

Abstract

c) Synopsis

A Vanadium Redox Battery- System, charged by renewable technologies (e.g. Photovoltaics) will be designed and built on basis of multidirectional-communication. The project is aiming at optimisation of energycosts as well as the possibility of pooling such systems in order for energy companies to participate on the energy balancing market. Calculation of potentials as well as the supra regional impacts on Austria will be investigated.

d) Abstract

Fluctuation of renewable energy technologies (e.g. Photovoltaic and Wind) is a challenge for Energysystems of the future, since they will be significantly operated by such sources. Storage systems are a solution, which provides multifunctionality far beyond the energy supply of single houses.

By „pooling“ of local storage capacities, the energy balance market can be addressed and by that contributing to stability and security of the total electricity system.

Additional financial means by partner EVN enables the installation of a real system, making possible by that the design and planning as well as real modeling of a Energy system, which

- a) Guarantees a reliable as well as highly renewable energy supply of a house, with the additional features of optimization and visualization.
- b) Moreover, modeling of electricity supply according to schedule from such PV/Battery-Combinations including an economic/technical feasibility study.
- c) The overall potential as well as the supranational impacts will be investigated finally

The communication of fluctuating generation (PV, Wind) together with the innovative storage (Vanadium Redox) of Austrian origin is the main challenge.

By performing scenarios as well as political economic studies an energy future will be designed where decentralized energy generation as well as the general value of fluctuating electricity sources will be increased – for small systems as well as for the whole electricity System.

Small systems are aiming at minimizing costs, according to current and future energy tariffs. For the energy company, pooling of hundred of such systems will enable him to participate on the energy balancing market.

Basically 5 questions will be addressed by this project:

1. How to design the communication interfaces of an energy battery system, which is charged by fluctuating sources (PV and Wind)
 - a. in relation to the supply of the building (load and consumption)
 - b. related to the communication with the public electricity grid
2. How to minimize the total energy costs for the (private) consumer. (on Basis of two advanced tariff models)
3. How to maximize the benefit of this system on the energy balancing market
4. Is an autonomous operation for a typical house possible and if yes, at which costs?
5. What is the total potential for such systems in Austria, what are the consequences of a wide dissemination?

Recommendations for the energy authorities will be given as final result of the project.