# IMPROVING ENERGY EFFICIENCY IN BUILDINGS

***Alijanov Donyorbek Dilshodvich (PhD)***
***Otabolayev Ubaydullo To'ychiboy o'g'li***
*"Andijan Machine Building Institute", Faculty of Electrical Engineering*
*4th year student of "Alternative energy sources" department*

**ABSTRACT**

In the course of this research, the building system was analyzed with reference to the improvement of energy efficiency of buildings and international experience. Today, the general condition of the buildings under construction is created according to international experience.

**Keywords:** discomfort, energy consumption, isolation, energy efficiency, passive houses

Increasing the energy efficiency of individual modern residential buildings being built today is becoming a need of the hour, because most of the existing residential buildings in the Republic of Uzbekistan are houses designed and built on the basis of individual individual projects [1-5]. When building such houses, the climate of Central Asia, including Tashkent, is considered hot and sharply continental. In the rooms of the building used in such climatic conditions, the temperature in the summer is 40-450 C, and the temperature of the room exceeds 450 C. This situation creates an uncomfortable microclimate in the room. Analysis of residential buildings being built in the climatic conditions of Uzbekistan from the point of view of increasing energy efficiency, analysis of the constructions of modern residential building projects under construction, energy-efficient roofs, door windows, and the location of the residential building in the area. It is very important to take into account the hot and dry climate of Uzbekistan. An energy-efficient house is a building that consumes very little energy to maintain a comfortable microclimate inside the building [6-12].

Energy saving in such buildings reaches 90%. Annual energy consumption in this type of buildings can be less than 15kWh per 1m2. As an example, most of the private houses being built today (reinforced concrete foundation, "warm floor" system without additional heating, walls 1.5 bricks thick with cement plaster, ordinary plastic windows, roof heat insulation 150 mm and without an air handling device in the ventilation system) the amount of energy used for heating is 110-

130kWh* per year per 1m2. The following houses in the European Union classification is accepted [13-18].

1. **Low-energy houses:**

Houses that use at least 50% less energy than conventional buildings, which meet the requirements of current energy consumption standards.

2. **Ultra-low energy houses:**

Compared to conventional houses

70-90% energy saving. As an example, German Passive House (passive house), French Effinergie, and Swiss Minergie clearly contain the requirements of ultra-low-energy houses. In many foreign countries, a number of administrative and economic regulatory and support measures are implemented to improve the energy efficiency of buildings. 1. Introduction of energy saving standards, strict construction norms and rules, indicators in the framework, which go to heating and lighting the building indicators related to limiting energy consumption. Improving the energy efficiency of residential buildings includes the following measures: building standards for new buildings, construction of passive energy and almost energy-free buildings, retrofitting of existing buildings from the point of view of energy efficiency, and the introduction of construction certification. . According to the final statistics of the International Energy Agency, in 19 of its member countries, the above policy has played a decisive role in the field of energy efficiency, according to which this indicator has been 1.3% since 1990. Today, the modern trend of residential buildings is to build "green buildings". As part of this trend, uniform standards have not been developed in the world, therefore, the approach to determining the ecological level of the building has not been developed in the world experience. Proprietary standards are only available in the UK, France, Germany, Italy, Australia, Japan and China. There are four "green building standards" in the US [19-21].

Some states offer subsidies to owners of buildings certified by the Green Building Council. In many states, building standards are updated annually, with a goal of doubling the energy use of every new building by 2030. A number of cities have legislated a building energy efficiency assessment under the ENERGY STAR program, which includes tables from 1 to 100 and more and suitable for buildings with an area of more than 1000 m2. Providing state support and subsidies for improving the building's energy efficiency. In Great Britain, there is a program called Warm Front (Warm Front), which is aimed at low-income households, according to which thermal insulation and energy efficiency improvement of the heating system

