MEASURES TO IMPROVE THE ENERGY EFFICIENCY OF MODERN AND RECONSTRUCTED BUILDINGS

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Abstract. This article discusses the development and implementation of a scientifically based legal and regulatory framework for the design and construction, as well as the operation of buildings and structures, aimed at improving the energy efficiency of buildings under construction

Keywords: Energy consumption, energy-saving technologies, building maintenance, civil engineering building air temperature, protection of the building from overheating.

In the context of the progressive reduction of reserves and the corresponding increase in prices for traditional non-renewable fuel and energy resources, the importance of the role of energy in the global economy has become obvious. Therefore, around the world, special attention is paid to improving energy efficiency and reducing carbon dioxide emissions into the atmosphere.

One of the main directions of the state policy in the field of rational use of energy in our country is the stabilization of production and consumption of energy necessary for the intensive development of the national economy [1,2,3,4,5,6,7,8,9,10]. Therefore, energy conservation, the development and application of energy-saving technologies, the use of renewable energy sources is the most important task in all spheres of the country's economy. Taking into account the special urgency of increasing energy efficiency, legislative acts and Resolutions of the Cabinet of Ministers were adopted in our country aimed at rational use of energy, deepening economic reforms in the energy sector, conducting energy surveys and examinations of fuel and energy consumers, developing a concept for reforming the heat supply system and a program for modernization and development of the heat supply system in the republic for the coming years, improving the systems accounting and control of electric energy consumption, etc. At the same time, it should be noted that at that stage of ensuring energy conservation in the republic, the above acts were aimed at developing and improving the activities of mainly energy producers and industrial products [11,12].

Considering that about half of the total energy consumption in the country is accounted for by buildings and structures, an urgent legal and scientific and technical problem is the development and implementation of a scientifically sound legislative

and regulatory and methodological framework for design and construction, as well as the operation of buildings and structures aimed at improving the energy efficiency of both newly constructed buildings and existing significant the fund of residential and public buildings that do not meet modern requirements for energy consumption.

During the years of independence of the republic, steps have been taken to gradually increase the requirements for thermal protection of buildings, taking into account the development of the country's economy. In subsequent years, 12 revised building codes and regulations were put into effect, one way or another related to the design and provision of energy efficiency of buildings. The achieved level of thermal protection of buildings according to these standards is 1.4-4.0 times higher than the level of regulatory requirements for thermal protection in force during the Soviet period. At the same time, the achieved level is on average 2 times lower than the level of regulatory requirements in the EU countries.[14,15,16,17,18,19,20]

Therefore, research aimed at developing and improving the regulatory and methodological framework for the design and construction of energy-efficient buildings, creating conditions (market mechanisms) for realizing the potential of energy saving in housing and civil construction by increasing the energy efficiency of new, reconstructed and existing buildings are of particular importance.

The purpose of this study is to develop the state of the production base of effective thermal insulation materials, the need to create prerequisites and mechanisms to stimulate energy saving in buildings and structures.

The task of the thermal engineering calculation of a complex enclosing structure is to obtain the distribution of temperatures and heat flows, taking into account its shape, size, thermophysical characteristics of the materials used and various thermal effects on them, and to check whether the design meets the regulatory data in relation to the relevant conditions [21].

The introduction of increased requirements for the thermal protection of buildings requires a fundamental revision of the design solutions of enclosing structures, the correct choice of thermal insulation materials taking into account the operating conditions.

Considering that knowledge of building heat engineering is of great importance for the rational design of external enclosing structures in modern construction, in which various enclosing structures made of new, often poorly studied, not always effective materials are widely used, we considered it advisable to briefly dwell on the presentation of the main well-known classical ideas and concepts about heat transfer in enclosing structures that have recently been in in conditions of increasing requirements for thermal protection, they are of particular importance.[22,23,24,25

Construction heat engineering is engaged in the study of heat transfer and air permeability through the enclosing structures of buildings, as well as the humidity regime of enclosing structures associated with heat transfer processes.

The thermal engineering qualities of the external fences of buildings depend on:

- in heated buildings – the amount of heat lost by the building in winter;
- the constancy of the air temperature in the building over time with uneven heat output by the heating system;
- protection of the building from overheating in the summer;
- the temperature of the inner surface of the fence, which guarantees against the formation of condensation on it;
- the humidity regime of the fence, which affects the heat-protective qualities of the fence and its durability.[25,26,27,28,29,30]

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