

ELECTRIFYING

JOURNEY

Charging an electric bus fleet with self-generated power



PROFILE

Client:
Salza Tours König OHG

Industry:
Bus company

Special characteristics:
Electric buses in urban and long-distance transport

Region, country:
Bad Langensalza, Thuringia, Germany

THE BACKGROUND

Mario König and his father Lutz run the bus company Salza Tours based in Bad Langensalza, Germany. With its 40 employees and 20 buses, the family-run operation offers services in the local public transport network as well as long-distance coach travel. Almost half of the buses operate in the local public transport network. Although some buses travel all across Europe, the focus of the operation is in the Unstrut-Hainich region.



THE CHALLENGE

Part of the company philosophy of Salza Tours is to take advantage of technical innovations to benefit customers and the environment. As far back as 1993, the company was already using locally produced bio-diesel as fuel for some of its vehicles. When use of the rapeseed-based fuel became too expensive due to a tax increase, the Königs sought an alternative power concept. They weighed up the relative merits of hybrid and electric vehicles and in 2016 acquired their first electric buses with support from the Thuringian government. The company first bought two SILEO S10 city buses with a battery capacity of 200 kWh, and later added a SILEO S12 with 220 kWh for long-distance travel.

Initial procurement costs for electric vehicles, however, are roughly twice that of diesel vehicles. To ensure economical operation, Salza Tours had to negotiate a longer-term rate agreement with the local energy supplier. But with rising electricity

prices, in-house production of electricity became increasingly attractive, and the company ultimately opted to install a photovoltaic system. With top-up charging impractical in urban transport, Salza Tours generally uses the system to charge the buses overnight. But because the photovoltaic installation only produces electricity during the day, Salza Tours needs a way of storing the electricity.

The requirements for a storage solution:

- High storability with many guaranteed cycles for sustainable provision
- High output power with high C-rate to charge electric vehicles quickly



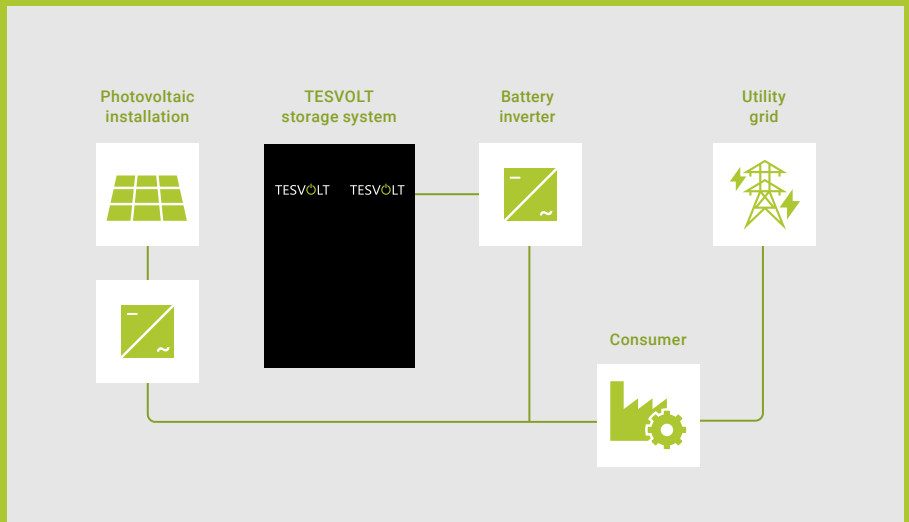
SELF-CONSUMPTION
OPTIMISATION



CHARGING STATION
INFRASTRUCTURE

THE SOLUTION

Through an EU tender process, Salza Tours found a suitable installer for the energy and storage systems. Kochkommmt Elektrotechnik subsequently installed three charging stations with TESVOLT battery storage systems of the type TS HV 70. Together, the storage systems have an energy content of 460 kWh and a discharging power per charging station of 75 kW. This enables Salza Tours to deploy the S12 for long-distance travel, as the bus can drive the whole day with a top-up charge in the morning.



»What we particularly appreciate about the storage systems, which provide such great benefits to us, is that they inconspicuously do their duty here without us having to do anything.»

Mario König, Managing Director of Salza Tours König OHG

»At first I was doubtful that the storage system could charge the buses fully. But now I'm completely convinced by the TS HV 70 because it does what it says it will.»

Thomas Koch, principle installer at Kochkommmt Elektrotechnik

THE ADVANTAGES

- Energy price independent, self-sufficient charging of their own electric buses with daily ranges of up to 280 kilometres
- Free battery charging instead of EUR 30–40 from the utility grid
- Given the substantial subsidies, major reduction of investment costs – amortisation in under 8 years
- **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 within an hour with the proper configuration. This

makes it possible to operate powerful consumers independently of the utility grid or to charge electric vehicles quickly.

- **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.

- **Expandable**

TESVOLT systems can be expanded or exchanged at any time – not just after the first few months of operation but even many years later.

PROJECT: FACTS AND FIGURES

Storage system	TS HV 70
Energy content	3 x 153 kWh
Discharging power	75 kW (per charging station)
Cells	Lithium NMC prismatic (Samsung SDI)
Efficiency (battery)	Up to 98%
Cycles	6,000–8,000 (0.5C to 1C cycles, at 23°C +/-5°C with 100% depth of discharge)
Operating temperature	-10°C to 50°C
Battery inverter	Sunny Tripower Storage
Installer	Kochkommmt Elektrotechnik

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TESVOLT
THE ENERGY STORAGE EXPERTS