are implemented, the investment is 50 million pounds. This program is also valid in the USA. In Japan, subsidies are provided by the New Energy and Industrial Technology Development Organization (NEDO), which renovates residential buildings in accordance with thermal protection (based on the Energy Efficiency Act), energy-efficient household appliances using renewable energy sources, and efficient equipped with systems. As a result of the subsidies, new-build homes are 15% more energy efficient and retrofitted homes require 25% less energy than when they were built [22-25]. Owners of new and renovated houses must report to NEDO every three years the increase in energy consumption. The level of basic energy demand in new modern buildings being built in Poland, the following technology is useful for different building energy per kW/m2: many buildings with concrete walls 20-30 cm and high-efficiency individual facade insulation total of 20-25 cm, in areas heated by central heating systems, polystyrene at least 20 cm or on slopes, the wooden roof is flat with one layer. Individual houses are insulated 20-25 cm minvata, individual gas boilers in the houses, the wall is 20-30 cm, the thickness of hollow brick walls and polystyrene foam insulation is 15 cm. The volume of high thermal insulation of walls, ceilings and foundations meets high thermal standards, the thickness is about 15 cm. As a result of using modern insulated windows and doors, it is possible to check the efficiency of ventilation systems of buildings, to prevent mold and rot on walls and ceilings due to insufficient ventilation.In conclusion, enough experiments and tests have been carried out in the field of energy efficiency in the world, and it is necessary to consider them in accordance with the climatic conditions of our Central Asia.

In the implementation of the measures mentioned above, it is required to take into account the proposals and solutions of Uzbek scientists. Based on the world experience, it is necessary to study their achievements and adapt them to our conditions.

## REFERENCES

1. Alijanov Donyorbek Dilshodovich Dean of the Faculty of Energetics of Andijan Machine-building Institute, & Islomov Doniyorbek Davronbekovich Phd student of Andijan Machine-building Institute. (2023). OPTOELECTRONIC SYSTEM FOR MONITORING OIL CONTENT IN PURIFIED WATER BASED ON THE ELEMENT OF DISTURBED TOTAL INTERNAL REFLECTION. Zenodo. https://doi.org/10.5281/zenodo.10315833
2. Alijanov, D. D. (2023). Storage of Electricity Produced by Photovoltaic Systems.
3. Донёрбек, А. Д. (2022, October). ОПТОЭЛЕКТРОННОЕ УСТРОЙСТВО ДЛЯ ОПРЕДЕЛЕНИЯ СОДЕРЖАНИЯ ВОДЫ В НЕФТИ И

НЕФТЕПРОДУКТАХ. In *Proceedings of International Conference on Scientific Research in Natural and Social Sciences* (Vol. 1, No. 1, pp. 71-78).

