

GREEN ELECTRICITY

FOR THE ROAD

Europe's largest charging park for electric vehicles

TESVOLT
THE ENERGY STORAGE EXPERTS



PROFILE

Client:

Ladepark Kreuz-Hilden GmbH

Business:

Electric charging infrastructure

Special characteristics:

Europe's largest charging park for electric vehicles

Region, country:

Kreuz Hilden motorway junction, North Rhine-Westphalia, Germany

THE BACKGROUND

At the start of 2021 there were more than 300,000 electric vehicles registered on the streets of Germany. With maximum ranges of around 500 km, they rely on a dense network of charging stations to recharge their batteries on longer journeys. Motorway junctions make ideal locations for charging stations. Every day around 235,000 vehicles pass through the Kreuz Hilden junction connecting the A3 and A46 motorways near Düsseldorf. This is where Europe's largest charging park is being built, on a site covering 12,000 square metres.



THE CHALLENGE

The Kreuz Hilden charging park already contains 20 Tesla superchargers of the new V3 generation and 16 quick charging points from the Dutch provider Fastned. Once the second phase of construction is complete, a total of 114 charging points with a charging power of up to 300 kilowatts (kW) will be available for electric vehicles to charge their batteries. All charging points are supplied with 100% green electricity, in part generated by a 400 kWp photovoltaic system installed on the charging park's carports. Following the second construction phase, drivers will be able to use the charge time for a visit to the bakehouse café and bistro with its own organic bakery and the vertical greenhouse which will grow lettuce, strawberries and blueberries for use in the bakehouse. Heat from the bakery will be used for heating, hot water and vertical farming.

Quick charging for electric vehicles causes high electrical peak loads. A grid connection set up to deal with these kinds of peaks needs to be extra powerful, which

also makes it expensive. Power peaks can be "accommodated" with a powerful battery storage system. This means that electrical peak loads are then generated by the discharging battery instead of the grid. A storage system like this saves charging station operators a lot of money. For this project, the aim of the storage system is also to store green electricity from the grid when it is particularly cheap, and to relieve the utility grid when more electricity is in the grid than is being consumed.

The requirements for a storage solution:

- High-performance storage system with a high depth of discharge and many guaranteed cycles for a sustainable and long-lasting investment
- High output power with high C-rate to charge electric vehicles quickly



CHARGING STATION
INFRASTRUCTURE



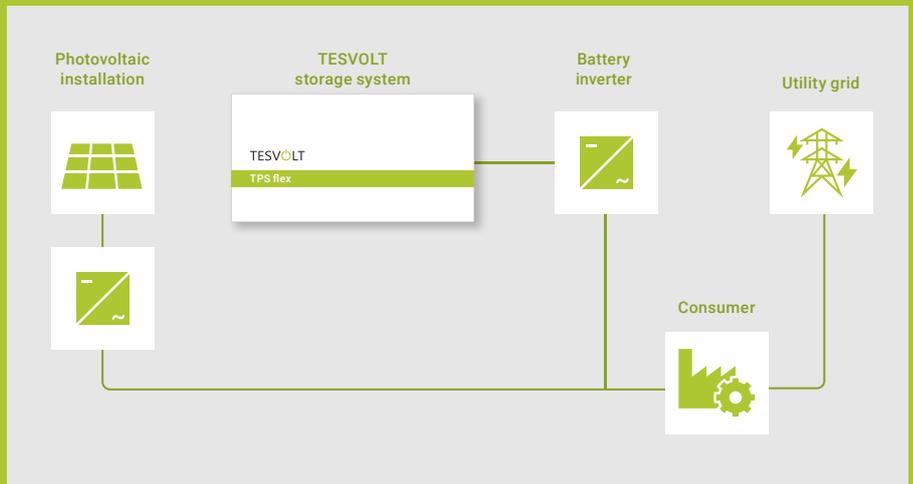
PEAK SHAVING



GRID SYSTEM
SERVICES

THE SOLUTION

The operator of the charging park, Roland Schüren, has experience in the field. The company vehicles at his bakery's headquarters are also charged with 100% green electricity. Voltego GmbH, based in Krefeld, incorporated a storage system using the TPS flex container system from TESVOLT, which was installed by Rheinland Solar. The system stores up to 2 MWh and has a discharging power of 2 MW. Battery storage systems from TESVOLT are designed to operate safely in industrial applications for decades.



"I want this charging park to demonstrate that climate protection is not just an environmental necessity but also financially worthwhile."

Business owner and organic baker Roland Schüren, operator of the charging park

"The Hilden charging park was in many respects a remarkable project for everyone involved. Communication with TESVOLT was without fail exemplary and on the level."

Andrea Klimek, project manager and partner at Rheinland Solar GmbH

"I had several manufacturers on my shortlist. Tesvolt came out top because its TPS flex delivers huge output while taking up little space and because it is one of the few products on the market that met the technical specifications."

Gregor Hinz, technical planner for the project, Voltego GmbH

THE BENEFITS

- Peak shaving**
 Reduction in power peaks caused by charging electric vehicles, and consequent lowering of the demand rate
- Grid system services**
 In future, the TPS flex will also store green electricity from the grid when it is particularly cheap, and relieve the utility grid when more electricity is in the grid than is being consumed.
- Durable**
 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, which optimises cells not only within a single module, but also between modules and cabinets.
- 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.
- 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.

FACTS AND FIGURES

Storage system	TPS flex
Energy	2 MWh
Output	2 MW
Cell	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	-20 to 45°C
Battery inverter	SMA Sunny Tripower Storage 60
Installer	Rheinland Solar GmbH/ Voltego GmbH

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