Western European Journal of Modern Experiments and Scientific Methods
Volume 2, Issue 4, April, 2024
https://westerneuropeanstudies.com/index.php/1
ISSN (E): 2942-1896 Open Access| Peer Reviewed

PROJECTING ENERGY EFFICIENT BUILDINGS WITH ENVIRONMENTAL REQUIREMENTS.

U.I Rustamov
PhD, Associate Professor

Abstract: Recently, many designers have increasingly decided to create buildings and structures that are environmentally friendly and energy-efficient. The article discusses some aspects of the design of private houses without the help of architects and designers. Several important rules are proposed with the help of an ordinary pencil and a notebook for designing private eco-friendly houses.
Keywords: cozy housing, own house, checkered notebook, contour, fire safety, scale, sketch, bathroom, floor slabs, finish, finalize, house project.

One of the most important advantages of alternative energy is its environmental friendliness: the process of obtaining energy from renewable sources is not accompanied by the formation of polluting waste, does not lead to the destruction of natural landscapes, in fact excludes emergencies dangerous for biological substances, thermal energy.

In modern conditions, when choosing means of using the energy of the natural environment, their consumer properties - price and ease of operation - are of decisive importance. A more progressive architectural concept, the implementation experience of which shows the possibility of a comprehensive and, moreover, high-quality solution to a wide range of economic, environmental and socio-cultural problems, can be recognized as the concept of bioclimatic architecture. [1,2]

Energy-active structures are aimed at the effective implementation of the energy potential of the outdoor environment in order to partially or fully autonomous energy supply through a set of measures based on the use of space-planning, landscape-urban planning, engineering, structural means, which assume the orientation of spaces, architectural forms and technical systems to the energy sources of the outdoor environment sun, wind, soil etc. [4]

The idea of energy-active buildings was the result of a search for ways to more economically supply energy to construction sites and implies achieving this goal due to the ability to produce energy specifically at the facility, promising the prospect of completely abandoning the device of expensive and unreliable external engineering networks.

When designing buildings that use the energy of the natural environment, it is a search for ways and means of effectively managing the distribution of energy air, heat, light and other flows. The purpose of maintaining good microclimatic characteristics of premises in conditions of cyclic and periodic configurations of the characteristics of the outdoor environment. At the same time, the solution of three tasks is of key importance: [3,4]

1. How to collect energy, how to get the right amount of energy, taking into account its certain dispersion in the outdoor environment? To make up for the insufficient power of natural energy flows;

Western European Journal of Modern Experiments and Scientific Methods
Volume 2, Issue 4, April, 2024
https://westerneuropeanstudies.com/index.php/1
ISSN (E): 2942-1896 Open Access| Peer Reviewed

2. How to store and accumulate the collected energy, how to make up for the characteristic discrepancy in time periods and the daily-seasonal unevenness of energy intake and consumption;

3. How to distribute energy, how to ensure a regulated distribution of energy in the building to ensure the functional, technological and microclimatic characteristics of its parts required at the moment and at the given time; [3,4]

The ecological approach to the design of energy-efficient and, in particular, energy-active buildings, considering the building as an organism closely interconnected with the external environment at first and following the logic of natural phenomena, aims to solve energy problems on the basis of a purposeful organization of a special material-spatial environment that provides a regulated but natural flow of the required energy actions: the building itself, its structures and spaces, environmental objects perform the role of an energy installation in this way, priority is given to tasks on the organization of effective natural exchange actions within the size of the structure and with the external environment. In order to use the energy of the natural environment, they are solved, to a greater extent, by landscape-urban planning, space-planning and constructive, or passive, means; technical systems at the same time perform ordinary auxiliary (mainly corrective) functions. [4] The energy efficiency of passive systems is still low: now they can provide about 50% of the energy needs of buildings. But, their comparably low cost, excellent operational properties, including ease of use and accentuated environmental friendliness, made it expedient to implement them in the design of all architectural objects. Moreover, the results of many energy-saving programs in construction, obtained in the late 1980s, in general, showed higher economic efficiency of passive power systems relative to most active ones: cost and operational properties gained decisive importance. [5]

Energy-active buffer spaces, in contrast to insulating energy-efficient ones, collect the heat given off by thermal tanks to the external environment through the natural "greenhouse effect" that takes place in spaces with translucent external fences (greenhouses, orangery, verandas) and allow to provide up to 25% of energy consumption; thus, a very high energy efficiency of buffer spaces using solar energy is observed in the construction of greenhouses on the roofs of buildings and their organization as mesospaces, in which buildings or even entire settlements are completely placed; a more perfect form for buffer mesospaces is a sphere, in particular, the geodesic Fuller dome, but the hygienic properties of such structures cause complaints many professionals and require careful research. [5,6]

References;

1. On additional measures for the introduction of energy-saving technologies and the development of low-capacity renewable energy sources. 09.09.2022 No. up220
2. On accelerated measures to improve the energy efficiency of economic and social sectors, the introduction of energy-saving technologies and the development of renewable energy sources. from 22.08. 2019 No. pp-4422
3. N.A.Samigov "Energy and resource-efficient building materials and technologies", Instructional manual. T.: 2014. – /Parts 1, 2, 3/.
4. Duggal S.K. Building materials. India New Delhi. 2008.
5. Savin V.K. Building physics: energy transfer, energy efficiency, energy saving. - M.: Lazur, 2005. - 432 p.

Western European Journal of Modern Experiments and Scientific Methods
Volume 2, Issue 4, April, 2024
https://westerneuropeanstudies.com/index.php/1
ISSN (E): 2942-1896 Open Access| Peer Reviewed

6. Sukhanov I.S. Radiant energy of the sun and architecture - Tashkent, Fan, 1973 - 224 p.
7. Fokin K.F. Building heat engineering of enclosing structures. - M .: Stroyizdat, 1973 - 286 p.