4. Donyorbek Dilshodovich Alijanov, ., & Isroiljon Maxammatismoilovich Boltaboyev, . (2021). Receiver For Registration Of X-Ray And Ultraviolet Radiation. *The American Journal of Engineering and Technology*, *3*(03), 23–27. https://doi.org/10.37547/tajet/Volume03Issue03-04
5. Alijanov, D. D., & Axmadaliyev, U. A. (2021). APV Receiver In Automated Systems. The American Journal of Applied sciences.
6. Alijanov, D. D., & Ergashev, A. A. (2021). Reliability of the brusk package on acs. *ACADEMICIA: An International Multidisciplinary Research Journal*, *11*(8), 395-401.
7. Alijanov, D. D. (2020). Optron na osnove APV–priemnika. *Muxammad al-Xorazmiy avlodlari*, (3), 13.
8. Alijanov, D. D., & Axmadaliyev, U. A. (2020). The Pecularities Of Automatic Headlights. The American Journal of Engineering and Technology.
9. Dilshodovich, A. D., & Rakhimovich, R. N. (2020). Optoelectronic Method for Determining the Physicochemical Composition of Liquids. *Автоматика и программная инженерия*, (2 (32)), 51-53.
10. Alijanov, D., & Boltaboyev, I. (2020). Photosensitive sensors in automated systems. *Интернаука*, (23-3), 6-7.
11. Alijanov, D. D., & Boltaboyev, I. M. (2020). Development of automated analytical systems for physical and chemical parameters of petroleum products. *ACADEMICIA: An International Multidisciplinary Research Journal*, 631-635.
12. Parpiev, O. B., & Egamov, D. A. (2021). Information on synchronous generators and motors. *Asian Journal of Multidimensional Research*, *10*(9), 441-445.
13. Atajonov M.O. Ashurova U.B. Algorithm for Adaptive Regulation of Parameters of Fuzzy-Models to Diagnose Dynamic Object. Technical science and innovation, Iss 8, Vol 2, 2021/2 peg. 234-240.
14. Розиков Ж.Ю, Холмирзаев Ж.Ю, & Абдуллаев М.Х. (2023). ОСНОВНЫЕ ПРОБЛЕМЫ ПЕРЕНОСА ИЗЛУЧЕНИЯ В АТМОСФЕРЕ. Fergana State University Conference, 48. Retrieved from https://conf.fdu.uz/index.php/conf/article/view/2298
15. Холмирзаев, Ж. Ю. (2022). ЗОНАЛЬНОЕ СТРОЕНИЕ КРИСТАЛЛОВ В ПРИБЛИЖЕНИИ МНОГОЗОННОЙ (КЕЙНА) МОДЕЛИ. Oriental Renaissance: Innovative, educational, natural and social sciences, 2(12), 748-753.
16. Qosimov Oybek Abdumannon o`g`li Dekhkanboyev Odilbek Rasuljon o`g`li Andijan Machine-Building Institute. (2023). ENERGY-SAVING CONTROL SCHEME OF ELECTRICAL CONTROL OF HORIZONTAL LAMINATING MACHINE. Zenodo. https://doi.org/10.5281/zenodo.10315865

17. Qosimov Oybek Abdumannon o`g`li Dekhkanboyev Odilbek Rasuljon o`g`li Andijan Machine-Building Institute. (2023). ENERGY-SAVING CONTROL SCHEME OF ELECTRICAL CONTROL OF HORIZONTAL LAMINATING MACHINE. Zenodo. https://doi.org/10.5281/zenodo.10315865
18. Yulchiyev, M. E., & Salokhiddinova, M. (2023). ORGANIZATION OF MULTI-STAGE ENHAT FOR MEDIUM AND LARGE POWER INDUSTRIES OR ENERGY SYSTEM. *World scientific research journal*, *20*(1), 13-18.
19. Abdulhamid o‘g‘li, T. N., & Sharipov, M. Z. (2023). ENERGY DEVELOPMENT PROCESSES IN UZBEKISTAN. *Science Promotion*, *1*(1), 177-179.
20. Abbosbek Azizjon-o‘g‘li, A., & Nurillo Mo‘ydinjon o‘g, A. (2023). GORIZONTAL O ‘QLI SHAMOL ENERGETIK QURILMALARINING ZAMONAVIY KONSTRUKSIYALARI.
21. Zuhritdinov, A., & Xakimov, T. (2023). STUDY OF TEMPERATURE DEPENDENCE OF LINEAR EXPANSION COEFFICIENT OF SOLID BODIES. *International Bulletin of Applied Science and Technology*, *3*(5), 888-893.
22. Olimjoniva, D., & Topvoldiyev, N. (2023). ANALYSIS OF HEAT STORAGE CAPACITY OF RESIDENTIAL BUILDINGS. *Interpretation and researches*, *1*(8).
23. Topvoldiyev, N. (2023). ANALYSIS OF HEAT STORAGE CAPACITY OF RESIDENTIAL BUILDINGS.
24. Shuhratbek o‘g‘li, M. Q., & Saydullo O‘ktamjon o‘g, S. (2023). OBTAINING SENSITIVE MATERIALS THAT SENSE LIGHT AND TEMPERATURE. *International journal of advanced research in education, technology and management*, *2*(12), 194-198.
25. Saydullo O‘ktamjon o‘g, S. (2023). IMPROVING THE ENERGY EFFICIENCY OF A SOLAR AIR HEATING COLLECTOR BY CONTROLLING AIR DRIVE FAN SPEED. *International journal of advanced research in education, technology and management*, *2*(12), 179-184.