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AUTONOMOUS BUILDING IN URBAN DEVELOPMENT

Under conditions of electric energy and heat tariffs raise, one of the most pressing issues in construction is to maximize the reduction of operating costs for housing and at the same time increase comfort of buildings. The constant increase of the solar panels efficiency and reduction of their cost; efficient solar heliocollectors and heat pumps; solid fuel boilers and heat recovery units; modern building materials and energy-saving appliances are integral elements of a modern house and of a new approach to the construction of residential and commercial buildings.

Search for a solution to the problem of large power consumption resulted in emergence of such concepts as "passive house" and "active house". The feature of passive house is absence of heating need or low power consumption. In 1996 "Institute of passive house" was established in Germany. Active House is a building that produces more energy than required for its operation and corresponds to the "energy plus" standard. The world's first active house was built in Denmark. It consumes small amount of power and the produced

power volume is enough to be transferred to a heating network.

The architectural concept of a passive house is based on the following principles: compactness, high quality and efficient insulation, absence of cold bridge nodes in materials and junctions, the correct geometry of the building, zoning, orientation to the cardinal. As a rule, ecofriendly materials are selected for its construction, often traditional, such as gas concrete, wood, stone, brick. Passive houses are often built from recycled concrete, glass and metal. Being an active method, supply and exhaust ventilation with heat recovery is a must for passive houses. Active house uses the same principles and produces energy by using engineering equipment placed on it: solar panels, collectors, heat pumps, soil heat exchangers.

The first energy efficiency (passive) and eco-friendly house was built in Ukraine by the architect Tatiana Ernst. The house is not connected to a gas system. Heating (in winter) as well as air conditioning (in summer) and preparation of hot water for tenants and large spacious pool (21 m³) are performed by alternative energy sources (geothermal heat pump soil, heat exchanger, solar collectors).

Buildings of this type can be considered as completely autonomous thanks to their self-sufficiency and independence from city's networks. These characteristics make such houses rather beneficial as they can be erected in the areas where networks can't be placed or accessed easily; electric power consumption is reduced and in some cases, there is the possibility for its production resulting in reduced amount of power output by power stations which saves households expenses; house is more environmentally friendly, which nowadays is also an important aspect. Therefore, the construction of autonomous buildings in Ukraine, in particular, in Kryvyi Rih is a very attractive and feasible prospect.

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MINERALOGY OF CLASTIC DEPOSITS OF SEASIDE AREA IN ZAPORIZHZHIA REGION

The samples to investigate were taken during the field work in Zaporizhzhia region in the period from June 29, 2015 to July 26, 2015. Bottom and coastal quaternary river sediments have become the objects of our investigation in such vast areas. In Zaporizhzhia Region, the river of Obitchna and the Azov Sea provided the samples including the ones from the conservation area.

When traveling to the city of Prymorsk, three observation points have been selected and five samples have been obtained, of which five grey sands have been washed. The grey sands were used to make ten polished thin sections or slides held together with magnetic and electromagnetic fractions. Sampling was carried out by a point method.

The future research has required the literature analysis and preparation of samples selected. In the course of mineral-graphical and mineralogical studies, the grey sand samples of electromagnetic and magnetic fractions have examined. As a result, mineralogical composition has been determined. To define the mineralogical composition a binocular microscope MBS-9 and the microscope “Vertyal” have been used for microscopic research of grey sands samples with polished thin sections.

The main task of our research is to study the ore components of gray sands and monitor certain common patterns in the minerals under study. The research is important as it aims at determining the mineral composition and characteristics of mineral individuals. Of particular note is ilmenite, which is available in the deposits of industrial conditioning. Ilmenite is a basic raw material for titanium production this fact making our research even more important and promising.