

Leveling power load peaks and optimising energy use from the sonnenBatterie

The sonnen battery is KNX-compatible. This allows a HEMS to access flexible loads in the home to level out load peaks and optimise energy use from the sonnen battery.

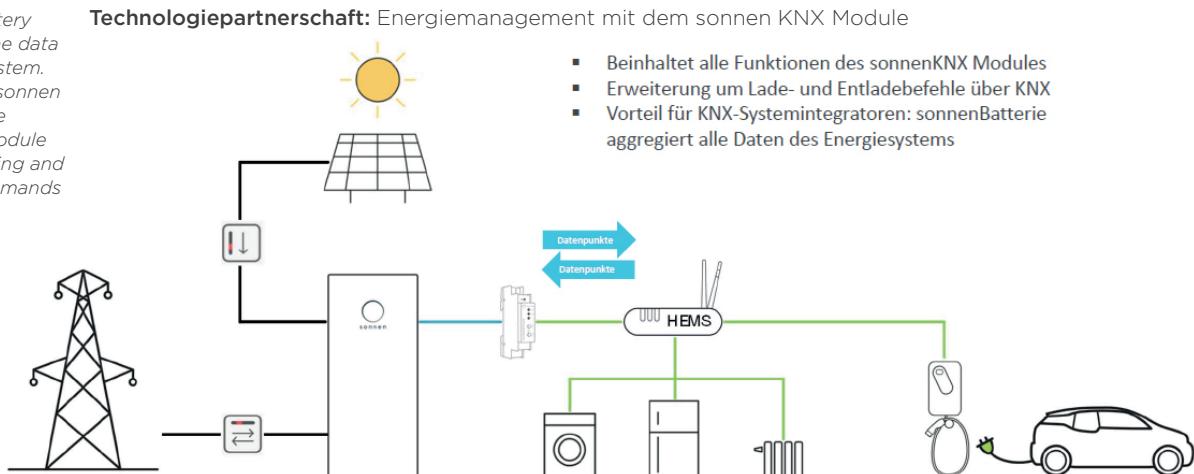
A year ago, sonnen joined the KNX Association. In the meantime, the company has introduced the sonnen KNX module, which sends the data points from the sonnen battery to the KNX bus. Communication is unidirectional: various devices in the smart home can be controlled more efficiently via the data from the sonnen battery. This includes the high-resolution measured values in the energy system, the status parameters of the sonnen battery and operating modes. This allows visualisations to be carried out and consumers to be controlled.

As part of the technology partnership, sonnen has added energy management functions to the sonnen KNX module in a proof of concept so that charging and discharging commands can also be controlled via KNX. In this way, the Home Energy Management System (HEMS) can also manage the sonnen battery individually. This project is currently in the prototype stage and therefore not yet a finished product.

The advantage this offers for KNX users: Because the sonnen battery maps the grid connection and the PV system with its internal energy management system, all relevant data is made available to the HEMS via KNX. The battery is managed from the HEMS via the KNX data points. „However, we continue to view the Sonnenbatterie as an independent system that coordinates and prioritises certain system-relevant processes internally“, explains Bastian Hackenberg, Product Owner within sonnen’s software development. Therefore, the HEMS must be informed about the status of the sonnen battery and sends status requests for this purpose. Next, the battery communicates its status and the HEMS can decide whether to charge or discharge.

The Sonnen-Battery aggregates all the data of the energy system. As a prototype, sonnen has extended the previous KNX module to include charging and discharging commands via KNX.

Source: sonnen



Bastian Hackenberg

In addition, the HEMS knows the remaining amount of energy in the sonnen battery at all times in order to be able to assess the further flexibility of the energy storage. This allows various use cases to be covered, such as extended self-consumption optimisation with flexible loads. Because the sonnen battery already has its own intelligent energy manager, forecast-based self-consumption optimisation has long been our core business: „we know how to do that,“ says Bastian Hackenberg.

So what is the advantage of HEMS-based advanced self-consumption optimisation? HEMS can access flexible loads such as heating, security guard, dishwasher in the home via KNX. By shifting the loads over time, the load peaks can be levelled out and the battery capacity optimised. „Therein lies the great advantage of central HEMS control“, according to Hackenberg.

