Photo: NEUBAU best.energy

Apple Garden

Almaty, Kazakhstan

Apple Garden is an EPlus-Energie single-family house with a Weissensee wood construction and was built within 15 months from design to fully furnished handover in the mountains of Almaty.

The building has a complex building services concept and distinguishes between 3 different climate zones within the thermal envelope. Fresh air is pre-tempered via a ground collector and fed into the controlled living space ventilation system with heat recovery, while also supplying an air source heat pump. The system is supported by thermal solar panels and a PV system with 20.55 kWp with an annual yield of 25,893 kWh/a, covering the building's own demand. To increase the self-sufficiency, an electric storage tank was installed. Heat is brought in via underfloor heating, and cooling in summer is provided by planar ceiling cooling.

Federal Ministry
Republic of Austria
Climate Action, Environment,
Energy, Mobility,
Innovation and Technology

klimaaktiv

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Companies involved

Client
- Eduard Kim

Architecture
- SPAZIO3 Architektur ZT GmbH

General planning, energy planning, quality assurance
- NEUBAU best.energy David Michulec

Construction
- Implementation on site: Weissenseer JV OST GmbH
- Photovoltaics, solar thermal: Kärnten Solar
- W + Kreisel GmbH - storage technologies, load management

Building services
- Stiebel Eltron

Electrical planning
- Elektro Götz GmbH

Timber construction
- Weissenseer Holzbau GmbH

Cooling ceilings
- Harreither GmbH

Facts

EPlus-Energy single family house
Completed 2020. Area: 282 m^2

Energy and environmental aspects
- Controlled living space ventilation with heat recovery with pre-tempering via ground collector.
- Air-source heat pump supplied by ground collector
- PV system with an annual yield of 25,893 kWh/a covers own needs
- Solar thermal energy
- Complex building services concept distinguishes between 3 different climate zones within the thermal envelope
- Timber construction

Characteristic values
- Primary energy demand (renewable): 119 kWh/m^2a
- Blower door test: n50 = 0,6/h
- Heating energy demand 7,9 kWh/m^2a calculated according to PHPP
- PER demand 39 kWh/m^2a calculated according to PHPP
- Renewable energy production: 143 kWh/m^2a related to the built-up area (photovoltaics)

Building labels and awards
- Passive-house certification

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