

NEW REQUIREMENTS TO ENERGY EFFICIENCY AND LABELLING OF LIGHTING PRODUCTS IN THE RUSSIAN FEDERATION

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ABSTRACT

The article describes the main provisions of the Government Decrees of the Russian Federation No. 450 dated on April 15, 2017 and No. 1356 dated on November 2017 regarding lighting products. The necessity to introduce the Technical Regulation of the EEU on energy efficiency requirements to power-consuming products in the territory of the EEU is considered in the article. It is shown that introduction of new requirements to energy efficiency and operational characteristics of general use lamps and luminaires, as well as informing consumers on the energy efficiency of the products, are aimed at lowering of power consumption for lighting and negative environmental impact.

Keywords: energy efficiency, power-consuming products, general use lamps, luminaires, energy labelling, energy efficiency classes, operational characteristics, standards, directives and regulations of the European Union

1. INTRODUCTION

In line with world trends in the area of energy efficiency and increasing of energy efficiency of products, clause 1 of article 10 of the Federal Law [1] provides mandatory availability of information regarding energy efficiency class of products manufactured in Russia and imported to Russia for turnover in the territory of Russia, in technical documentation attached to such products and in its labelling; clause 6 of article 48 of the Law provides mandatory setting of requirements to lighting de-

vices and electric lamps used in AC circuits for lighting. According to the said article of the Law, the Government of the Russian Federation introduces statutory acts on energy efficiency and increasing of energy efficiency of energy-efficient products, including lighting products, aiming at the reduction of power consumption for lighting and lowering of negative environmental impact.

The Decree of the Government of the Russian Federation (hereinafter referred to as the Decree) [2] specifies the types of products (with consideration of their characteristics), including household electric lamps, and approves the list of determination principles (rules) of energy efficiency class of the products by manufacturers and importers. The values of energy efficiency indicators specified in the Decree [2] used for determination of the energy efficiency class of power-consuming products, in particular, household electric lamps, were harmonised with the standards of setting of energy efficiency class of relevant products applicable in European countries.

The Decree [3] approved the requirements to lighting devices and electric lamps containing minimally acceptable values of luminous efficacy (energy efficiency) of electric lamps and luminaires for general lighting.

2. LIGHTING PRODUCTS ENERGY EFFICIENCY REGULATING: INNOVATIONS IN RUSSIAN PRACTICE

The Decree [2] applies the following designations of the energy efficiency classes: *A, B, C, D, E, F, G*. As it is known, the classes *A* and *G* should be

used for designation of the products categorised as one category with consideration of their characteristics with the highest and the least energy efficiency respectively.

As soon as the products with maximum energy efficiency significantly exceeding that specified for class *A* were introduced in the market, the Decree [2] was amended for setting of additional classes of energy efficiency: first *A+*, then *A++* for designation of the products with the highest energy efficiency (in ascending order: *A+*, *A++*). The EU Member States also used similar classes of energy efficiency of products characterising their energy efficiency during operation [4]. For instance, for the purpose of labelling energy efficiency of high-output electric lamps and luminaires meeting the highest requirements of the market in terms of energy indicators, the EU introduced the Regulation [5] setting another two classes of energy efficiency: *A+* and *A++*.

Over the recent years, as a result of the global technological progress, new efficient technologies which sufficiently outperform the conventional ones in terms of economic efficiency, environmental safety, and qualitative parameters have appeared and reached technological maturity. The products with the highest level of energy efficiency significantly outperforming the levels set for classes *A+* and *A++* have appeared in the global market, due to which it has become necessary to specify the class of energy efficiency of such products.

For the purpose of society informing system modernisation on the quality and energy efficiency of power-consuming products, including electric lamps, and acceleration of market transition to energy-efficient technologies, the Decree [6] entered into force since January 1, 2018, in accordance with which, the amendments to the Decree [2] were made.

The Decree [6] specifies the energy efficiency classes *A+*, *A++*, *A+++* for labelling of power-consuming products with the highest energy efficiency (in ascending order: *A+*, *A++*, *A+++*), i.e. it has become possible to apply an additional energy efficiency class *A+++*.

Another important modification introduced in the Decree [2] by the Decree [6] is an extension of the list of products for which the requirement on availability of energy efficiency class information in the attached technical documentation and in labels of such products applies. The Decree [2]

specified the mandatory designation of the energy efficiency class only for household electric lamps, including incandescent lamps with a power of up to 100 W and low-pressure fluorescent lamps. The Decree [6] specifies this mandatory requirement for all types of general use electric lamps, i.e., apart from the household lamps, now this group of light sources includes also the lamps for professional lighting, e.g. for the lighting of offices, public buildings and structures, production facilities, etc.

For fulfilment of the requirements of the Decree [6], it is necessary to formalise the Russian statutory documents regulating uniform regulations and rules concerning the list of indicators related to the energy efficiency of general use electric lamps, which contain the methods of determination of electric lamps efficiency classes and requirements to energy efficiency labels.

For measurement of lighting products indicators, including those related to energy efficiency, the measurement methods according to GOST [7, 8] may be used.

GOSTs related to labelling and information about the power consumption of household electric lamps were developed [9, 10]. However, these standards require actualisation, since new improved lighting technologies have appeared recently and methods of evaluation of their energy efficiency are not reflected in these standards.