„Within one year, we have already made great progress in our technology partnership with KNX“, says Peter Sparakowski, Head of Development for the sonnen battery,



Peter Sparakowski

proudly. „In the future, sonnen wants to make more and more data available to the KNX world. At this stage, a customer who owns a sonnen battery already has full transparency in his energy system. He can increase his own consumption and control his household appliances decent-

tralised depending on the respective current conditions and feed them with green energy. With this, we have taken a first step within the technology partnership with KNX, and more will follow.“

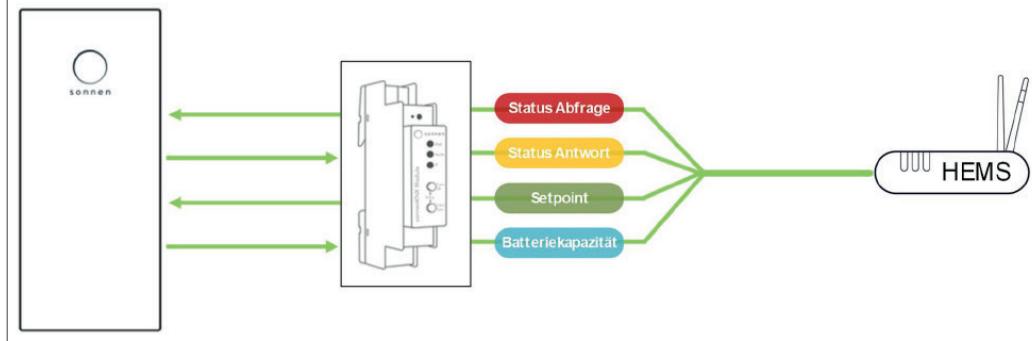
Sonnen is currently investigating where the journey will lead and what further potential can be tapped via the expansion of the KNX module. „We are working towards the KNX system integrators being able to get an update from us, but the date is not yet fixed, the whole thing is still in the development stage“, explains Sparakowski.

A future KNX user should be able to set up an energy management system together with the sonnen battery and optimise it according to his individual wishes. „Together with KNX, we want to be at the forefront of this“, says Sparakowski.

In his opinion, energy management would have to be expanded in the future beyond the individual smart home to the level of entire municipalities: „Holistic energy management via networking at the distribution grid level is the key element for the energy transition“. sonnen already lives this approach with the sonnen community and also the sonnen virtual power plant.

Aufbau Lade-/Entladelogik: Interaktion sonnen-Batterie und externe HEMS

- HEMS sendet Statusabfrage: Batterie bereit?
- sonnenBatterie bestätigt/lehnt ab
- Freigabe/Sperren der externen Lade-/Entladesteuerung
- Verbleibende Batteriekapazität in Wh

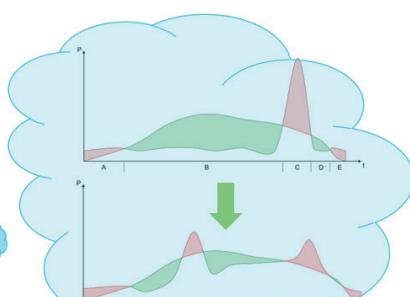
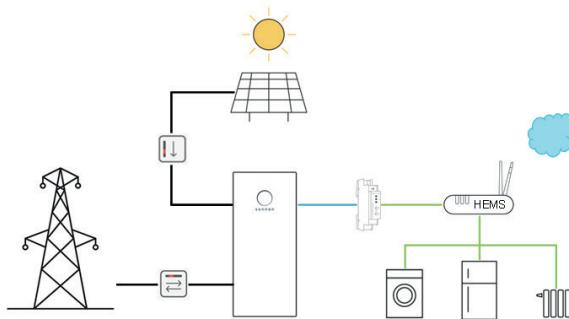


The charging and discharging logic in detail: HEMS determines whether charging or discharging is allowed. For example, the HEMS can estimate the remaining capacity of the battery.

Source: sonnen

Use case innerhalb der Technologiepartnerschaft

- Erweiterte Eigenverbrauchsoptimierung mit flexiblen Lasten



- Das HEMS gleicht den Verbrauch durch Nutzung der Flexibilität einer oder mehrerer Geräte aus
- Optimierung der Batteriekapazität

The sonnen battery maps the grid connection and the PV system, while the HEMS controls the flexible loads in the home from a central location. At the top right, you can see in green what the PV system is supplying, the surplus of the load is shown in red. By flexibly shifting the loads, the surplus can be minimised and self-consumption is optimised.

Source: sonnen