Buildings as Power Plants

MicroPolygen

Initial Conditions
The European Union has set the goal that on average, new buildings do not consume energy throughout the year by 2019. This goal can only be achieved through a further reduction of the power energy demand and with the help of de-centralised energy supply. The building infrastructure is integrated into the power supply network.

Research
In its theme Kraftwerk Haus (Power Plant House), the Swiss National Network of Excellence in Construction Technologies and Renewable Energies - brenet - uses the potential of the buildings as part of a virtual power plant.

This research project, which was funded by the Swiss Office of Energy (BFE), investigated new concepts for a sustainable, building-integrated polyvalent energy supply for three years. The project expanded the limits of the energy systems of residential units by their induced mobility. In order to evaluate the system's efficiency, widely applicable simulation models were used, with the goal of evaluating new, future-oriented system combinations of buildings, energy supplies, and mobility.

The results clearly showed that in order to achieve high levels of energy efficiency, both the residential unit and mobility must be considered in an integrated manner.