ENERGY-EFFICIENT HIGH-RISE RESIDENTIAL BUILDINGS.

Topvoldiyev Nodirbek Abdulhamid o`g`li
Xolmirzayev Jasurbek Yuldashboyevich
Assistants of the Department of Alternative Energy Sources
Tursunov Ro'zimuhammad Muhammadyunus ugli
"Electrotechnics" faculty. 4th grade student of
"Energy saving and energy audit".

Abstract: Energy Efficient Housing As a result of the world energy crisis of 1970,appeared as a new type of construction. This is the International Energy Agency of the United Nations The conference (MIREK) was a response to the criticism of the experts, the residence in the criticism buildings have huge reserves of increasing thermal efficiency, but it was shown that the characteristics of their thermal regime formation have not been fully studied. Energy was the main issue in the construction of buildings until the end of the 20th century is the study of economic activities. In the early 90s, only energy economy energy-efficient architectural-planning solutions, improvement of innovative building materials and energy efficient systems and moving to the goals of creating a comfortable microclimate in residential buildings by using occurred.

Key words: Energy efficiency, Zero energy, homes, buildings, photoelectric.

"Energy efficiency" in the 21st century means sharp emissions to the environment from alternative energy sources, with the main goal of reduction use is understood. Modern energy-efficient residential buildings can be divided into 3 groups: passive, zero, active (active) [1-5].

1. Passive houses - from a minimum amount of energy, even during the heating period user houses.

2. Zero energy homes are self-generated energy complete the energy requirements of the generator and the residents of the house are providing houses.

3. Active homes produce more energy than they consume are houses. Connected to external feeds, but not as a consumer, but energy as a source. Construction of energy-efficient buildings in various parts of the world dates back to 1974 started after the global energy crisis. At the same time, the first multi-storey energy-efficient project earlier, namely in 1972 in Manchester, America started to be built. The building has seven floors and a two-level garage. Building energy consumption for

ventilation (ventilation) intake of outside air is compensated by reduction. This is a rational planning solution is achieved at the expense of use. Also in the project heat recuperators used, they reduce energy consumption for air cooling and heating by 60-75% allows to reduce. As the level of natural light changes, light intensity controller, artificial lighting control system, electric It allows energy savings [6-10].

The first high-rise energy-efficient building (Manchester, USA, 1972) Multi-storey residential project in "Nikulino-2" microdistrict, Moscow city aimed at solving the problem of energy conservation in the economy. Project 1998- It was built in 2002 together with the Ministry of Defense of the Russian Federation and the Moscow City Government. In the implementation of the project, the designers have the following points based on

1. 21st century energy conservation policy - renewable non-conventional energy to use architectural solutions and technologies using resources based on

2. The building is a whole energy system, all its elements are a barrier constructions, heating systems, ventilation and condensation systems are mutual depends, so the project is simple of a series of energy saving solutions appears as a sum, but at the same time increasing the quality of the microclimate well-responsive, technical solutions for the purpose of energy saving should be the result of selection by scientific methods.

3. When choosing energy-saving technologies, rooms at the same time technical solutions that help to improve the microclimate have an advantage.

High-rise energy-efficient residential building in "Nikulino-2" microdistrict The Hudson River at Twenty River Terrace in New York City It is a 27-story residential building. In the building at the same time to increase the quality of the microclimate of the rooms, to efficient energy consumption focused solutions are used. Great attention is paid to water conservation [11-13]. Reworked or reused construction in the construction of the same building widely used materials. According to the designers, such a building not only creating favorable conditions for people to live, but should also improve their living environment. The authors of the project are this building the first residential building designed according to the principles of sustainable building is called As a result of the use of energy efficient measures, to the requirements a 35% reduction in energy consumption, as well as SO_2, SO_2 and NO_2 A significant decrease in the release of pollutants such as

Twenty River Terrace building, sun set on building façade using panels Since the 1970s, in the practice of building energy-efficient buildings, they requirements were formed:

