LIGHTING IN PRODUCTION AND ITS STANDARDS.
NATURAL AND ARTIFICIAL LIGHTING

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Annotation: The article discusses the importance of lighting in buildings, its impact on human health, lighting standards and requirements, as well as methods of lighting buildings: natural, artificial and mixed lighting. At the same time, when and where to use these types of lighting, their advantages and disadvantages will be discussed.

Key words: energy efficiency, energy saving, full lighting, general lighting, local lighting, mixed lighting, natural lighting.

Lighting requirements

In order for the lighting in production conditions not to harm the health of workers, it is required that it does not strain the eyes and is evenly distributed in all parts of the building during work. The light should not dazzle the eyes, in other words, the light rays should not fall directly into the eyes [1-2].

The spectral composition of light should be selected in such a way that, as a result, a person correctly perceives the colors of the surrounding objects. There should be sharp shadows in the workplaces and the illumination of the surrounding environment should not be too different, otherwise, as a result of a person frequently changing his eyes from one situation to another, the accommodation properties of his eyes will be disturbed and vision will be impaired. the state of exhaustion of organs occurs.

Lighting and their main types

In practice, three types of lighting are used in workplace lighting, that is, they natural, artificial and mixed.

Natural lighting

1. Rooms where people are always present, as a rule, must have natural lighting. It is allowed to design rooms that do not have natural lighting, as well as rooms that are allowed to be placed in the basement and basement floors of buildings, which are

approved in the established order, as specified in the construction standards and regulatory documents for the design of buildings and structures [3-8].

2. Natural lighting is divided into side, top and mixed (top and side) types. In small rooms with one-sided natural lighting from the side, small values of TEK are measured at the point located at the intersection of the conditional working surface at a distance of 1 m from the wall and the characteristic wall of the room, far from the place of light, and at the point between the room in the case of two-sided side lighting. In one-way side lighting of residential and public buildings, the measured amount of TEK (natural illumination coefficient) should be provided as follows:

a) in the living rooms of residential buildings, at the point of calculation located at the intersection of the vertical plane and the floor plane, taken at a distance of 1 m from the wall farthest from the windows (in one room of apartments with 1,2 and 3 rooms and in 2 rooms of apartments with 4 or more rooms); In other living rooms and kitchens of multi-room apartments, the standard amount of TEK in the case of side lighting should be provided at the reference point located in the center of the building at the floor level;

b) in the hotel rooms of dormitories, hotels - at the point of intersection of the vertical plane of the characteristic wall of the building and the plane of the floor in the center of the building;

c) in groups and playrooms of pre-school educational institutions, rooms for sick children and medical isolation - at the point of calculation at the intersection of the vertical plane of the building's characteristic roof and the plane of the floor, taken at a distance of 1 m from the wall farthest from the windows;

g) the vertical plane of the characteristic wall of the building with a conditional working surface located at a distance of 1.2 m from the wall farthest from the windows in the classrooms and training rooms of general education institutions, boarding schools, vocational education institutions at the point of calculation at the intersection;

d) in other rooms of residential and public buildings at the counter located on the working surface in the center of the building;

Mixed lighting

In industrial buildings, mixed lighting is used in the following cases:

a) for production rooms where discharge works are performed;

b) for production and other rooms, when: technology, organization of production or climatic conditions require spatial planning solutions at the construction site, in cases that do not allow to ensure the standard values of TEK

(one-story buildings with a large width, spaces with a large width (intervals), one-story multi-span buildings, etc.), as well as the feasibility of mixed lighting from a technical and economic point of view, when compared with natural lighting, is confirmed by appropriate calculations in scores;

c) in accordance with the regulatory documents on the design of buildings and structures of certain industrial networks, approved in the established order should be kept. Mixed lighting of rooms of residential, public and administrative- household buildings, rooms and kitchens of residential buildings, educational and training rooms of schools and educational institutions, rooms for children's residence, sanatoriums and rest houses, from dormitories of sanatoriums and rest houses external, in cases where it is required by the conditions for the selection of rational volume-planning solutions allowed to hold [9-12].

General (regardless of adopted lighting systems) artificial lighting of production rooms where people are always present must be provided with discharge light sources. The selection of sources of maturity should be carried out in accordance with the requirements of section 4 of this standard. The use of incandescent lamps is allowed in some cases, when there is no possibility to use discharge light sources or it is not suitable for the purpose, according to the technology, conditions or the requirements of the interior decoration of the house [13-15].

Artificial lighting

1. Artificial lighting is divided into types of working, emergency, safety and duty lighting. The normative description of indoor and outdoor lighting is ensured by the use of working lighting lights together with emergency lighting lights. Normative illumination and the relative power providing it are indicated in the working drawings of the buildings. Emergency lighting is divided into emergency lighting and evacuation route lighting [16-20].

2. Artificial lighting can be divided into two systems: general lighting and mixed lighting.

3. Work lighting should be provided for all rooms of the buildings, as well as for open space sections intended for workers' work, passage and traffic. For rooms with zones with different conditions of natural lighting and different working procedures, it is necessary to consider lighting with separate control of such zones. For general and local lighting of buildings, light sources with a color temperature of 2400 to 6800 K should be used. The activity of ultraviolet radiation in the wavelength range of 320-400 nm should not exceed 0.03 W/m. It is not allowed to have wavelengths less than 320 nm in the radiation spectrum. Energy efficient light

sources should be used for artificial lighting [21-25]. If the power of the light sources is equal, it is recommended to take into account those with a longer shelf life, taking into account the requirements of high light output and color differentiation. The use of common incandescent lamps for lighting is limited. Also, it is not allowed to use general incandescent lamps with a power of 100 W or more for lighting. If necessary, part of the working or emergency lighting can be used for duty lighting. The standardized description of lighting outside buildings and rooms can be provided by working lighting, as well as by the combined use of security lighting and lighting of escape routes.

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