

PROJECT DESCRIPTION

Single-family home with hybrid storage

System: AC ELWA-E and battery storage

Control: SMA Sunny Home Manager

Planner: Manuel Maerz



Object data

- Dwelling 220m², 2 residents
- 10 kWp PV-plant east/west orientated
- Inverter and battery from SMA
- Space heating with heat pump

Description

This project was realised by an SMA employee Mr Manuel Maerz. We are now looking forward to present to you the successful implementation of the AC ELWA-E in his system with a SMA Sunny Home Manager. Mr Maerz was our beta-tester for this system installation, whereby know-how from both sides assisted in the development of the project.

Why hybrid storage?

With good sun radiation, typical battery storage can reach the state of full charge often during the hours of late morning. From that time on, the further excess is fed into the grid and cannot be used by the owner of the PV-system. Excessive loads on the grid system can also be reduced, thus reducing current major challenges faced by the grid operators.

With hybrid storage incorporating the AC ELWA-E and the Battery system you could raise your self-consumption by almost 100 % with the appropriate framework conditions. The price for this additional capacity bears no relation to the actual costs of the batteries. The addition of the AC ELWA-E therefore requires minimal additional effort!

Functionality

The battery communicates with the AC ELWA-E via the SMA Sunny-Home-System and signals its state of charge. After completion of the charging process the further solar yields are used to generate heat via the AC ELWA-E to the hot-water storage. The decisive factor is the ability of the heater to adapt its power linear to the excess.

Control concept of the hybrid storage

At the implementation of the system it was very important for the customer that the battery has a higher priority than the AC ELWA-E in the order of loading. This operation mode is also recommended by my-PV because electric power, both economically and physically, has a higher value than heat.

Figure 1 shows the daily progression of hybrid storage. The yellow line presents the power of the PV-system, the orange line the one for battery loading and the green area marks the excess energy that is used for hot-water heating by the AC ELWA-E.

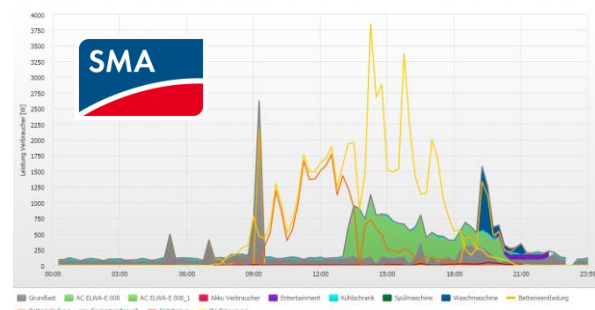
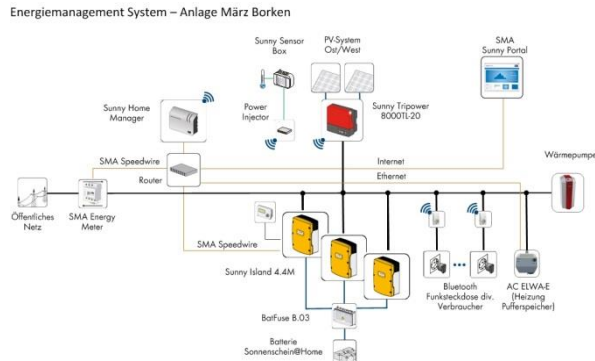


Figure 1: Daily progression of hybrid storage illustrated in SMA Sunny Home Manager

The diagram shows very clearly that the AC ELWA-E has a lower priority. This means that first all switched loads are supplied directly, afterwards the battery is loaded and then the final use is for heat generation.

Technical system description



10.08.2016

- 10 kWp PV-plant east/west orientated
- Inclination of the modules is 62°
- 3 x Battery inverters Sunny Island 4.4M-11.
- Inverter Sunny Tripower 8000TL-20
- Battery GNB Sonnenschein@Home (SH48V16.0-B) from EXIDE Technologies.
Total capacity 330 Ah, matches with 16 kWh. The useable capacity is approx. 8 kWh.
Sealed lead-battery with outstanding cycle stability (up to 3800 cycles at 50 % DOD (depth of discharge)).
- Heat pump for space heating
- AC ELWA-E for hot-water heating

Customer's opinion of Mr. Manuel Maerz:

"The system was very easy to install and with the SMA Sunny Home Manager data logger I can now monitor all of my devices easily. With the AC ELWA-E I can completely deactivate my heat pump during the summer months. This not only reduces my running costs, it also provides me with additional service life of my equipment and investment"

By using the AC ELWA-E the heat pump can be completely switched off in summer!

Product details AC ELWA-E

- 0 - 3.000 W linear control
- For smart-homes and battery systems
- Ethernet connection
- Internal Consumption <1,5 W
- Efficiency >99 % at nominal power
- No thyristors, grid compliant solution
- Boost-mode for hot-water securing



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Upon request we show you how easily the AC ELWA-E can be integrated in the SMA Sunny Home Manager.