Sharopov Shohruh Bahromjon o'g'li
master
(Namangan engineering – construction institute,
Uzbekistan, Namangan).
Scientific supervisor
Umarov Qudiratilla Bekbaevich c. p.-m.s.
Head of the Department of Energy
(Namangan engineering – construction institute,
Uzbekistan, Namangan)

MAIN CRITERIA FOR THE QUALITY OF LIGHTING IN RESIDENTIAL AREAS

Abstract: The article proposes the main criteria for the quality of lighting in residential premises, i.e. provision of standardized quantitative parameters, comfort, safety, reliability, efficiency, ease of use and aesthetics. These criteria are closely related. The importance of each of them is determined by the type of room or object illuminated and the nature of the work performed.

Key words: lighting, illumination, illuminated surface, incandescent lamps, compact fluorescent lamps.

For residential premises, first of all, you should choose the right lighting fixtures. Luminaires are a lighting device (OD) in which the luminous flux of light sources is distributed within large solid angles. As a rule, luminaires illuminate surfaces or objects located at sufficiently close distances from them, commensurate with the dimensions of the luminaires themselves. The luminaire includes a light source, a socket for connecting the lamp to an electrical network, reflectors, shades, ballasts and fixtures for fixing the luminaire to a ceiling or wall surface. A significant role in the choice of lamps is played not only by their lighting characteristics, but also by their appearance, and of course,

the type of light sources used. For lighting living quarters, incandescent lamps and compact fluorescent lamps are most often used.

When designing lighting for apartments and residential buildings, it is recommended to calculate the illumination based on the minimum horizontal illumination at floor level: 150 lux (lux) in living rooms and in the kitchen, 200 lux in rooms for children, 50 lux in bathrooms and toilets. In reading areas (offices, home libraries), the illumination should be 300 lux. On the surface of tables in offices and libraries, the illumination should be maintained at a level of 400 - 500 lux. Illumination is measured with a special device - a luxmeter. [2]

In recent years, LED light sources have become widespread. But, in accordance with the above-mentioned sanitary rules and norms regulating hygienic requirements for lighting, rather significant restrictions are imposed on them: in residential and public buildings, lighting devices with LEDs must have a protective angle that excludes direct radiation from entering the field of view. That is, the shades and diffusers of the luminaire should be such that we cannot see the very luminous surface of the LEDs. Otherwise, LED luminaires can cause significant glare. Since the very small surface of the LED is capable of producing a significant luminous flux. In addition, some low-cost LED lamps containing the simplest control devices have an unacceptable light ripple factor of up to 80%. If you illuminate an apartment with lamps with such a ripple of illumination, then after an hour of reading your eyes will feel tension and fatigue. [3]

To control lighting, switches, switches, dimmers, motion sensors are used. To control the lighting of bathrooms, bathrooms and shower rooms, as well as balconies, switches are installed outside these rooms.

The criteria for the quality of lighting can be considered: provision of standardized quantitative parameters (illumination); comfort; safety; reliability; profitability; ease of use and aesthetics. These criteria are closely related. The importance of each of them is determined by the type of room or object

illuminated and the nature of the work performed.

Currently, there are many computer programs for calculating the illumination, which allow, using the known KSS of the luminaires and the given illumination, to find the required number of lamps, their optimal location, the power of light sources, the distribution of brightness in the field of view.

Comfort includes many factors: direct and reflected glare - that is, the glare of light sources, lighting fixtures and their reflections on shiny surfaces. To limit the direct brilliance of luminaires, various design techniques are used - the use of shielding gratings, diffusers, etc. [1]

Other factors that determine the comfort of lighting include: the distribution of brightness in the field of view, directionality of light, shade-forming properties of light, acoustic noise (hum) from lighting devices, etc.

The safety of lighting is determined, first of all, by the class of protection of lighting devices from electric shock to people.

