

TIGER IN THE TANK –

BACK-UP IN THE CELLAR

Refuelling even in an emergency thanks to battery storage

TESVOLT
Free to go green.



PROFILE

Client:
Georg Wurm petrol station

Industry:
Fuel sales

Special characteristics:
Emergency back-up power

Region, country:
Altenmarkt an der Alz,
Traunstein, Upper Bavaria, Germany

THE BACKGROUND

Altenmarkt is a tranquil village in Upper Bavaria with just over 4,000 inhabitants. Georg Wurm Mineralöle GmbH & Co. KG operates the sole petrol station there. It has eight pumps and is open around the clock. During the night, customers can use a self-service terminal. The company also sells and delivers fuels and lubricants.



THE CHALLENGE

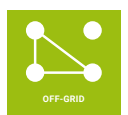
The fuel tanks at filling stations are located underground for safety reasons, so the petrol pumps are fitted with electric pumps to bring the fuel up to where it's needed. A widespread, long-lasting power cut could leave the police, fire brigade and Technical Relief agency unable to fill up their vehicles. In such a scenario, a petrol station can be kept running on an emergency power reserve from a battery storage system. The Georg Wurm station is one such emergency petrol station, registered with the disaster assistance authorities.

But manager Thomas Wurm also had other reasons for installing a battery storage system. With a combined heat and power unit in the cellar and a solar installation on the roof, his petrol station produces its own electricity to help reduce its dependence on the public grid. Each morning, the company's drivers fill up the fuel delivery tankers – for example with heating oil. To fill the tankers within two minutes, they use powerful pumps with an output of 15 kW. A high-capacity storage system

can supply consumers like this station with electricity from renewable sources, even at times when the yield from the on-site solar installation is lower.

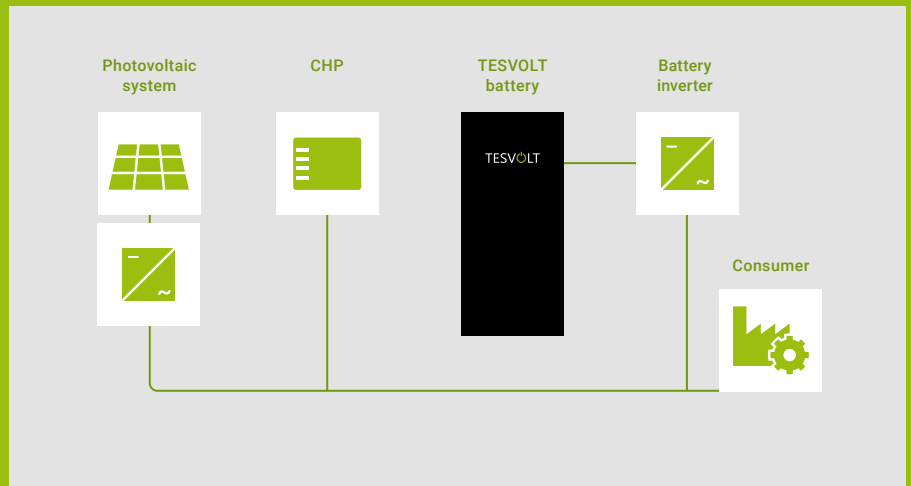
Requirements for a storage solution:

- Stand-alone operation, to ensure that the on-site grid and photovoltaic installation can be operated with or without a public grid connection
- High performance, to enable self-sufficient operation of the powerful fuel pumps
- Reliability, to keep maintenance to a minimum



THE SOLUTION

Expert installer Reichbrandstätter Elektrotechnik GmbH was able to win this client over with the high quality of TESVOLT's batteries and installed a TS 48 V lithium-ion battery storage system in the petrol station's cellar. The system has an energy content of 38.4 kWh and an output of 18 kW. The system is completed by three SMA Sunny Island inverters, which turn the petrol station into a self-sufficient island in the event of a blackout.



"I had researched various storage systems very thoroughly before making my decision, and I haven't regretted choosing TESVOLT for a single second. I particularly appreciate the modular structure and the impressive charging and discharging power."

Stefan Balk, Technical Director at Reichbrandstätter

"The TESVOLT storage system is outstanding. Together with the PV installation and combined heat and power unit, it has enabled us to cut our grid electricity usage by 97 %."

Thomas Wurm, petrol station manager

THE ADVANTAGES

- **Efficient**
90 % Depth of Discharge and only 3 W self-consumption
- **Transparent operation**
Certified installers can monitor storage health down to the cellular level.
- **Durable**
The system boasts an above-average service life of up to 30 years thanks to robust Samsung battery cells and one of the most advanced battery management systems on the market, which optimizes cells not only within a single module, but also between the modules in each cabinet.
- **Expandable**
Thanks to the Active Battery Optimizer TESVOLT systems can be expanded or exchanged at any time – not just after the first few months of operation, but after several years as well.

PROJECT: FACTS AND FIGURES

Storage system	TS 48 V
Energy content	38,4 kWh
Discharge power	18 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 °C to 50 °C
Battery inverter	3 x SMA Sunny Island
Installer	Reichbrandstätter Elektrotechnik GmbH