Battery storage solution for the Elektrizitätswerk Jona-Rapperswil AG (EWJR)

Axpo plans and implements turnkey battery storage systems. One example is the realisation of a decentralised 2 MW / 2.17 MWh battery storage system for the EWJR.

Scope of Axpo's services:

- Provision of permits for the installation and operation of battery storage units.
- Implementation planning, including foundation and earthing.
- Specification of the battery storage system.
- Procurement and factory acceptance test at the battery storage supplier.
- Transport of the battery storage system from supplier factory to customer site and unloading at the place of installation.
- Installation, wiring and commissioning of the battery storage system.
- Preparation for provisional and final acceptance by the customer.
- Support during the prequalification of the battery storage system at Swissgrid (Swiss Transmission System Operator TSO).
- Maintenance and support of the battery storage system for the entire service life of at least 10 years.

Project

For the implementation of a decentralised battery storage system, EWJR commissioned Axpo to supply, install and regularly maintain a battery storage facility with a system power / capacity of 2 MW / 2.17 MWh and all associated plant components. This plant is managed by SN Energie AG and CKW.

Facts

Owner / developer:	EWJR
Location:	Jona (CH)
Energy management:	SN Energie AG and CKW (Axpo subsidiary)
Project duration:	2018 – 2019 (9 months)
Number of battery modules:	12 modules with 181 kWh each
Battery type:	Lithium iron phosphate
Power / capacity:	2 MW / 2.17 MWh
Mass / weight:	2 x 12 m container with 40/27 t
Usage:	Primary and secondary balancing energy regulation, peak shaving and voltage regulation
Lifetime:	At least 10 years

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1 Factory acceptance in China
During the factory acceptance test in China, inverter and battery containers are assembled and fully tested.

2 Transportation
The containers, weighing 40 t and 27 t, fall under the category of special and heavy transports for which permits must be obtained.

3 Civil engineering
The containers are set down on the prepared foundations. The foundations must be able to withstand the heavy load of the containers and provide connection facilities for cabling and main connections.

4 Installation of the 12-m-long battery and inverter containers
Unloading of the containers with a special crane. The assembly work can begin from this point.

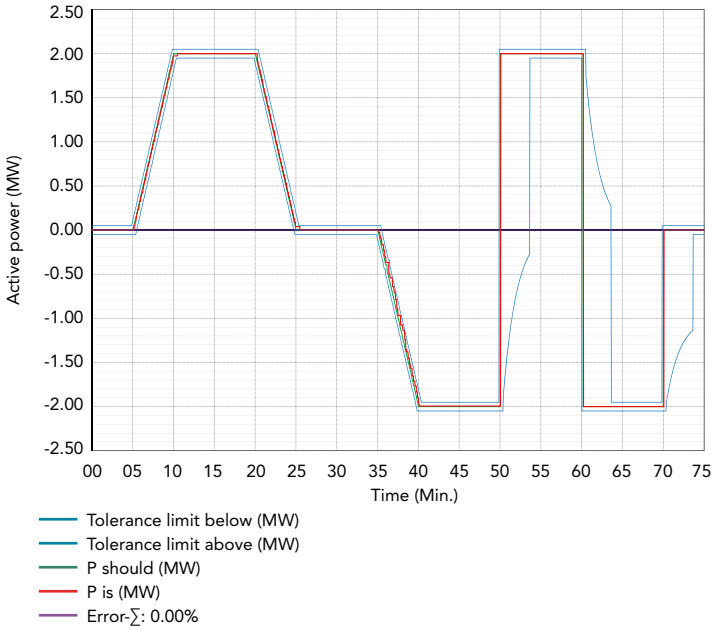
5 Assembly and commissioning
After the battery and inverter containers are installed on the foundation, all cable connections are laid, and the air conditioning system and fire protection are installed. Afterwards, extensive commissioning tests of the interfaces to the control system and power supply system are carried out. The aim is to ensure the quality and long-term functioning of the battery storage system.

6 Energy management system
The energy management system (EMS) is the heart of the battery storage system. The EMS determines the state of charge, initiates when the battery should be charged or discharged according to the requirements of the grid. The EMS also permanently specifies the functional status of the system. All this information may also be monitored by the EWJR command centre.

7 Prequalification

In order to market balancing power, the battery storage unit must pass a prequalification (e.g. right: system control performance test). The technology concept to be created describes how the limited capacity of the battery storage system can be managed in such a way that the specifications of Swissgrid may be observed at all times.

System control performance test

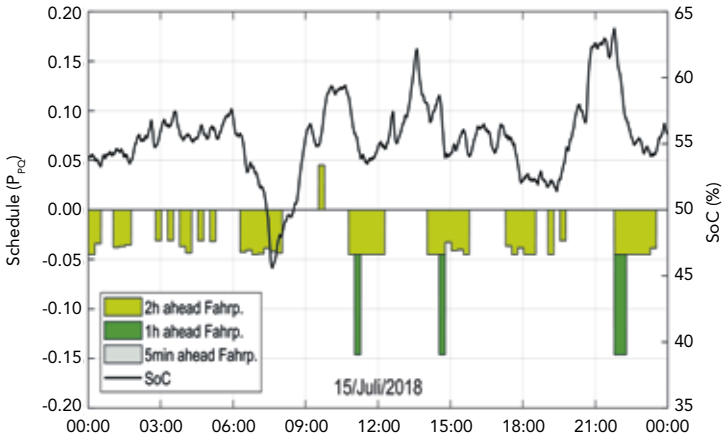


8 Energy management

EWJR uses the battery storage system for various purposes:

- For example, the battery storage compensates for fluctuations in the grid between production and consumption. If more electricity is produced than consumed in the EWJR's supply area, the battery is charged with the excess energy. If more electricity is required than produced, for example because of reduced solar radiation on photovoltaic systems or a consumption peak for households and industry, it releases the stored energy back into the distribution network.
- The battery storage system is used to break load peaks: the process known as peak shaving reduces the grid usage costs.
- The battery storage system is used to provide Swissgrid balancing services, for which the EWJR is reimbursed (see image).
- The battery storage system supports an economical and future-oriented energy supply, increases security of supply and thus makes an important contribution to the Energy Strategy 2050 (including Smart Grid System).

Battery storage system's schedule of operation for Swissgrid balancing services



Axpo
Parkstrasse 23
CH-5401 Baden
T +41 56 200 39 39
netzdienstleistungen.ch@axpo.com
axpo.com