

мый на объектах, где применяется без огневой метод укладки на металлические и иные поверхности без утяжеления конструкций покрытия.

Список литературы

1. Новиков В.У. "Полимерные материалы для строительства". М.: Высшая школа, 1995. — С. 448.
2. Бутырин А.Ю., Орлов Ю.К. Строительно-техническая экспертиза в современном судопроизводстве: учебник. – М.: РФЦСЭ, 2011. -368 с.

NATURAL LIGHTING IN THE TRENDS OF MODERN CONSTRUCTION

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Abstract

The purpose of the work is analysis of violations of natural lighting conditions (insolation) in residential buildings. The methodology is based on a comprehensive and objective analysis of the SSTC-R B normative document R.2.2-27: 2010 "Guidance on the Calculation of Civilian Object Insolation". It is investigated in the process of analysis that the regulation and calculation of insolation is the most acute economic and architectural and construction problem. With the transition of land usage and construction to the market basis, building insulation rates have become a major factor in holding back investors, landlords and tenants from seeking to redevelop urban development in order to maximize profits. Imperfect normalization was found under the current conditions in the course of the research, which can lead to serious errors in the design and evaluation of the insulation regime of the apartment and the house as a whole. The maximum shade mask of a new home shall correspond to the maximum possible height of the projected house or to the combination of the maximum heights of each individual section at which the insolation regime in the premises of the existing house or in the surrounding area shall meet the regulatory requirements or shall not deteriorate during the normalized period of insolation. If the insolation is interrupted more than once, then for the estimated duration of the insolation, the sum of the duration of the two largest insolation periods should be taken. The results of the study may be useful in further studies of violation of natural light conditions, as well as the impact of residential development on insolation processes.

Keywords: insolation, normalization of insolation processes, compaction of residential development.

The aim of the work is to analyze the violation of natural lighting (insolation) in residential buildings, because in modern construction the role of direct sunlight as a natural health factor has increased significantly, high-rise buildings in cities are becoming increasingly detached from natural conditions.

Light is a natural condition of human life. It has a positive effect on the emotional state of man, affects the metabolism, cardiovascular, nervous and mental systems and is an important stimulator not only of the visual analyzer, but also the body as a whole. More than 80% of all information about the external environment enters the human brain through the eyes. Therefore, in large cities, the quality of the light environment inside the room is of particular importance, where a person must be provided not only visual comfort, but also the necessary biological effect of lighting. This one is determined mainly by the conditions of illumination of the premises with natural light, which means the diffused light of the sky penetrating through the light slots, and direct sunlight (insolation). These natural factors must be present in sufficient quantities in each room intended for a long stay of a person, and, above all, in the premises of residential buildings. Thus, the problem of

forming a comfortable lighting environment in architecture is in the center of construction and social attention, as well as in the field of basic issues of ecology, architecture and urban planning.

Today we are discussing the improvement of Ukrainian lighting standards, which is the optimization of the area of light openings in terms of harmonization of sanitary and hygienic requirements with economic ones; introduction of light guides for daylight illumination of rooms without windows or areas away from light openings; introduction of helioaccumulation systems for combined and artificial lighting; introduction of light redistribution systems to direct it into the premises; introduction of sun protection devices (SPD) to optimize the insolation regime of the premises.

Limited glazing transparency, light transparent openings, their darkening, and often the mismatch of the size of the window area to the depth of the premises cause an increased shortage of natural light in the premises. Lack of natural light worsens the conditions of visual work and creates the preconditions for the development of urban population syndrome of "sun (or light) starvation", which reduces the body's resistance to adverse factors of chemical, physical and bacterial nature, and according to recent data to stressful situations.

Therefore, the lack of natural light and denaturation of the light environment are among the factors unfavorable to human life. In this regard, our main task is to study the violation of the insolation process of residential buildings in high-rise buildings in cities.

