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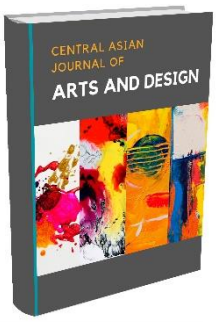

The Prospects for the use of Energy-Saving Materials in Residential Architecture

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Annotation

Today, the widespread introduction of energy-saving technologies and alternative energy sources in the economy, social sphere and construction industry is a key priority of the Government of Uzbekistan. In Uzbekistan, buildings account for 49% of total energy consumption, or 17 million tons of oil equivalent per year. Accelerated industrialization and sustainable population growth will significantly increase the economy's need for energy resources, as well as exacerbate negative anthropogenic impacts on the environment. This article focuses on saving electricity and rational use of natural resources in residential buildings in Uzbekistan today.

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Introduction

The President of the Republic of Uzbekistan has adopted an updated program for the construction of affordable housing in rural areas of Uzbekistan for 2017-2021 on the basis of improved standard housing projects. The program identifies new directions and tasks that will open up promising opportunities for the construction of high-efficiency and low-carbon buildings, which will save more energy and reduce greenhouse gas emissions, ie reduce the negative impact on the environment [1-7].

The main goal is the effective use of environmentally friendly and energy-saving materials in the construction of housing in rural areas and their introduction through new technologies. Based on the purpose of this scientific article, the following tasks have been identified:

- To study the world experience of housing construction;
- To study the practice of using energy-saving materials in housing construction around the world;

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- Study of the architecture of Uzbekistan, the history of housing construction, materials and construction materials used;
- To study the shortcomings in the construction of modern residential buildings;
- Suggest ways to use solar and wind energy efficiently;
- Based on theoretical skills, to recommend the main methods of creating an energy-efficient complex system and its sequential implementation;

The main goal is the effective use of environmentally friendly and energy-saving materials in the construction of housing in rural areas and their introduction through innovative technologies.

If we look at the buildings and structures in European countries today, the projects created by the architectural and design organization in Washington (USA) are equipped with energy-efficient houses, self-managing energy and resources. The house is designed to maximize heat retention. The projects are based on special equipment and use a collection system for water saving and clean water [8-13]. The windows are large and use smart glass. One such project is a 5-star "green residence" in Washington. The total area of the house is 3,900 square meters, and the equipment, technologies and materials used for the building are energy efficient. The interior and exterior architectural solutions of the building have an energy-saving design system. One of the modern traditions in the field of housing construction in European countries is the design and construction of buildings, in which planning solutions are combined with environmental friendliness and energy efficiency. According to various experts, the main sources of energy are oil, gas and coal. In developed countries, almost half of energy consumption is in residential buildings. Therefore, one of the main ways to save resources is to increase the energy efficiency of buildings [14-27]. Therefore, in the process of innovative design of housing in European countries, the building is considered a preliminary analysis of energy efficiency and materials used. The main task of designing an energy-efficient house is to maintain a comfortable indoor temperature using the heating and ventilation system due to the maximum location of the building and the use of alternative energy sources.

Modern building materials and technologies from energy-saving materials to design proposals for walls can not only save energy, but also make the aesthetic appearance of the building more attractive. At present, it is possible to provide such indicators, each of which (taking into account the thermal resistance and protective properties of the outer surface layer of the building). However, this information and materials have been used successfully in the north. If we pay attention to the tested energy-saving wall structures, in the design of energy-saving walls, we must first pay attention to their material, because there are so many types of protective materials, such materials are adapted to climatic conditions. can be used without exiting. Their air resistance depends on their ability to absorb air and accumulate moisture, as well as the rate of evaporation [25-31]. In addition to reducing energy consumption, modern frame walls take the form of checkers and maintain the relative humidity level in the room, which increases their overall well-being.

Taking into account the processes associated with heating and heat loss, the basis of an energy-efficient home solution, the main components of the thermal conductivity of the building are the external elements of the house, and winter temperatures in low-rise buildings also negatively affect home comfort. Only through rational planning and solution can the energy-saving house be warmer and more efficient, the easiest way to reduce heat loss is to reduce the exterior surface of the building, the larger exterior surfaces of the house will cause more heat loss. What should we pay attention to when designing an energy efficient building. To do this, we need to study where the house is built and the ecology and climate of the place. Proper use of heating systems is necessary to reduce heat loss

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[29-35]. Basic heating is often spent on indoor heating. When building a house, it is necessary to pay special attention to the decoration of the exterior walls and the judicious use of materials that should be used for the walls. Because the charm of the house is the decoration, they are a barrier to heat loss.

It is known that in the process of reforms in Uzbekistan to improve the living standards of the rural population, to change the appearance of our cities and villages, to build comfortable houses with all amenities and communication systems, built on the basis of modern architecture and design in line with world standards. special attention is paid to the construction, development of the social sphere and production infrastructure. The results of the study also showed the need to develop fundamentally new approaches that provide high efficiency of construction, taking into account the real needs and purchasing power of the population, the national mentality and living conditions in rural areas.

- Taking into account these factors, the house, built of energy-saving, heat and cold-resistant materials, today will be one of the most important innovations not only for the people of Uzbekistan, but also for the world community. In the course of the research, the products to be used in construction were studied and an alternative version of the residential building was developed in order for the apartment building to be able to adapt itself to the cold winter and hot summer weather. The following factors were taken into account. The following energy-saving construction materials were adopted during the project development: “gazoblok”,
- “NASA” paints,
- 2-function ClimaGuard smart windows,
- Solar lamps “Master Led, PROPAP PRIM SRL”,
- Insulators for exterior walls “Facade panels DPK”,
- “wind generator”
- “solar panels”

A brief summary of the conclusions and recommendations.

Through a complex solution of architecture and design, embedded energy-saving materials, innovative technological equipment, a modern shape and perfectly equipped environment will be built in residential buildings. As a result, a social environment and opportunities are created in the modern formation of people, creating favorable conditions. Introduction of energy-saving materials in rural housing, innovative technologies for energy production from natural resources, the use of unusual "smart home" technology. In conclusion, these solutions are reflected in the complex exterior and interior architectural-spatial and design solutions of residential buildings. Efficient use of energy-efficient new, unusual technologies from external environmental influences (solar, wind). The exterior of the building will be equipped with modern energy-saving materials and innovative technologies, the residential microclimate will be created through the architectural-spatial form and design solution, and the "smart home" solution and style will be widely used in equipping the interior.

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