1. Social;
- Creating a comfortable environment;
- Improving the quality of life in multi-family houses;
- Economics in the operation of residential buildings.
2. Ecological and energetic;
- Use of renewable energy sources;
- Reducing the amount of use of natural materials and fuel;
- Use of recyclable materials;
- Reuse of water resources;
- Creating a comfortable microclimate in the apartment;
- Reducing the negative impact of architecture on the external environment, harmful waste reduction.
3. Climate;
- Special attention should be paid to the local climatic conditions in the design help to increase the level of environmental comfort and microclimate in the house will give. Taking into account climate characteristics, the level of energy efficiency plays an important role in increasing
- The location (orientation) of the buildings should be chosen in such a way that the residence maximum use of radiation that provides heat and light in buildings if possible, that is, to increase the glazing of the facade on the south side, north on the other hand, it should be reduced. In foreign architecture, energy efficiency an important factor determining its character is precisely the climate aspect. Also local to relief, climate (use of solar and wind energy), building form and its location, as well as modern technologies in volume-planning solution special attention is paid to use. In the modern design of energy-efficient residential buildings, the sun systems using radiation are widely used. It is used for heating residential buildings and providing hot water, and in some cases, such a solution fully satisfies the energy demand of citizens [14-17].

Examples of using balconies as energy sources An example of residential wind energy use is Strata in London. is a residential building. Its height is 147 meters. The top of the building 3 turbines are installed in the part. Each turbine has five blades instead of three. this allows to reduce noise and vibration. Of course, the construction of turbines cannot fully provide the required energy, but is another energy saver together with systems, such a solution can reduce energy consumption by 10% allows. The building has maximum use of wind energy throughout the year so placed for

Strata residential building in London, using wind energy to save on traditional resources In hot climates, strong solar protection is required and the solution used in the Al-Bahar tower is an excellent example. To protect the interior from the 50-degree heat, the engineers came up with the idea of placing a golden checkered floor on the facade, which opens and closes according to the lighting. The degree of opening of the cells is determined by the computer: from fully open in the morning to fully closed at noon [18-21].

"Al-Bahar" towers, known as active solar protection A large number of "smart" homes and "green" devices appear every year.ZCB (Zero Carbon Building, as "zero carbon waste building") in itself It has all the features. Ronaldo Lu's new award building in Hong Kong - it is a manifest-building. The frame of the ZCB is made of recycled materials. Don't shout the eastern and western facades of the building are small, with solar panels and the covered asymmetric roof completely protects the building from the south and "itself allows to "shadow". The north facade is open to the direction of the wind, which enables the use of natural ventilation. Such location and plan, and up to 45% in combination with microclimate control using a smart system saves energy. If solar energy is not enough, biodiesel can be used. Theoretical In terms of energy consumption, a single-storey building consumes more energy throughout the year must produce energy - excess energy is sent to the city energy system and the amount of carbon dioxide released during the construction will be compensated [22-25].

From recycled and reusable building materials, and "ZCB" building, which uses an energy-efficient planning solution Pearl River Tower, a record holder for energy efficiency Located in China. The building also has solar collectors on the facade and wind turbines is also equipped with unusual construction of walls air masses allows maximum efficient use of energy. Wind generators only four. They are four wind-powered turbines, each wheel It has a diameter of 6 meters. Although the speed of air movement at the level of three floors is not very high, the efficiency of wind equipment is high: engineers a hurricane passing through the opening between the opposite sides of the façade those who were able to use the results. Thus, the air flow rate is doubled. Photoelectric solar panels installed on the western and eastern facades are also part of the building "produce" energy for They are also at the top of the building. The sun the total area of batteries is more than 1500 sq.m. per facade. Photoelectric the total capacity of the panels is about 300,000 kW. Cooling agent circulation channels partially provide optimal cooling (they pierce the building). "Partly" - because the windows in the southern part of the building contribute to cooling adds - they are double-glazed and have inter-glass ventilation. Besides, blinds are installed on the windows, their slats are in the position of the Sun in the sky automatically changes according to the movement. And to top it all off – paint solar heating reduces individual structural materials. Project the "prose of life" prevented him from reaching the limit level of perfection: representatives of local power networks to the owner of the building through the public network they did not allow to connect electricity. This stumbling block is the project process it was discovered when he got to work. Basically, that's why architects "zero" the goal of creating a carbon-neutral building was not achieved [26-28].

