

Затраты на эксплуатацию одного светильника в течение года снизились до 9 раз, а потребления электроэнергии до 6 раз. Применение ИСУЭО может обеспечить уменьшение электропотребления на 30-34% даже в сравнении с системами уличного освещения, прошедшими модернизацию – замену электроламп ДРЛ на светодиодные [2].

### **Список литературы**

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## **Realization of energy efficiency concept of outdoor lighting management system based on industry technology 4.0**

S.R. Suleimanov, V.Y. Ushakov, A.D. Mekhtiev

*National Research Tomsk Polytechnic University, 634034, Russia, Tomsk, Usov Street, 4a*

seidamet.s@gmail.com

The quality of outdoor lighting systems is one of the indicators of the development and welfare of the country. To solve the problem of improving the energy efficiency of lighting systems, not only energy-saving lighting devices are needed, but also devices for smart energy management systems based on SMART technologies [1].

Together with the scientific and production company called "KazTechAutomatics", a working model of the intelligent outdoor lighting management system (IOLMS) was developed. The prototype allowed to perform system tests in the conditions of the pilot project on the road in Temirtau in 2017.

The tests carried out lasting 3 months showed the opportunity to reduce electricity consumption in urban electric lighting networks up to 6 times (According to the communal department of Temirtau).

Experimental operation of the IOLMS developed by us showed its advantages over existing analogues, especially clearly manifested when replacing technically obsolete gas-discharge lamps. The operating cost of a single luminaire decreased to 9 times during the year, and electricity

consumption to 6 times. The application of the IOLMS can provide a reduction in power consumption by 30-34% even in comparison with outdoor lighting systems that have undergone modernization - replacing the AML lamps with LED lamps [2].

### References

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## Use of numerical modeling to select a rational scheme for air exchange

V.M. Ulyasheva, A.A. Vdovichev

*St. Petersburg State University of Architecture and Civil Engineering,  
190005, St. Petersburg, ul.II Krasnoarmeyskaya, 4*

ulyashevavm@mail.ru

The article considers the issues of increasing the energy efficiency of the air conditioning system in an office building with low ceilings. The tasks were solved to create an efficient air exchange system, to improve the air distribution quality and to provide a given air circulation scheme by changing the number and location of fan-type air outlets. The study of the problem is realized on mathematical modeling method the basis with the using the universal program STAR-CCM+. On the analysis of spatial fields of temperature distribution and air velocity basis, the features of the interaction of the inlet full horizontal fan-like flooring jets identified. The justification of the proposed version of air-supply devices placement from the energy saving position carried out. The results of the work implemented in the project activities.