Safety issues are of particular importance when illuminating explosive and fire hazardous premises. Only special luminaires can be used to illuminate explosive areas. Explosion safety of lighting devices is ensured by their design.

Fire safety of lighting devices is ensured by their design, choice of construction and lighting materials and limitation of the maximum temperature to which individual elements can be heated. For lighting fixtures with mirrored reflectors and with incandescent halogen lamps or metal halide lamps, sometimes the minimum distance from the outlet of the device to the illuminated surface is also limited. [3]

The reliability of lighting includes the concept of service life, the dependence of parameters on external factors (temperature and humidity, dustiness, the presence of vapors of aggressive substances, mechanical influences - vibration, shock, etc.) and on the quality of electricity.

The ambient temperature has almost no effect on the parameters of lighting devices with incandescent lamps, high-pressure mercury and sodium

lamps, metal halide lamps, but it has a very strong effect on the parameters of lamps with fluorescent lamps. A decrease in temperature from +25 to 0 degrees Celsius leads to a decrease in the luminous flux of fluorescent lamps by almost 5 times.

Reliable operation of lighting devices in conditions of high humidity, dustiness, the presence of vapors of aggressive chemical compounds in the air is ensured by their design. To illuminate rooms with high humidity (bathrooms, showers, laundries, indoor swimming pools, etc.), it is necessary to use lamps with a degree of protection. [3]

When choosing luminaires, it is necessary to take into account: their price, total lighting costs. Maintenance costs and the cost of electricity are related to the parameters of light sources - their luminous efficacy and service life, the amount of energy consumed is influenced by the parameters of the luminaires themselves, first of all, the nature of their light distribution (LWD) and efficiency: - the higher the luminous efficiency of the light source, the at a lower power consumption, the required illumination can be provided: from this point of view, the most disadvantageous light sources are incandescent lamps; - the most preferable for indoor lighting of administrative premises - fluorescent lamps, for outdoor lighting and lighting of some enterprises - high pressure sodium lamps; - under equal illumination, a lighting installation with good fluorescent lamps consumes 7-10 times less power than with incandescent lamps: lamps with fluorescent lamps are much more expensive than with incandescent lamps, however, large initial costs will quickly pay off due to less energy consumption and more lamp life); - in addition to saving electricity, the use of fluorescent lamps leads to a reduction in operating costs, since their service life is 15-20 times longer than that of incandescent lamps; - it must be borne in mind that in some lighting installations the cost of replacing lamps significantly exceeds the cost of the lamps themselves, this applies, first of all, to rooms with high ceilings and with hard-to-reach lamps; - a significant

contribution to energy savings while increasing the comfort and reliability of lighting is provided by the use of electronic switching devices. [2]

The criterion for ease of use includes the availability of luminaires for cleaning optical elements (reflectors and diffusers) and replacing light sources as they fail.

Ease of use is ensured by the location of the luminaires and their design.

Sometimes there are luminaires in which replacing burned-out lamps is not an easy task that requires a lot of time and the use of a special tool.

Aesthetics of lighting devices is provided by: design; the quality of the materials used; design; location.

When choosing an OP, one should not proceed only from the principle “like - not like”. Labor productivity, the level of defects, fatigue of people, energy consumption, and, ultimately, human health depend on the quality of lighting.

Thus, the issue of lighting must be approached extremely responsibly, taking into account all the listed criteria for the quality of lighting.

BIBLIOGRAPHY:

1. Electric lighting reference book / V.B.Kozlovskaya, V.N.Radkevich, V.N.Satsukevich - 2nd ed. Mn. techno perspective 2008.
2. SP 52.13330.2011 Natural and artificial lighting.
3. Rules for electrical installations 7th ed.
4. A.A.Shunikhin "Electric devices". Tutorial. - M .: Energoatomizdat, 1988.
5. B.N.Neklepanov, I.P.Kryuchkov. "Electrical part of stations and substations." (Handbook) -M .: Energoatomizdat, 1989.
6. www.energystrategy.ru