Thus, rational design of biopositive building constructions opens up new opportunities for creating a sustainable, environmentally friendly, and healthy living and working environment. The development of this direction in construction is an important step towards ensuring sustainable development and improving the quality of life of modern society**.**

REFERENCES

1.Ortiz, O.; Pasqualino, J.C.; Castells, F. Environmental performance of construction waste: Comparing three scenarios from a case study in Catalonia, Spain. Waste Manag. 2010, 30, 646–654. [Google Scholar]

2.John, G.; Clements-Croome, D.; Jeronimidis, G. Sustainable building solutions: A review of lessons from natural world. Build. Environ. 2005, 40, 319–328. [Google Scholar]

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ENERGY EFFICIENCY IMPROVEMENT IN RECONSTRUCTION OF RESIDENTIAL BUILDINGS (UKRAINE)

While the global community addresses the issue of global warming and attempts to mitigate the consequences of climate change, more pressing scientific and applied tasks have emerged in Ukraine since February 24, 2022.

With the beginning of the Russian invasion in Ukraine, the Russian Federation launched multiple massive and methodical missile strikes against critical infrastructure in Ukraine during the winter period. These strikes caused power and heating cut-off for thousands of consumers.

In addition, the housing stock of Ukrainian cities is largely represented by houses of typical series that do not meet current normative requirements for energy saving. The pipelines for the centralized heat supply systems are worn out due to long-term operation.

Today, we are facing the problem of significant 'aging' of the infrastructure of heat supply systems, further complicated by hostilities. This critically affects the microclimate inside residential buildings. With the external temperature of -5°C, the indoor temperature drops from +20 to +12°C in 24 hours [1].

Modern research in Ukraine pays considerable attention to the reduction of energy costs during the operation of multi-apartment multi-story residential buildings. However, most of these works concern new construction, where the principles of energy efficiency can be taken into account at the design stage and implemented during construction [2].

Regarding reconstruction, research is aimed at individual structural elements, for example, double-glazed windows, which allow for an almost thermally homogeneous outer shell of the house [3]. Scientists are also investigating the modernization of the ventilation system [4] and the heat distribution system [5], studying the use of new materials.

There are a lot of great individual works, but we need one working system, the implementation of which will make it possible to save energy and make existing buildings more autonomous.

This issue concerns millions of Ukrainian families who are currently living in houses of typical series. Reconstruction of these buildings will cost tens of billions of hryvnias, but replacing a similar amount of housing with new ones will cost hundreds of billions of hryvnias.

Improving energy efficiency of buildings requires a comprehensive approach to the implementation of energy-saving measures, in particular:

Insulation of external enclosing structures;

Modernization of the heating system;

Modernization of the ventilation system;
Modernization of energy equipment;
Implementation of home management systems.

Therefore, the formation, assessment, substantiation and selection of rational organizational and technological solutions to the reconstruction of residential buildings, taking into account improved energy efficiency, is an urgent problem to be researched.

REFERENCES

1.Belikov, A. S., Kolesnyk, I. O., Zheleznyakov, Ye. O., &Klymenko, H. O. (2023). "Zabezpechennia umov mikroklimatu z urakhuvannyam konstruktyvnyh osoblyvostey budivel ta sporud u razi avariynykh vidklyuchen teplo postachannya". Ukrayinskyi zhurnal budivnytstva ta arkhitektury, (2312), 7-948. [Ensuring microclimate conditions taking into account the design features of buildings and structures in case of emergency heat supply outages. Ukrainian Journal of Construction and Architecture)]

URL:http://srd.pgasa.dp.ua:8080/bitstream/123456789/10725/1/BELIKOV.pdf

2.Nazarenko, O. M., Beyner, N. V., &Beyner, P. S. (2023). Kompleksnyy pidkhid do proektuvannya energoefektyvnykh budivel na osnovi BIM. Ukrainskyi zhurnal budivnytstva ta arkhitektury, (2312), 66-920. [A comprehensive approach to designing energy-efficient buildings based on BIM]

URL: http://uajcea.pgasa.dp.ua/article/view/277263/272002

3.Sopilnyak, A. M., Kolokov, V. V., Yarova, T. P., Sereda, S. Yu., Sirenko, K. O., & Dunda, V. V. (2023). BIM-energoanaliz budinku z podviynymy viknamy. Ukrainskyi zhurnal budivnytstva ta arkhitektury, (2312), 107-773. [BIM-based energy analysis of a building with double windows. Ukrainian Journal of Construction and Architecture]

URL:http://srd.pgasa.dp.ua:8080/bitstream/123456789/6941/1/SOPILNIAK.pdf

4.Vilinska, L. M., Burlak, G. M., & Gurska, A. V. (2023). Energoefektyvnist' bahatokvartyrnoho zhytlovoho budinku. Ukrainskyi zhurnal budivnytstva ta arkhitektury, (2312), 28-951. [Energy-efficiency of a multi-apartment residential building]

URL: http://srd.pgasa.dp.ua:8080/bitstream/123456789/10728/1/VILINSKA.pdf

5.Kosenko, L. V., Koval, O. O., Yurchenko, Ye. L., &Tymoshenko, O. A. (2023). Energoefektyvnist' systemy opalennya vysotnoho korpusu PDABA. (2312), 66-912. [Energyefficiency of the heating system of a high-ris ebuilding of PDABA]

URL: http://srd.pgasa.dp.ua:8080/bitstream/123456789/9798/1/Kosenko.pdf