore with reduced efficiency.

How to insulate ceilings and walls effectively?

Ceilings under an unheated attic should be lapped from the attic side. Such an investment can be relatively easy and inexpensive to carry out, so it is worth considering its implementation in the first place. In addition, it is worth using a thicker insulation layer (up to 30 cm), as the heat naturally flows upwards. If we want to be able to use part of the attic (e.g. as a drying room), it is recommended to make a floor on the used surface after laying the insulation layer.

Attic used for residential purposes should also be insulated. In this case, it is worth paying attention to protection against condensation of water vapor in the roof partitions and the penetration of cold outside air through leaks in the roofing and insulation layer into the rooms.

Basement ceilings should be warmed from the bottom, and the thickness of the insulation should also consider the limitations resulting from the possibility of reducing the height of the basement rooms.



When insulating **walls**, you can use many methods that differ in the scope of work and materials used. Some of these methods may require, for example, the implementation of an additional foundation, which, unfortunately, will increase the investment costs.

In addition, you cannot forget about choosing the optimal insulation thickness, because using a thicker insulation layer will often slightly affect the investment costs and may involve significant energy savings during the period of the house use.

How to avoid heat loss through windows and doors?

Windows and doors are characterized by significant unit heat losses related to thermal conductivity (often significantly higher than walls and roofs) and by leaks through which cool air enters the rooms. Depending on the technical condition, the following upgrades can be proposed:

The use of **blinds and shutters** helps to reduce heat losses in a simple way. In addition, there are many solutions that allow you to make a choice that also considers the convenience of use and aesthetic values. It is possible to mount shutters inside or outside the building. It is worth paying attention to the possibility of regulation that will provide daylight and reduce heat loss at night.

This and another example are a type of action that will allow you to make savings while maintaining low investment costs.

In addition, the **arrangement of curtains and hangings** is also important, so that they do not so that they do not obscure the radiators that are often under the windows. Too long curtains will direct the heat flow from the radiators to the windows and thus the heat loss will increase.

Sealing windows limits the penetration of cool air into the rooms and thus reduces heat loss. The windows can be sealed inside their structure (e.g. between the sashes), as well as outside. When sealing the windows, remember to leave the gap, as partial air exchange is necessary due to maintain a good internal microclimate. Additional benefits resulting from window sealing are the limitation of external noises and the penetration of dust into the interior of the rooms.

Replacement of windows and doors should be used in case of their poor condition. The basic condition for window tightness is the exchange of glass with any cracks and those that have been made of several pieces. When replacing windows, as with sealing them, it is necessary to remember about the partial unsealing.

Reducing the size of windows - it is recommended to consider during their replacement or greater modernization, because in many buildings their surface has been oversized.

