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MODERN ENERGY-EFFICIENT CONSTRUCTIONS OF BUILDING FACADES. VENTILATION OF THE AIR LAYER ON THE FACADE OF THE BUILDING

Allaberganova Umida Karimberganovna
Student of Department of "Architecture"
Faculty of Technology
Urgench State University
allaberganova4745@gmail.ru

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Annotation

This article covers the use of facade systems with ventilated air gap. Examples from the experience of foreign countries are given, and the advantages and problems of using these systems in Uzbekistan are discussed.

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Based on constructive principles, the ventilation system of the air layer on the facade of the building is carried out as follows: load-bearing structures of the outer wall (foundations) of reinforced concrete, brick or various concrete blocks, on the outer side of which a metal frame (base) is installed with a layer or layer coating (barrier) suspended.

The distance between the foundation and the fence should be such that when heat insulation plates are laid in the gap in the range, a 40-100 mm air gap should remain between the fence and the insulation material (Figures 1 and 2).

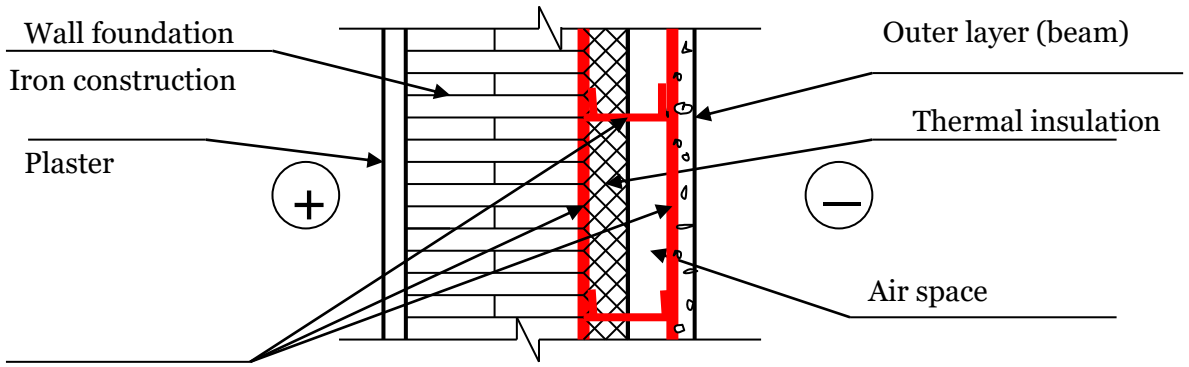

Figure 1. Ventilation system in the air space in the construction of the facade system.