Another document regulating labelling and information about power consumption of products, including household lamps, applicable in the Russian Federation is the Order of the Ministry of Industry and Trade of Russia [11], which specifies the rules of determination of energy efficiency class of a product and other information of its energy efficiency by the manufacturers and importers. The rules of determination of the household lamps energy efficiency class set out by this Order are similar to evaluation methods specified in GOST [9], harmonised with the Directive [12] (in relation to energy labelling of household lamps), which was cancelled and replaced by the Directive [13] (on specification of information on power and other resources consumption by power-consuming products in the labelling and standard product information) which, in its turn, was cancelled since August 1, 2017.

It should be expressly noted that the EU conducts constant work related to the development of new directives and regulations on energy efficiency

and energy labelling of power-consuming products including lighting products.

In the Member States of the Eurasian Economic Union (EEU), mandatory uniform technical regulations apply to power-consuming products including lighting products. There are two technical regulations for low-voltage equipment and technical means which include lighting products applicable in the territory of the EEU: [14] harmonised with the Directive [15] (on approximation of low voltage equipment legislation of Member States¹) and [16] harmonised with Directive [17] (on approximation of electromagnetic compatibility legislation of Member States²). Moreover, since March 1, 2018, the technical regulation of the EEU [18] harmonised with the Directive [19] is applicable in the EEU; it limits the content of hazardous substances in products, namely the six hazardous substances: lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls and polybrominated biphenyl ethers.

Compliance with the requirements of technical regulations is provided by the voluntary application of international standards or national standards provided the former have not been developed yet. It is useful to highlight in this regard that the energy efficiency of power-consuming products technical regulation of the EEU (TR EEU) developed with consideration of the latest directives and regulations of the EU has not been approved yet and is being discussed in the international level [20].

One of the Member States of the EEU, the Republic of Belarus, has made a decision on the strengthening of requirements to the energy efficiency of power-consuming products and has introduced the requirement on mandatory confirmation of the energy efficiency parameters compliance since July 1, 2018, which will be applicable until TR EEU comes into effect. This requirement applies to both lighting products manufactured in Belarus and the products imported to this country, namely the household undirected light distribution lamps, fluorescent lamps without built-in ballast, and high-intensity discharge lamps. For implementation of the evaluation procedure, the following standards were adopted in Belarus: the standard [21]; the stan-

dard [22], which states that it complies with the Delegated Regulation [23] supplementing the Directive [13] in relation to energy labelling of electric lamps and luminaires, and the standard [24], which states that it takes the requirements of the Regulation [25] into account. As it was noted above, the basic Directive [13] was cancelled in the EU, and the new Regulation [26] of energy labelling of power-consuming products was adopted in the EU since August 1, 2017.

In order to set uniform energy efficiency requirements to lighting products in the EEU Member States and for compliance with the requirements of the Decree [6] in the course of energy efficiency evaluation, it appears to be necessary to introduce TR EEU. Alongside with entering TR EEU into force, the problem of necessity to develop international standards constituting a base of evidence of compliance with the requirements of TR EEU regarding setting of uniform requirements and rules regarding the list of energy efficiency parameters of electric lamps, methods of electric lamps energy efficiency class determination and energy efficiency labelling requirements.

Apart from the Decree [6], in order to reduce costs of lighting and lower negative environmental impact, the Decree [27], in which the requirements to lighting installations and electric lamps used in AC circuits were revised, has entered into force since July 1, 2017. Introduction of this decree is related to the fact that the applicable minimal energy efficiency requirements to lighting installations and electric lamps set out by the Decree [3] do not comply with the current level of development of lighting technologies, therefore, with the Decree [27] entering into force, the Decree [3] was annulled. The Decree [27] introduces new requirements to energy efficiency and operational characteristics of general use lamps and luminaires used in AC circuits for lighting, which will be implemented during two phases: the first phase is from July 1, 2018 to December 31, 2019, the second phase is since January 1, 2020. During phases 1 and 2, the lamps and luminaires should comply with the set requirements to energy efficiency and operational characteristics. During phase 2, the level of real-power losses in ballasts of luminaires for public and production premises with fluorescent or induction lamps should not exceed 8 %.

Given that the Decree [27] was published on the website of the Government of the Russian Federa-

¹ Since 20.04.2016, the Directive [15] was replaced by the newly adopted Directive 2014/35/EU

² Since 20.04.2016, the Directive [17] was replaced by the newly adopted Directive 2014/30/EU

tion on November 15, 2017, the manufacturers of lighting equipment have sufficient time (until July 1, 2018) to conduct analytical comparison of the actual values of luminous efficacy (energy efficiency) of their products reached in the course of manufacturing and standardised by the statutory technical documentation with the minimum values of luminous efficacy (energy efficiency) regulated by the Decree. Based on the results of the conducted comparison, the companies should take a set of measures to introduce relevant modifications to the statutory and technical documentation in case the indicators reached during manufacturing are not lower than the ones standardised by the Decree or to make a decision on enhancement of the products to reach compliance of the parameters with the requirements of the Decree with subsequent revision of the statutory and technical documentation. The similar work should be conducted for meeting the requirements of this Decree by operational characteristics of general use lamps and luminaires.

3. CONCLUSION

The requirements set out in the Decrees [6, 27] will: significantly reduce power consumption of the lighting devices; assist in increase of quality of artificial lighting; accelerate market penetration of energy-efficient and high-quality products; assist in establishment of the system of social informing on the quality and energy efficiency of power-consuming products including lighting products; assist in performance of informational and advertising events explaining economical benefits of application of energy-efficient products; establish real barriers on the way of non-energy-efficient and non-qualitative products to the market and provide compliance of the Russian products with the energy efficiency and labelling requirements of the European market which is required for promotion of Russian lighting products to the international market.

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