

FARMING AT THE RIGHT TEMPERATURE

Cutting environmental costs with an energy storage system



PROFILE

Client:

Ehlen potato farm

Industry:

Agriculture

Region, country:

Ahrensmeer, Stade region,
Lower Saxony, Germany

THE BACKGROUND

Situated halfway between Hamburg and Bremen, the Ehlen family farm dates back to 1857. Today, the fifth generation of the family – Frank Ehlen, his wife and four children – together manage 260 hectares. The Ehlen family particularly appreciates the sandy soil of the geest landscape, as the farm's main produce, potatoes, grows very well here thanks to the many nutrients that the soil contains. In addition to growing potatoes, pig rearing is an important component of the farm's operations.



THE CHALLENGE

Consumers in Germany are used to being able to buy potatoes all year round. However, the harvesting season for the sensitive tuber only lasts from June to October. To ensure the potatoes keep from harvest to the point of consumption and don't germinate, they have to be stored cool and dry at a constant temperature of 4°C. So, on the Ehlen's farm, the storage of the various potato varieties is ably assisted by a complex climate control system. With the aid of the outdoor temperature, the outside air is used for cooling from October to January; this is mechanically supported with ventilators until May, and during the warm months leading up to July a 26 kW cooling system is used for 800 tonnes of potatoes.

As a result of climate change and rising temperatures in winter especially, the need for cooling is steadily increasing. It's not just the potatoes that require a controlled climate on the Ehlen's farm; the pigs also need a comfortable ambient temperature and a steady supply of fresh air.

In total, the farm's annual consumption amounts to 160,000 kilowatt hours. A few years ago, the Ehlen's installed a photovoltaic system to benefit from low-cost electricity that they themselves produce. Because the cooling and ventilation systems are required to operate at night, too, they needed an energy storage system to optimise self-consumption and spread the power across the day.

Requirements for a storage solution:

- High storage capacity with many guaranteed cycles for sustainable power delivery
- Straightforward installation and compatibility with the photovoltaic system



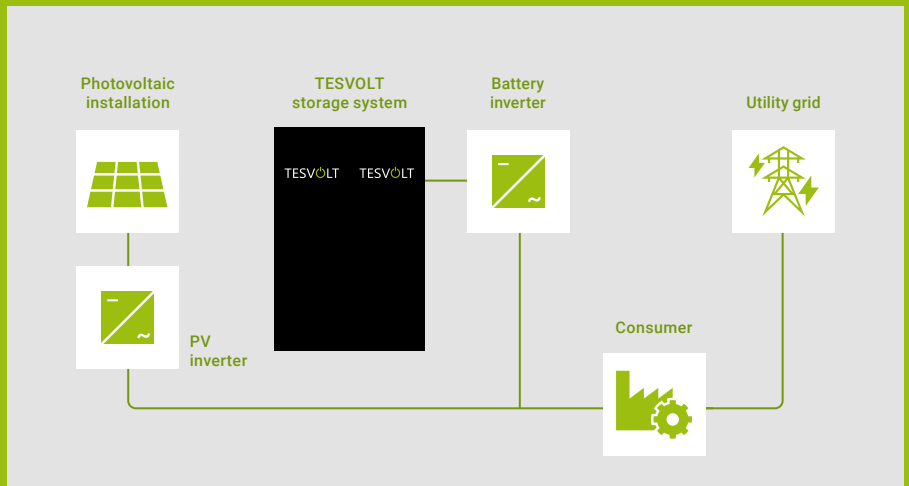
PEAK
SHAVING



SELF-CONSUMPTION
OPTIMISATION

THE SOLUTION

Jörg Niemann from Wärme aus der Natur had already installed an initial photovoltaic system some years ago. In the course of expanding the existing installation, the energy consultant and installer saw the need for a suitable accompanying system to hold the energy. Since the installation's economic viability would depend primarily on a long service life, the storage system chosen was the long-lasting TS HV 70 from the leading producer of commercial storage system technology, TESVOLT.



»I believe TESVOLT is the perfect partner for the energy transition with its first-class products and expert support.«

Jörg Niemann, Energy Consultant and Installer, Wärme aus der Natur GmbH

»It's quite remarkable how many obstacles are put in the way of becoming self-sufficient. I'm glad I can rely on TESVOLT completely.«

Frank Ehlen, Farmer, Ehlen potato farm

THE BENEFITS

• Safe and long-lasting

The system boasts an above-average lifespan of up to 30 years thanks to extremely robust Samsung battery cells and the one-of-a-kind battery management system. This optimises cells not only within a single module, but also between modules within a cabinet.

• Future-proof

Thanks to the revolutionary ABO battery management system, battery modules of the same type can be upgraded or replaced without causing any problems or efficiency losses even after years of service.

• Transparent

Our monitoring software TESVOLT-BATMon makes it possible to seamlessly monitor storage health down to cell level.

• Powerful and responsive

Thanks to the battery management system, TESVOLT storage systems make the energy they accumulate fully available. TESVOLT storage systems are 1C-capable, meaning they can be fully charged or discharged in one hour with the proper configuration. As a result, even high-performance consumers can be kept running when the sun isn't providing enough power.

FACTS AND FIGURES

Storage system	TS HV 70
Energy	134 kWh
Output	60 kW
Cell	Lithium NMC prismatic (Samsung SDI)
Efficiency (battery)	Up to 98%
Cycles	6,000 to 8,000 (0.5C to 1C cycles, at 23°C +/-5°C with 100% depth of discharge)
Operating temperature	-10 to 50° C
Battery inverter	SMA Sunny Tripower Storage 60
Installer	Wärme aus der Natur Niemann GmbH & Co. KG

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