

ZERO-ENERGY PASSIVE HOUSE



Areas of Application

The technology is to be used in communal heating systems. The proposed passive house consumes minimum heat and has an autonomous power supply (electricity, heating/cooling, and hot water) based on renewable energy sources

Specification

The prototype house has energy-efficient double-pane windows, type 4M1i-10-4M1i-10-4M1; exterior walls from domestic construction materials: fan coils and combination of warm floor or warm walls as heating devices; heat pump based on geothermal heat; annual heat consumption (for climate conditions of Kyiv) of about $14.8 \text{ kW} \cdot \text{h}$ per 1 m^2 (passive house standard). The air heat curtain system of facades and roof is based on ground heat exchangers. The rated capacity of power supply system is 15 kW (5 kW produced by the wind turbine and 10 kW by the electric solar panels).

Total heated area, m^2	306
Thickness of facade heat insulation, cm	≤ 35
Heating system capacity, kW	2.6
Hot water supply system capacity, kW	3.4

Advantages

Autonomy from centralized power supply networks; complete autonomy of operation; high environment safety

Stage of Development. Suggestions for Commercialization

IRL7, TRL7

Manufacture, supply, installation, commissioning, warranty service, and staff training, upon request

IPR Protection

IPR1, IPR3

Contact Information

Alexander I. Chaika, Institute of Engineering Thermophysics of the NAS of Ukraine;
+38 044 456 93 81, e-mail: chaika@ittf.kiev.ua