

THE ELECTRIFIED

CAR PARK

Energy provider uses battery storage for peak-load shaving



PROFILE

Client:
Helen Ltd.

Industry:
Energy, heat and cooling provider

Special characteristics:
peak shaving

Region, country:
Helsinki, Finland

THE BACKGROUND

HELEN is one of the largest energy companies in Finland with over 500 000 customers. Founded in 1909, the company produces and sells electricity, supplies district heating and district cooling and is 100% owned by the city of Helsinki. The company's subsidiary Helen Electricity Network LTD is responsible for supplying the capital with electricity. Helen Electricity Network is headquartered in the district Käpylä. The company headquarters there also has a 1-storey car park, in which the company car fleet is stationed, too.



THE CHALLENGE

Finland is setting ambitious targets to reduce its greenhouse gas emissions: by 2035 it wants to become carbon neutral. In the field of mobility, more than 250,000 electric vehicles are expected to be used on Finnish roads by 2030. As a city owned company Helen is developing services towards common vision of becoming carbon neutral.

A significant part of Helen Electricity Network's employees already drive with electric cars, and some vehicles in the company's car fleet also drive electrically. Consequently, the company installed several regular 22 kW charging stations for these vehicles as a pilot project in the company's own car park.

The charging of electric vehicles causes high peak energy loads due to the desired speed during charging. Grid connections designed for these kinds of loads need to be particularly powerful, which carries a cost. Peak energy loads can be "absorbed" by a high-performance battery

storage system. In this "peak load shaving" process, the current load peak is then generated by the discharged battery instead of being drawn from the grid. To this end, the storage system saves the charging station operator a lot of money. The battery storage system can then be charged without burdening the grid, for example overnight, when the charging stations are less in demand.

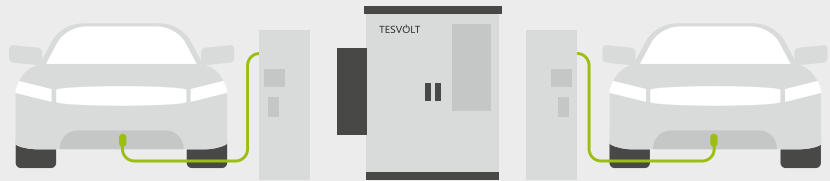
Requirements for a storage solution:

- High output power with high C-rate for quick electric vehicle charging
- Reliable mode for peak load shaving and low-maintenance operation
- a small footprint and a robust layout due to the installation at the parking lot



THE SOLUTION

The specialist installer Solar Factory Ltd. had already had good experiences with German battery storage systems in the private sector and wanted to offer a similar high quality solution to its commercial customers. Due to the advanced battery management system of the products, the decision was made in favor of TESVOLT. Solar Factory Ltd. then installed two TS HV 70 lithium-ion battery storage systems in the outdoor version in the Helen Electricity Network car park, each with an energy content of 67 kWh and a power of 60 kW.



“Thanks to their high quality and great battery management system, TESVOLT’s high-quality storage systems are an acquisition that commercial customers can enjoy for decades to come.”

Ville Venäläinen, CEO at Solar Factory Oy.

“This pilot project will help us to verify the best operation logic for behind-the-meter battery storage. We are looking forward to customer’s cost savings when reducing peak power demand from the charging stations and headquarter’s electricity consumption with the help of Tesvolt storage.”

Kristiina Siilin, business designer at Helen Ltd.

THE ADVANTAGES

- The battery storage system enables peak load shaving and operation of the charging station with a less powerful and costly grid connection.
- The storage systems take up very little space thanks to their high power density and small size and, as such, can be installed directly near charging stations.
- With the highest degree of shock resistance IK10 due to the high-quality Rittal housing with double-walled aluminium, the TS HV 70 OD is predestined for robust environments such as lay-bys, petrol stations and car parks.
- To enable electric vehicles to recharge quickly, the storage system offers a high charging capacity. TESVOLT memory is 1C capable, i.e. they can be fully loaded or unloaded in one hour if configured accordingly.
- With robust battery cells from Samsung and one of the most advanced battery management systems on the market that optimizes not only cells within a module, but also between the modules in each cabinet, the system has an above-average lifespan of up to 30 years.
- Easiest installation by „turnkey“ delivery with all components, including concrete base, air conditioning and inverter.

PROJECT: FACTS AND FIGURES

Storage system	2 x TS HV Outdoor
Energy content	134.4 kWh
Discharge power	120 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	-33 °C to 55 °C
Battery inverter	SMA Sunny Tripower Storage
Installer	Solar Factory Oy

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TESVOLT
THE ENERGY STORAGE EXPERTS