



Photo: R. Korner



## Active Energy Building

### Vaduz, Liechtenstein

The apartment building, designed by falkeis2architects, is a thoroughly unique project. The goal was to develop a sustainable building which is energy autonomous. The Active Energy Building is independent of fossil fuels; only renewable forms of energy are used. The building also takes an active role as an energy producer and supplier within an "Energy Cluster", a building network with neighboring buildings. For this new type of building, new building-integrated energy generation systems were developed and successfully implemented for the first time. PV tracking systems and PCM air-conditioning wings, as part of a movable building envelope, use solar and interstellar radiation to air-condition the building.

Furthermore, the building has a high degree of adaptability due to its effective structure, allowing it to respond to changing spatial requirements throughout its life cycle. In its entirety, the Active Energy Building contributes to improving the quality of life while reducing energy consumption and greenhouse gas emissions. Through the newly developed decentralized energy generation systems, it contributes to a democratization of energy production and its distribution.

## Companies involved

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### Client

- Marxer family

### Architecture & research

- falkeis2architects

### Research partner

- Lucerne University of Applied Sciences and Arts,  
Dr. Fischer

### Consultants

- Structural engineering: Bollinger-Grohmann,  
ARGE Hanno Konrad Anstalt, Hoch & Gassner AG
- Mechanical engineering: Albrecht Wössner
- Textile facade: White True Innovation
- Building services: A.Vogt AG, Energy Design Cody
- Building physics: BDT IB Bauphysik AG, KH Wille

## Facts

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### Multifamily house

Completed 2019. area: 3,187 m<sup>2</sup>

### Energy and environmental aspects

- Controlled living space ventilation with heat recovery.
- Geothermal energy
- Photovoltaic system with 34.79 kWp, which can increase earnings by 291 % with a tracking system
- Solar thermal
- PCM climate wings as part of a movable building envelope
- Solid construction

### Characteristics

- Heating energy demand (specific):  
 $Q_{h,eff} = 14 \text{ kWh/m}^2\text{a}$
- PCM climate wings total weight: 2,501 kg

### Building labels and awards

- IBK Sustainability Award 2017 (nomination)
- Energy Globe Award 2020  
(National Winner Liechtenstein)



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