1. It does not depend on and does not affect the architectural appearance.

2. Late 1990s and early 2000s. Architecture affects the shape of the building started Apartments have high technology and modern architecture unite

3. Modern stage - from 2010. Architecture and energy efficiency technologies represent a single system. Now engineering systems, eg solar panels and wind turbines form the building, and from the level of urban planning from the architecture to the architectural-aesthetic device of the building gives the solution.

References

1. Topvoldiyev Nodirbek Abdulhamid o‘g‘li, & M.Z.Sharipov. (2023). ENERGY DEVELOPMENT PROCESSES IN UZBEKISTAN. Science Promotion, 1(1), 177–179. Retrieved from https://sciencepromotion.uz/index.php/sp/article/view/240
2. Topvoldiyev, N. (2023). ANALYSIS OF HEAT STORAGE CAPACITY OF RESIDENTIAL BUILDINGS.
3. Topvoldiyev, N. (2023). Storage of Electricity Produced by Photovoltaic Systems.
4. Alijanov, D. D. (2023). Storage of Electricity Produced by Photovoltaic Systems.
5. Abdulhamid o‘g‘li, T. N. (2022, June). STIRLING ENERGY GENERATOR. In E Conference Zone (pp. 13-16).
6. Abdulhamid o‘g‘li, T. N. (2022). Stirling Engine and Principle of Operation. Global Scientific Review, 4, 9-13.
7. Abdulhamid o‘g‘li, T. N., & Muhtorovich, K. M. (2022). Stirling's Engine. Texas Journal of Multidisciplinary Studies, 9, 95-97.
8. Abdulhamid o‘g‘li, T. N., Maribjon o'g'li, H. M., & Baxodirjon o’g’li, H. I. (2022, June). BIPOLYAR TRANZISTORLAR. In E Conference Zone (pp. 150-152).

9. Topvoldiyev, N. (2022). PHYSICAL AND TECHNICAL FUNDAMENTALS OF PHOTOELECTRIC SOLAR PANELS ENERGY. Theoretical & Applied Science.
10. Topvoldiyev, N. (2021). SOLAR TRACKER SYSTEM USING ARDUINO. Scienceweb academic papers collection.
11. Topvoldiyev, N. A., & Komilov, M. M. (1902). DETERMINING THE TIME DEPENDENCE OF THE CURRENT POWER AND STRENGTH OF SOLAR PANELS BASED ON THE EDIBON SCADA DEVICE. Web of Scientist: International Scientific Research Journal, 1906.
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. Olimov, L. O., & Yusupov, A. K. (2021). The Influence Of Semiconductor Leds On The Aquatic Environment And The Problems Of Developing Lighting Devices For Fish Industry Based On Them. *The American Journal of Applied Sciences*, *3*(02), 119-125.
19. 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

20. 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.
21. Olimov, L., & Anarboyev, I. (2023). IKKI STRUKTURALI POLIKRISTAL KREMNIYNING ELEKTROFIZIK XOSSALARI. *Namangan davlat universiteti Ilmiy axborotnomasi*, (8), 75-81.
22. Alijanov, D. D., & Axmadaliyev, U. A. (2021). APV Receiver In Automated Systems. *The American Journal of Applied sciences*, *3*(02), 78-83.
23. Abdulhamid o'g'li, T. N., & Sharipov, M. Z. (2023). ENERGY DEVELOPMENT PROCESSES IN UZBEKISTAN. *Science Promotion*, *1*(1), 177-179.
24. Abbosbek Azizjon-o'g'li, A., & Nurillo Mo'ydinjon o'g, A. (2023). GORIZONTAL O 'QLI SHAMOL ENERGETIK QURILMALARINING ZAMONAVIY KONSTRUKSIYALARI.
25. 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.
26. Olimjoniva, D., & Topvoldiyev, N. (2023). ANALYSIS OF HEAT STORAGE CAPACITY OF RESIDENTIAL BUILDINGS. *Interpretation and researches*, *1*(8).
27. 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.
28. 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.