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Reception Of Improving The Microclimate In The Houses Of The Fergana Valley

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ABSTRACT

The article deals with the issues of the influence of climate on buildings and the improvement of the microclimate in flight conditions.

KEYWORDS

Climate, wind, air, insolation, temperature, conditions.

INTRODUCTION

The architecture of the people's dwelling is formed, as you know, under the influence of socio-economic, natural and climatic conditions.

In the favorable landscape and climatic conditions of the Fergana Valley, a number of independent types of dwellings have developed, which are characterized by an active consideration of natural factors, features of the relief, which is reflected in the volumetric composition and the development of open spaces.

As a result of the centuries-old experience of the peoples living in the Fergana Valley, a set of protective measures has been developed that reduce the adverse impact of the climate on the building and actively use its positive side.

In the Fergana Valley, peculiar types of dwellings have been created, differing in local features associated with taking into account natural factors. Low-rise and multi-storey folk dwellings in the valley, organized around a compositional-functional core - a summer

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room of one type or another was sufficiently well protected from direct exposure to the sun and, with the active use of landscaping and watering, had, as a rule, favorable summer microclimatic conditions. (four)

Methodic researchers have identified characteristic ways to combat overheating in a popular dwelling (dividing rooms into summer and winter, orientation of living rooms to the southern and southeastern sectors, constructive measures for organizing ventilation of premises, methods of sun shading of openings and shading of the yard space), creating satisfactory temperature conditions, (1,3,4). The folk remedies adopted are mainly aimed at taking into account the natural and climatic conditions of the region and are clearly reflected not only in the general compositional idea of organizing the dwelling, but also in the solution of its constituent elements, from the courtyard space and summer premises to the solutions of the enclosing structures and the light opening.

Depending on the seasonal use in the people's dwelling, there is a differentiation of premises in a dry hot climate. The state of the microclimatic environment, in particular the wind regime, in the people's dwelling in areas with a dry hot climate is significantly deteriorating. Insufficiently wide streets, intra-quarter and intra-courtyard gaps between buildings, dense plantation of greenery can delay, and sometimes completely stop the formation of local winds of thermal origin. This is due to the fact that heating of the surface, in the summer overheating period due to insolation, occurs mainly in the upper part of buildings, the lower part of buildings and the territory does not heat up or heats up much less. At the same time, prerequisites are created for braking the vertical movement of air in the lower tier of the building and development (1,2).

The limitation of insolation of the territory and walls of buildings is observed in carpet layouts with a dense combination of houses with courtyards and with very narrow passages between them. This is how the old quarters of the Fergana Valley look like, where the width of the courtyards is close to the height of the building. In such conditions, the insolation of the passage and walls during the day becomes variable and minimal, moreover, more than half of the surfaces of the outer walls are in the shade. At the same time, an uncomfortable wind regime is formed, causing a feeling of stuffiness.

In connection with the above, it is necessary to determine the following prerequisites for improving the microclimatic environment in modern one- and low-rise buildings and developments:

- Selective input into the courtyard space of insolation and favorable wind temperatures;
- The formation of local winds of thermal origin by natural architectural and construction means and an increase in their radius of action;
- Removal of heated air from the premises and courtyard into the background environment.

Cooling of premises during the hot period is achieved by compositional planning and

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design techniques that provide the best flow of cool air flow into the dwelling. A similar technique is the opening of the courtyard space towards the prevailing wind; determination of the gap between buildings of construction not less than 1.5-2.0 building heights.

Effective use of large-crown green spaces, shrubs and lawns in combination with water bodies that reduce the air temperature by 6-8 ° C; provision of heat-resistant and heat-inertial brick blocks for the construction of roof walls for single-storey, gas-foam concrete blocks and attic roofs for multi-storey buildings, which create a temperature regime in the room not exceeding 23 ° C; the use of the cooling properties of the soil floor and underground tunnels, which reduce the air temperature in the room by 5-6 ° C; application of the method of irrigation of the paved floor of a covered courtyard, which reduces the air temperature by 2.0-3.0 ° C (3).

The most important task of construction is the relationship of urban development with the external natural environment. The planning and development of the city, taking into account the specific situation, natural environment, climate, is one of the essential issues of this task. Correct consideration of the climate in the design of buildings contributes to the creation of a healthy living environment for a person, a healthy environment, in turn, increases a person's working capacity, improves the conditions for his rest.

Residential formations according to their purpose, meeting social and functional requirements, in planning and constructive terms, must correspond to the geographical and climatic conditions of their location.

The latter requirement takes on a decisive meaning in a hot climate, where the provision of a favorable thermal regime in the dwelling and on the territory of the building is in the first place.

With the transition of a one-story dwelling to a modern multi-story dwelling, the conditions for the formation of the thermal regime in the premises have changed dramatically - the separation from the ground of most apartments about 75-80% deprived of the favorable influence of ground coolness, landscaping, watering and improvement; there were contradictions associated with the orientation of the house as a whole and the conditions of insolation of the facades. Due to this, the temperature in the rooms of the middle floors is 1-3 ° C higher than in the rooms on the first floor. A certain role was also played by the transition to prefabricated types of lightweight structures of external fences, which have low inertial qualities and heat resistance, which are active intermediaries between the external environment and the internal climate of the premises. These designs have made it much more difficult to deal with summer overheating in the room. As our observations show, in buildings with expanded clay concrete walls 30 cm thick, the average temperature of the internal air, even without operational heat release, coincides with the average total temperature of all fences and is 2.5-3.5 ° C higher than the average temperature of the outside air.

Modern urban construction is characterized by a sharp increase in the number of storeys

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and building density. At the same time, new conditions for insolation of the territory, rooms and facades of buildings are created, in which traditional methods of regulating the thermal regime are ineffective.

Summer field observations carried out in multi-storey brick residential buildings built in Tashkent and Bukhara showed that the air temperature in the eastern and western premises reaches 38 ° C at an outside air temperature of 42 ° C, which is much higher than the upper hygienically permissible limit.

The adverse effects of the external environment on the dwelling begin to affect when the external maximum temperature of 34 ° C is exceeded. During this period, stable uncomfortable conditions are established in the dwelling. Due to the significant isolation of living quarters by means of constructive means, their microclimate can differ from external conditions by 8-10 ° C at an external air temperature of 34-40 ° C (3).

In the currently existing standards, recommendations, instructions, instructions and scientific papers, the factors of thermal effect on the building and the enclosing structures under calm weather conditions are practically not reflected, because the latter is the main thing in determining the intensity of heat and mass transfer between the internal and external environment. Therefore, the currently existing means of combating overheating are ineffective or ineffective. So, for example, it was found that a deaf perimeter building reduces the general air circulation in the inter-building space, the enthusiasm for sun-protection devices, summer rooms, protrusions on the facades of buildings leads to a sharp decrease in convective flows in the wall layer of air.

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