Making strong connections to maximise efficiency

Sector coupling is an effective means of achieving the energy transition efficiently. The aim is to effectively connect sectors such as industry, buildings and transport. When they are interconnected and the components of energy generation from renewable energies are combined, CO_2 emissions can be significantly reduced. Storage solutions help to balance out volatile renewable energies. Taking the industrial company KOSTAL Solar Electric as an example, we look at the opportunities and challenges of sector coupling, speaking to Lars Brinkmeyer, International Sales Director responsible for the German company's business development in Europe.

PES: Lars, thank you for taking the time to talk to us. Please explain briefly to what extent the topic of sector coupling is part of your strategy.

Lars Brinkmeyer: In addition to our highest quality standards for our products, we also want to offer customers the greatest possible flexibility. Let's take our hybrid inverter PLENTICORE plus as an example. To enable a large network of strong partners, we work closely with companies in the respective product division. These divisions include battery storage, heat pumps, heating rods, optimisers or power plant control. We make sure we work with partners whose products meet high quality standards and have a certain market presence.

PLENTICORE is always the first choice, as the installer can select from a wide range of system components and the inverter allows great flexibility in the expansion of the photovoltaic system. This is of course also a strong plus point for the dealer, who will always have the right inverter in stock for many products in the aforementioned product categories.

PES: How do these partnerships come about and how does the process of ensuring compatibility work?

LB: We regularly enter into discussions with potential partner companies. If the company's portfolio and service convince us, our product managers act as an interface to our developers. Technical specifications, interface protocols and requirements are exchanged and then tests are carried out on the hardware, based on software adaptations, until smooth operation can

Lars Brinkmeyer

be ensured. When working with battery manufacturers, for example, a non-disclosure agreement is required, because internal, non-public protocols are shared.

In some cases, the optimisation is entirely up to the partners, who prepare their product for smooth communication with our inverters. Generally, we can say that the communication between the inverter and the periphery is ensured for the most efficient use of the available energy.

PES: As part of The smarter E Europe, you presented several battery partners at Intersolar 2023. How large is your network and what else is in store for the future?

LB: With the storage partnerships we have entered into, we enable users to have different options in terms of performance classes, budget, technology or installation type. Our partners include LG Energy Solutions, BYD, Axitec, bmz, Pylontech or Wintersun.

Further partnerships are already in the works. For example, we are currently working closely with VARTA and Dyness on compatibility between storage and inverters. In this context, I would like to mention that it is worth activating the autopdate for the PLENTICORE. As soon as our software receives an update that ensures new compatibility, it is automatically updated, without any intervention.

PES: What support does the technology offer when it comes to heating?

LB: The second generation PLENTICORE plus has a total of four digital outputs for self-consumption control. The selection option via the web interface with preset parameters for the use of a switching contact with SG Ready function is particularly convenient. This is a seal awarded in Germany that states that the PLENTICORE plus is suitable for use with heat pumps.

An even higher degree of self-sufficiency can potentially be achieved by activating ModBus TCP communication. This enables the provision of information such as solar energy generation and surplus power at the grid connection point. Compatible heat pumps installed in the same home network can read this information and control the heat pump based on it, with the control carried out independently. So-called modulating heat pumps can then dynamically adjust their power consumption and thus ensure the greatest possible use of the self-generated energy.

Compatible manufacturers that can read the PLENTICORE or the KOSTAL Smart Energy Meter are Brunner, Solvis and Nibe. There is also a partnership with my-PV from Austria, which produces heating rods. These store surplus electricity from photovoltaic systems in the form of heat for hot water.

PES: Can you detail how the PLENTICORE plus works and its main benefits?

LB: The device can be used as a hybrid inverter. By default, it is a solar inverter with an unlockable function that, with the help of an activation code, enables it to operate a battery storage system. It is DC coupled and has a high degree of efficiency, as shown by the System Performance Index conducted annually by the Berlin University of Applied Sciences TWH. The classification in energy efficiency class A additionally proves its efficiency.

Furthermore, it can be connected to the KOSTAL Smart Energy Meter or KOSTAL Energy Meter energy management systems. Monitoring works via the free KOSTAL Solar app or portal. As an all-in-one device, it requires little installation effort, which is further enhanced by the option of commissioning via app with a setup wizard or directly on the device display.

PES: Are there other areas where cross-product compatibility has been made possible?

LB: The PLENTICORE plus has integrated safety functions that can be extended by the Tigo TS4 components. These ensure a quick shutdown at solar module level in the event of a malfunction or fire brigade intervention.

Our PIKO CI commercial inverter works in harmony with the Tigo module optimisers, which can be used for difficult designs, e.g. partial shading. Furthermore, it is compatible with the power generation system controller from Ecodata, which regulates the active power feed-in and the reactive power at the grid connection point of the PV system according to static or dynamic setpoint specifications of the grid operator.

Another example is the compatibility between the PLENTICORE plus and the Checkwatt virtual power plant in Sweden. The number of partners is constantly increasing across countries and is a development that we will continue to drive forward.

PES: Is there further potential for cross-product compatibility in the future?

LB: Currently, our hybrid inverter PLENTICORE plus can be combined with the KOSTAL wallbox ENECTOR as well as with one of our two energy meters. In addition, further inverters can be connected for a power extension. Of course, we will continue to work on expanding compatibility with partner devices in the future, be they storage, heat pumps, air conditioners, optimisers or energy management systems.

We want to help push the envelope towards the energy transition and hence improve and innovate. For example, with the upcoming third generation of the PLENTICORE in 2024, we will even offer outputs of up to 20 kW. We are also working on bidirectional charging, for even more possibilities and flexibility.

PES: Lars, thank you very much for the interview.

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