

similar light on a goniophotometer GO-2000H Research Center for Lighting Measurements KNUMG named after O.M. Beketov. There is a good agreement between theory and experiment.

***АНАЛИЗ КОНСТРУКЦИЙ ПОТОЛОЧНЫХ СВЕТИЛЬНИКОВ С РАЗНЫМИ
ИСТОЧНИКАМИ СВЕТА И КОНЦЕПЦИЯ ПРОЕКТИРОВАНИЯ ИХ LED-
ПАНЕЛЬНОГО ВАРИАНТА***

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***АНАЛІЗ КОНСТРУКЦІЙ СТЕЛЬОВИХ СВІТИЛЬНИКІВ З РІЗНИМИ
ДЖЕРЕЛАМИ СВІТЛА І КОНЦЕПЦІЯ ПРОЕКТУВАННЯ ЇХ LED-ПАНЕЛЬНОГО
ВАРІАНТУ***

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***ANALYSIS OF TWO DIFFERENT APPROACHES TO THE DESIGN OF
INDUSTRIAL LIGHTING EQUIPMENT***

Nowadays optoelectronic devices with two different types of light sources are used to solve the problem of lighting industrial facilities for different purposes. The first type - lights with discharge lamps of approximately cylindrical shape - mainly sodium gas discharge lamp (arc sodium tubular lamps) and metal halide lamps (arc mercury metal halide lamps). The second type is LED devices. Lights with traditional discharge lamps have long been used as the only option for lighting industrial facilities, their design has a solid theoretical basis, the practical component of the design is also well studied. At one time, lights with such lamps were the most progressive and energy efficient, as light sources such as sodium gas discharge lamps (arc sodium tubular lamps) and metal halide lamps (arc mercury metal halide lamps) were unalterable in terms of high light output, long service life and satisfactory retention of lighting characteristics in different climatic conditions, in particular, when working in a fairly wide temperature range. After the serious entry of LED products into the market of lighting equipment in Ukraine and the EU, the position of traditional lights with discharge lamps gradually began to lose. LEDs began to occupy a leading position first in the market of local lighting fixtures and exclusive decorative lighting, then they strongly supplanted traditional lights used for interior lighting and exterior decoration (using fluorescent lamps of various modifications), then - transport and street lights, including light signaling equipment (traffic lights and beacons) and at present it can be firmly stated that LED lighting has become the main tool in the design of devices for various purposes - from lighting devices and systems to precision scientific equipment (medical equipment, interferometers, devices for scanning surface roughness, etc.).

Our analysis of the sites of modern manufacturers of lighting equipment in Ukraine, for example, showed that the lion's share of industrial lighting fixtures are LED devices. The only well-known manufacturer of lighting products that still pays significant attention to the development of industrial lamps with discharge lamps is JSC "Vatra.

This paper aims to consider the essence of both approaches to the design of industrial lighting, impartially consider the pros and cons of such approaches and draw some conclusions about the feasibility of the transition from traditional lighting to LED-technology.

Conclusions:

1. For the first time, a very thorough and unbiased analysis of the positive and negative aspects of the design of lighting fixtures for industrial facilities was conducted.
2. The essence and ideology of design are presented, the disadvantages and advantages of different approaches are shown.
3. The market of industrial lights is quite stable, the old modifications of discharge lights do not disappear from the sites of manufacturers, as well as examples of their use - and still are many. However, LED technology continues to evolve and, given the pace of their development, it is possible to predict a gradual reduction in the range of lights with discharge lamps.

***АНАЛІЗ ДВОХ РІЗНИХ ПІДХОДІВ ЩОДО ПРОЕКТУВАННЯ ПРОМИСЛОВОГО
ОСВІТЛЮВАЛЬНОГО ОБЛАДНАННЯ***

Є.Е. Лобанов, Г.О. Петченко

***АНАЛИЗ ДВУХ РАЗНЫХ ПОДХОДОВ К ПРОЕКТИРОВАНИЮ ПРОМЫШЛЕННОГО
ОСВЕТИТЕЛЬНОГО ОБОРУДОВАНИЯ***

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***METHODS OF DESIGNING INDUSTRIAL LIGHTING FIXTURES
WITH DISCHARGE LAMPS***

Today modern lighting devices require not only the observance of the necessary light distribution, which is regulated in accordance with the nature and conditions of their operation, but also in accordance with the tasks of energy saving and ecology. If we analyze the overall market situation of the lighting products of Ukraine and the neighboring countries of the EU, it is possible to record the turbulent dynamics of the LED lighting market. So LEDs have become seriously entrenched in the market for indoor and outdoor lighting: local lighting, indoor lighting, facade and architectural lighting, decorative and stage lighting, transportation lighting, and more. Practically, it is possible to state unlimited domination in the market of lighting products of lighting devices on LED basis, if not but for one thing. Powerful DRI and DNaT discharge lamps cannot compete with their LED counterparts, but they do have certain unconditional advantages that keep them on the market. The first and the most famous is the low price. This advantage is, in fact, highly debatable, as the low cost of discharge lamps and luminaires for them quickly becomes a trap for developers of appropriate lighting because of the significant power consumption of the respective lighting systems and the significant degradation of the lighting characteristics of such luminaires over time. In contrast to the mentioned, their LED counterparts have their drawbacks in that sense - LEDs are more vulnerable to external climatic factors and, therefore, have deviations in their regulated characteristics unlike discharge lamps that are purely structural → - due to the presence of a vacuum layer between the outer flask and the burner, they are more stable with respect to variations in ambient temperature. The second advantage is the spectral range of the discharge lamps. If you need to design street or industrial lighting, for example, to develop and apply a light fixture to illuminate a highway or foundry at a metallurgical plant, a white LED light would not be the best solution for the developer. The spectral range of luminaires for such tasks should be at a maximum in the orange range. The explanation is simple - such a spectrum is the most effective stimulus for the human