Nowadays, the main trend in the cities of Ukraine has been the consolidation of residential areas, especially in the central areas of cities, the construction of commercial and public buildings. This density leads to violations of state building codes, creates problems associated with the probable shading of residential buildings in connection with these transformations of residential areas and results increasing the frequency of resolving issues in expert practice related to the study of the expected negative impact of new buildings on the insolation regime of existing residential buildings.

The duration of insolation of the room depends on the magnitude of the insolation angles of the windows, their orientation relative to the countries of the world and the dimensions and remoteness of nearby buildings. This problem is especially relevant for the central areas of large and small cities – in neighborhoods with existing housing increases the density of buildings due to the construction or reconstruction (increase in size) of commercial and public buildings. As a result, the duration of insolation of existing residential buildings may be significantly reduced and does not meet the requirements of State construction codes (SCC).

In Ukraine, the duration of insolation must be at least 2.5 hours per day for residential premises and equivalent buildings and yards in the period from March 22 to September 22. The standard duration of insolation must be provided: in residential apartments – not less than in one room in one-, two-, three-room apartment and not less than in two living rooms in four-room apartment, dormitory bedrooms and hotels (not less than in 60% of rooms). The location and orientation of the main functional premises of children's preschools, secondary schools, boarding schools, health care and recreation facilities should provide continuous three-hour insolation per day. The normative three-hour insolation should be provided on the territories of children's, playgrounds, sports grounds of residential buildings, preschool institutions, schools, sports zones and recreation areas.

The "insolation conflict" arises mainly between the developer and the occupants of existing residential buildings. Therefore, the supervisory services are limited to requiring expert opinions on the impact of the new building on the surrounding residential buildings or children's institutions and only occasionally require conclusions on compliance with the insolation of residential premises (apartments) in new buildings. However, I am convinced that when approving the design documentation, it is also necessary to analyze the insolation of apartments in the designed residential buildings. After all, there are situations when even with the rules of insolation, the microclimate in the apartments

is far from optimal. For example, in a three-room apartment, two living rooms are oriented to the north side of the horizon, one – to the south. It is obvious that in two rooms there is no insolation and at the same time the temperature-humidity regime and psychological microclimate of these premises significantly deteriorates. In the third room, which is often a bedroom, overheating is possible due to excessive insolation. Formally, according to State construction code B.2.2-15-2005, the insolation rate is met, but the living conditions in this apartment can not be called comfortable. It is inadmissible when in new projects of apartment houses the norm of insolation in one or several apartments is not observed. This significantly reduces the quality of living, the cost of apartments, increases the possibility of chronic diseases in residents.

Conclusions. I believe that state control institutions, municipal services of the city, which are responsible for approving urban and design decisions, should require developers and designers to issue an opinion on the insolation of housing, which is located in the immediate vicinity of the projected building (complex). The conclusion on possible changes of an insolation mode and infringement of norms of insolation in inhabited premises of existing houses and territories should consider taking into account specialized establishments or the licensed firms.

Therefore, in order for residential premises to comply with normative documents and State building norms, the maximum of the shadow mask of the project space must be calculated first of all. It must correspond to the maximum possible height marks of the conditional topographic surface, at which the insolation regime in the premises of the existing building or in the adjacent territory is mandatory.

References

1. Demin M., Levitan Y. Socio-demographic processes and bases of state urban policy in Ukraine // Design and planning aspects of urban planning. - K., 2004. - Issue 7. P. 47–56.
2. Sergeychuk O.V. Requirements of EU norms - the basis of the development of a set of regulatory documents on natural and artificial lighting / OV Sergeychuk // Modern problems of technical regulation in construction: a collection of scientific works - K. : KNUBA, 2015. - Issue. 1. - P.79-85.
4. SCC 360-92 **. City planning. Planning and development of urban and rural settlements / State Committee of Ukraine for Construction and Architecture. - K., 2004.
5. SCC B.2.2-15-2005. Residential buildings. Main provisions / State Committee of Ukraine for Construction and Architecture. - K., 2005
6. SSTC-R B normative document R.2.2-27: 2010 "Guidance on the Calculation of Civilian Object Insolation".