

As in the case of the velocity profile, the temperature profile here is also significantly different from the parabolic, it is also more filled out.

The influence of the fluid flow regime in the boundary layer on heat transfer lies in the difference in the mechanisms of heat transfer. In the laminar boundary layer, heat is transferred across the layer only by thermal conductivity, and in a turbulent boundary layer, in addition to thermal conductivity, convective heat transfer additionally arises due to turbulent pulsations.

Data on studies of cylinders of the flow plane are practically absent.

K.O. Udovychenko

Language supervisor: O.M. Suprun

Dmytro Motornyi Tavria State Agrotechnological University

THE ADVANTAGES AND DISADVANTAGES OF USING LED LIGHT BULBS

Nowadays energy efficiency issues are becoming increasingly important for modern society as resources and raw materials are being exhausted and the environmental situation is becoming increasingly disturbing. The primary task to reduce energy consumption in enterprises is posed to each power engineer. One of the ways of solving the problem of excessive energy consumption is replacing incandescent light bulbs with LED bulbs while maintaining the luminous flux.

The aim of our study is to compare the main characteristics of incandescent and LED bulbs, to find out the economic feasibility of using LED bulbs, to analyze the negative effects of using LED bulbs on human health.

Among the arguments in favor of using LEDs instead of incandescent light bulbs the following should be mentioned: environmental sustainability (these bulbs do not contain mercury); low power consumption at high luminous flux (they use over 5 times less energy); ease of disposal; long service lifetime (they last up to 25 times longer); the emission spectrum is close to natural lighting. We compared the two types of bulbs by a number of indicators; the results are shown in table 1.

Table 1

100 W E27 36 V Incandescent Bulb and LED T8 18W 1200mm 1600 Lm G13 6500K Bulb Compared

Bulb type	Incandescent bulb	LED bulb
Power, W	100	18
Luminous power, lm	1600	1600
Service lifetime, hr	1000	50000
Cost, UAH	12,10	73,73
Expenditures in 3 years, UAH	1471,68	264,9

The expenditures in 3 years of operation have been calculated taking into account the fact that the light bulb will work 8 hours a day, 365 days a year at a cost of 1 kW*hour of electricity 1.68 UAH, not taking into consideration the number of replaced bulbs due to the duration of operation.

It should be noted that despite their high energy efficiency, LED bulbs have a number of disadvantages. These include the high cost of the bulb and the spectrum of its emission.

The emission spectrum of the bulb was included into both advantages and disadvantages, since on the one hand the emission spectrum of the bulb is white which makes it very close to natural lighting. However the main disadvantage of LEDs used in lighting is the high intensity of short-wave emission with high energy of blue and violet spectra that are harmful to eyesight. For example, in some agricultural enterprises in Ukraine, which used LED bulbs to substitute sunlight for animals, poultry in particular, it was noticed that animals began to lose their

eyesight. In this regard, power engineers were given the task of developing a replacement for this type of bulbs with others in order to preserve the vitality of animals.

Thus, by solving the problem of the emission spectrum of the bulb it will be possible to guarantee the preservation of consumer's health while maintaining the energy efficiency and economic feasibility of LED bulbs, as human safety and the quality of lighting are among the main factors influencing the choice of bulbs, both in households and enterprises.

SECTION 6. ECOLOGICAL SAFETY

S.V. Andrushchenko

Language supervisor: O.O. Kravets

Dmitro Motorny Tavria State Agrotechnological University

MODERN WAYS OF SOLVING BASIC ENVIRONMENTAL PROBLEMS

With the increasing scale of human economic activity, rapid scientific and technological development the negative impact on the environment has increased, which in turn, has led to a disruption of environmental security state on the planet. In this regard, it was not only necessary to influence the situation as a whole, but also to develop and use environmental means to preserve the ecology.

The purpose of the research is to analyze the factors that have a negative impact on both the life of the individual and the environment, as well as suggest methods that can help escape these problems.

Nowadays, there is a serious environmental crisis and its main feature is that all man-made impacts have a significant connection with natural processes, they are weakened or exacerbated by them. Ecologists identify four major groups of causes that have the greatest influence on nature and which, from their point of view, have led to a global environmental crisis. They include the horrific environmental pollution, waste, improper disposal and recycling; high levels of exhaust emissions leading to air pollution; the increasing of economic growth has a paramount importance and will be achieved at any cost; growing of global population and urbanizing using of technologies that maximize the consumption of natural resources. The rapid population growth, in turn, has led to an overuse of natural resources, which as a consequence has threatened another world crisis - the energy one. It is only a matter of time when the resources that our planet is endowed with are running out and that is why it is necessary to develop and provide an alternative [1].

In connection with all of the above mentioned, which represent the environmental security of our planet, the following ways are proposed to help reduce or eliminate the environmental crisis:

- rationalization and optimization of nature management. It is extremely important to use natural resources properly and carefully;
- restriction and greening of economic activity. It means the reproduction of natural resources through the improvement of technology, the organization of material production, improving the efficiency of work in the environmental field;
- improvement of environmental legislation. It includes the development and implementation the state-of-the-art rules and laws that will protect the environment of our planet;
- minimalisation of negative impact on nature. First of all, speaking of restoration of already destroyed ecology, it is necessary to stop the process of destruction as soon as possible [2].