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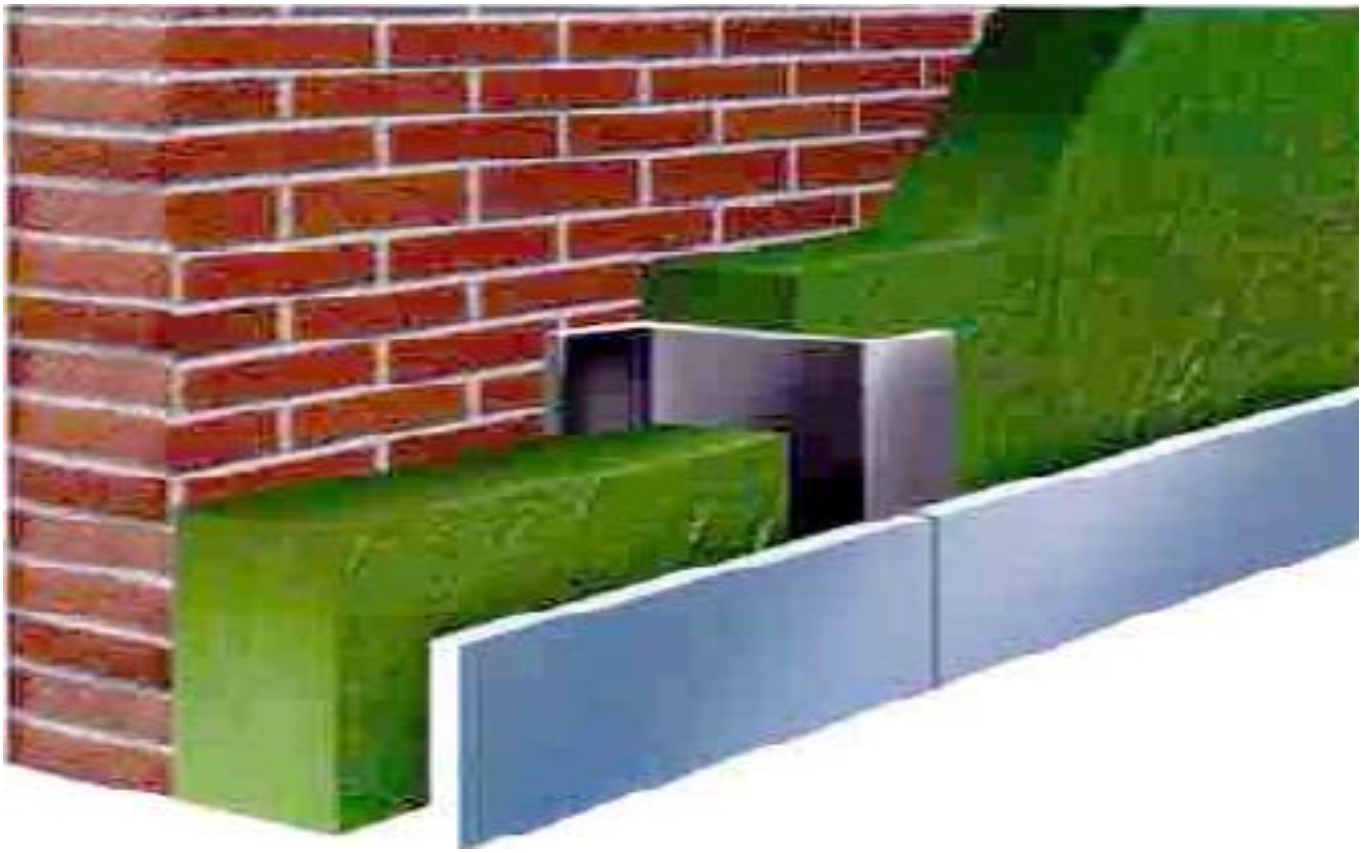
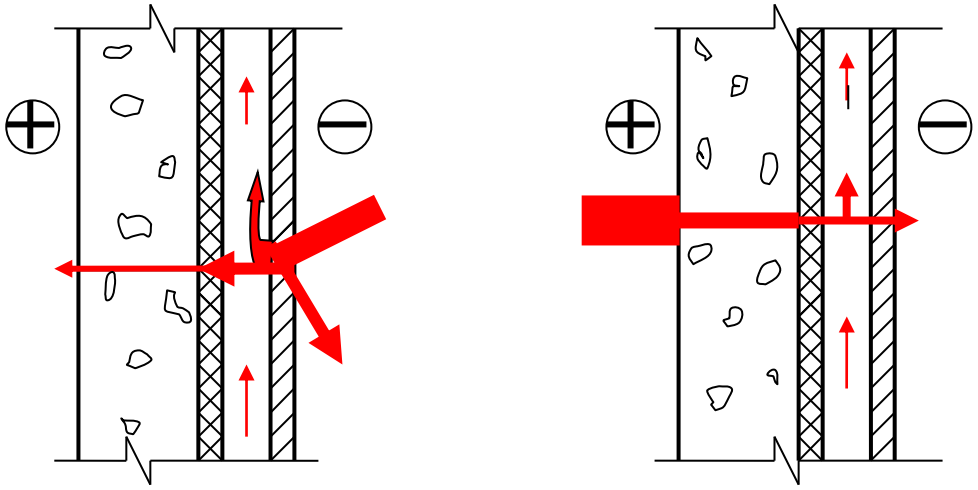


Figure 2. Ventilation part in the "PAROC" air space in the facade system.

