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## Profile

**Client:**

Helen Ltd.

**Industry:**

Energy provider, car park

**Special characteristics:**

Peak shaving

**Region, country:**

Helsinki, Finland

# THE ELECTRIFIED CAR PARK



## The background

Helen is one of the largest energy companies in Finland with over 500 000 customers. The company 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's offices there have a one-storey car park, which also houses its fleet of cars.

## The challenge

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

Many of Helen Electricity Network's employees already drive with electric cars, and some vehicles in the company's car fleet are also drive electric. The company has installed several 22kW charging stations for these vehicles as a pilot project in its own car park.

The charging of electric vehicles causes high peak energy loads. Grid connections designed for these kinds of loads need to be particularly powerful, which is reflected in the price. Peak energy loads can be "absorbed" by a high-performance battery storage system. In this

„peak shaving“ process, the peak in electricity demand is covered by energy discharged from the battery instead of drawn from the grid. This means that the storage system saves the charging station operator considerable sums 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 battery storage solution:**

- High output power with high C-rate for quick electric vehicle charging
- Reliable and low-maintenance peak shaving operation
- A small footprint and robust construction to make it suitable for installation in the car park

# The solution

The specialist installer Solar Factory Oy had already had good experiences with German battery storage systems for private use and wanted to offer a similar high quality solution to its commercial customers. TESVOLT products were chosen due to their advanced battery management system. Solar Factory Oy then installed two TS HV 70 Outdoor lithium-ion battery storage systems in Helen Electricity Network's car park, each with an energy content of 67 kWh and a power of 60 kW.



## The advantages

- The battery storage system enables peak shaving and makes it possible to operate the charging station with a less powerful and less expensive grid connection.
- The storage systems take up very little space thanks to their high power density and small size, meaning that they can be installed directly at charging stations.
- The TS HV 70 Outdoor is perfect for high-traffic environments such as lay-bys, petrol stations, and car parks thanks to its top-quality outdoor housing with double-walled aluminium, which provides the highest degree of shock resistance IK10.
- The storage system offers a high charging capacity to enable fast recharging of electric vehicles. TESVOLT storage systems are 1C capable, i.e. they can be fully charged or discharged in one hour when suitably configured. With robust battery cells from Samsung and one of the most advanced battery management systems on the market, which optimizes cells not only within each module but also between modules in the cabinet, the system has an above-average lifespan of up to 30 years.
- Simple installation thanks to "turnkey" delivery with all components, including concrete base, air conditioning system, and battery inverter.

## Project facts and figures

<b>Storage system:</b>	2 x TS HV Outdoor, made in Germany by TESVOLT
<b>Energy content / discharge power:</b>	134.4 kWh / 120 kW
<b>Cell:</b>	Lithium NMC prismatic (Samsung SDI)
<b>Efficiency (battery):</b>	up to 98%
<b>Cycles:</b>	6.000 – 8.000 (0.5 C to 1 C at 23° C +/- 5° C with 100% depth of discharge)
<b>Operating temperature:</b>	- 10 to 50° C
<b>Battery inverter:</b>	SMA Sunny Tripower Storage
<b>Installer:</b>	Solar Factory Oy



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*"Thanks to their high quality and great battery management system, TESVOLT's storage systems are a worthwhile purchase 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.

**TESVOLT GmbH**  
Am Heideberg 31  
06886 Lutherstadt Wittenberg  
Deutschland | Germany

Tel. +49 (0) 3491 8797 100  
info@tesvolt.com  
[www.tesvolt.com](http://www.tesvolt.com)