

THE ENERGY PRODUCER

Sustainable and cost-effective production
of biogas using a battery storage system



PROFILE

Client:

Wenning Biogas GmbH & Co. KG

Business:

Energy supply, farming

Special features:

Feed-in to the public gas network

Region, country:

Rhede, North Rhine-Westphalia

THE BACKGROUND

The Wenning family's farm has been located on the outskirts of Rhede since 1752. Back then, cattle fattening was the main focus of the business, whereas these days the animals are more of a sideline. The farm has been predominantly producing biogas for the past 42 years. The Wennings now feed purified biomethane into the public gas network and are thereby supplying the neighbouring town of Rhede, among others, with biomethane. The quantities fed in are accounted for via E.ON and therefore reach the fuel market via mineral oil companies.



THE CHALLENGE

A biogas installation produces biogas as a result of methane bacteria fermenting biomass in the absence of air. For the Wennings, various residual agricultural products such as corn or wheat starch, not to mention industrial by-products like glycerine, serve as the base material. Once produced, the raw biogas is purified. The Wennings' installation enables them to produce 600 standard cubic metres of biomethane per hour.

This enormous throughput, however, causes extremely high power consumption. Agitators, pumps and the gas processing operations consume between 500,000 and 600,000 kWh per year, which is a huge cost considering the current electricity prices.

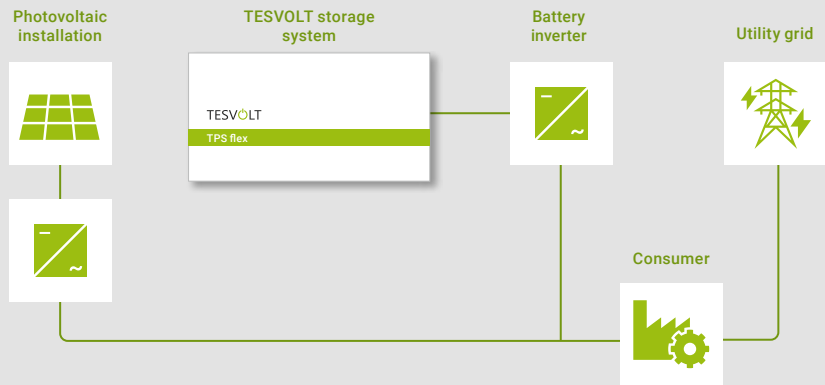
Originally, the Wenning family had an offer for a photovoltaic installation that would have generated the electricity needed for production from hydrogen. However, as the requirements were barely manageable and profitability was a long way off in the future, they instead decided to get an energy storage system, which enabled energy consumption to be 90–95% self-sufficient.

Requirements for a storage solution:

- High technical reliability and resilience against failure
- High storage capacity with well-guaranteed cycles for sustainable power delivery
- Straightforward installation and compatibility with the photovoltaic system

THE SOLUTION

DieEnergieFabrik DEF GmbH and the company Elektrokass worked with the Wenning family to develop the storage concept for the project. The aim was to be as self-sufficient as possible (i.e. ensuring maximum self-consumption with minimum electricity drawn from the grid). Elektrokass carried out the installation work. It mounted two 749 kWp photovoltaic installations and the TESVOLT TPS flex battery storage system. With a usable capacity of 576 kilowatt hours and output of 240 kW, it now enables the sustainable production of biomethane.



“Our end customers are often already aware of TESVOLT, as word has spread quickly about the quality of our products.”

Ralf Ebbing, DieEnergieFabrik DEF GmbH

“Our installation runs 24 hours a day, 7 days a week. After technical simplicity, maximum availability is our top priority. Tesvolt battery storage systems are leaders in their field.”

Qualified agricultural engineer Bernd-Josef Wenning, farmer and energy producer

THE BENEFITS

- **CO₂ savings** of 600 tonnes per year as a result of the two PV installations
- **Self-sufficiency of approx. 95%**
- **Amortisation** of the installation after approx. 5–6 years
- **Safe and long-lasting**
The system boasts an above-average lifespan of up to 30 years thanks to extremely robust Samsung SDI 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.

- **Powerful**
Thanks to the battery management system, TESVOLT's 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.

PROJECT FACTS AND FIGURES

Storage system	TPS flex
Energy	576 kWh
Power	240 kW
Cell	Lithium NMC prismatic (Samsung SDI)
Efficiency (battery)	Up to 98%
Cycles	6,000–8,000 (0.5C to 1C at 23°C +/-5°C with 100% depth of discharge)
Operating temperature	-10 to 50°C
Battery inverter	SMA Sunny Tripower Storage 60
Installer	DieEnergieFabrik DEF GmbH, Elektrokass GmbH

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