When using this method, a very good result is achieved-that is, when laying various metals in a layer method, air circulation is ensured between them, vapor permeability increases through the air gap.

Because the insulation layer is located outside in this system, the foundation of the wall is protected from seasonal freezing and melting. It keeps the temperature in the wall mass uniform, and also prevents the formation of deformations. The energy accumulation zone passes to the outer thermal insulation layer, the wall does not get wet inside, and it is not necessary to heat with additional steam. Moisture is removed from the airy space between the thermal insulation layer and the wall.

Due to the decrease in pressure, the air gap "works on the stretchable principle of the pipe" (Figure 3). As a result, the internal moisture freely escapes around.



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in the summer in the winter

Note: + - internal environment; - - external environment

Figure 3. Ventilation system of heat flow on the facade.

The ventilated air gap reduces heat loss during the heating period, since the air temperature is much higher than outside. When designing the structure of the facade with an airy space, special attention should be paid to ensuring free air circulation. In this case, both the air space itself and the dimensions of the input and output intervals are calculated separately.

Such systems consist of external thermal insulation systems-" ROCKWOOL"," BREVITOR"," PAROC"," GASELL"," AYDO-s"," DIAT"," Duvils".

On ventilated facades, mineral cotton heat devices made of moisture and water-resistant basal or vitreous Cotton are used as heating insulation materials. Due to the appearance of a strong air flow in the air cavity, which can destroy the soft thermal layer, it protects the wind-resistant, vapor-permeable layer. Solid insulation plates can also be used. A barrel-shaped plastic dummy holds the thermal insulation material in the pressure-lifting Wall.

The wall Kronstein under the metal structure is reinforced directly using special anchor elements, and the lifting part (directional) is installed on the Kronstein. The contiguous qimis are covered by montiruth plates.

The product of structures under the structures required for a particular building depends on the climate of the area, the height and configuration of the building, the type of load-bearing wall material, the thickness of the thermal insulation and the method of its attachment. In any case, the calculation of the infrastructure must be carried out by specialists.

When using an airy space (ventilated facade) on the facade, there are not only advantages, but also its disadvantages.

First, the ventilated facades are very multi-component systems, and the effectiveness of all technical solutions will depend on the quality of each of these components. In addition, the components are produced by various enterprises. As a result, strict technical control is necessary for both each component and the system as a whole.

Secondly, it is very difficult to solve the issue of joining general construction structures. Depending on the type of materials used for each system, specially designed elements will be needed.

Thirdly, when building ventilated facades, it is necessary to ensure an unobstructed and efficient air flow over the entire inner surface of the wall, for which "dead zones" are not formed.

Fourth, it is critical to ensure that the pressure of the outside air and ventilation in the air equalize the pressure quickly, which is necessary to prevent rain droplets from entering the air mixtures and excessive wind load at constant wind pressure. This is achieved by accurate calculation and the width of the open barriers of the coating, the thickness of the air space and the air permeability of the main structure of the outer wall during construction.

Fifth, the air gap is an" acoustic tube". The sounds produced in it are found on all facades. To reduce noise on the facade during strong winds, it is necessary to reduce the gaps between the coating plates.

Sixth, the only way to calculate systems on a ventilated facade has not been developed.

Seventh, the systems presented were developed by scientists in Western countries and correspond to the climatic characteristics of these countries and their level of construction. Companies in Russia are adapting them to their climate and conditions. Scientists in the Republic of Uzbekistan have identified a specific aspect that is, we need to protect not only from thermal insulation in the winter season, but

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also from overheating in the summer season.

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