TESVOLT
Free to go green.

CRANE WITH GREEN POWER

Battery storage system smooths out power peaks for warehouse crane

PROFILE

Client:
Oomen Warehousing and Movers (Oomen Group)

Business:
Warehousing and transport

Special characteristics:
highly automated and electrified warehouse site, in-house solar power generation

Region, country:
Katwijk, South Holland, Netherlands

THE BACKGROUND

Katwijk, a coastal town in the Dutch province of South Holland, has been home to the headquarters of Oomen Warehousing and Movers and its warehouses since 2020.

Emile Oomen founded the company in 2015, having initially worked as a freelance courier. Together with his father Frans and his wife Stephanie, he has grown it into a leading removal company with over 40 employees, an extensive vehicle fleet and its own warehouse.

THE CHALLENGE

In 2020 Oomen Warehousing and Movers moved into its new headquarters with warehouses in the coastal town of Katwijk. The 24-metre-tall building has space for nearly 500 containers. An electric crane, similar to the ones you find on the docks of Hamburg and Rotterdam, stacks them on top of each other up to eight storeys high. They use software to coordinate the complex processes that enable the crane to always find the right container and prepare it for transport to the customer at the right time. The crane is in operation about 12 hours a day. It requires a lot of energy to lift the heavy containers, which results in large peak loads in the company's consumption profile. However, even during construction work on the building, it became clear that the power connection was not designed for that kind of load. There are just 3 x 80 amperes available – what you might expect in a small business or household. Increasing the output of the grid connection would have required a new substation, which would take about two years to build. In addition, the power peaks would have meant high costs, since electricity costs are heavily dependent on the peak load. So the Oomen family business was looking for an alternative, and found it in the form of an energy storage system and a photovoltaic installation. The PV installation generates green electricity right on top of the building. The storage system ensures the best use of this power and also smooths the peak loads for the power drawn from the grid.

Requirements for a storage solution:

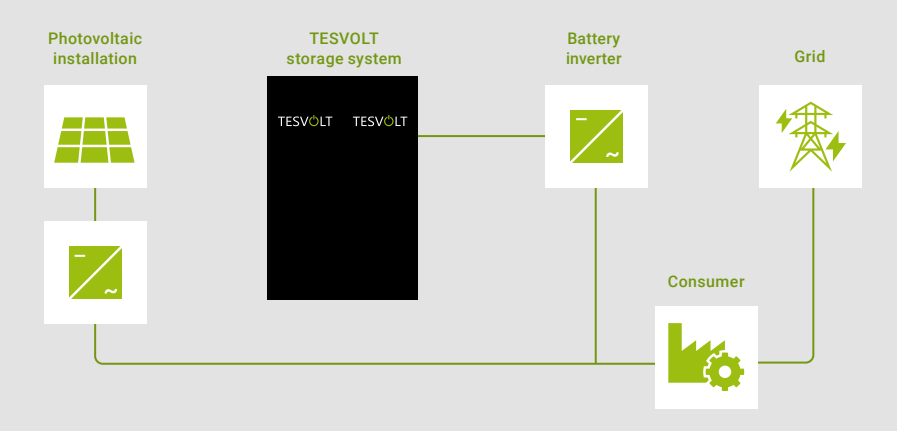
- Smoothing of power peaks during the day (peak shaving)
- Quick and easy installation
- Optimisation of solar power usage

PEAK SHAVING

INCREASED SELF-CONSUMPTION

THE SOLUTION

The solar and storage system specialists from EXPIRION designed an intelligent system for Oomen, combining peak shaving and PV use. The crane now draws high power levels from the storage system, rather than the utility grid. The storage system provides 60 kW in addition to the grid connection. Between power peaks, the storage system fills up almost solely from the solar installation. At night, however, the storage system also charges via the grid connection. Fully charged it holds 153 kWh – that enables it to buffer the peak loads of the day even when the weather is overcast.



"We decided on the TESVOLT energy storage system for two reasons: first, sustainability is one of our corporate goals, and second, our power connection would have been too small for our energy consumption."

Emile Oomen, founder and owner of Oomen Warehousing and Movers

"Like EXPIRION, TESVOLT stands for ingenuity along with reliable, trusting partnerships. The two companies will be developing more energy storage system solutions together in future."

Jaap Burgerhout, founder and owner of EXPIRION

THE BENEFITS

- **Avoiding peak loads** caused by the crane, as it can draw high power levels from the energy storage system
- **Construction starts sooner**
  The company avoided a two-year delay waiting for a new substation and managed to move in as scheduled.
- **Cost reductions**
  The use of independently generated and stored energy lowers both the demand rate for the peak loads and the company's energy costs.
- **Facilitating electromobility**
  In the future, Oomen also wants to run its vehicle fleet on fully electric power. This electricity demand will also need to be covered by the existing grid connection. Energy storage systems and charging management will facilitate this.
- **Long lifespan**
  Thanks to robust Samsung SDI battery cells and the unique battery management system, which optimises cells across modules and cabinets, the system has an expected service life of up to 30 years.

FACTS AND FIGURES

Storage system	TS HV 70
Energy/output	153.6 kWh/60 kW
Cell	Lithium NMC prismatic (Samsung SDI)
Efficiency (battery)	up to 98%
Cycles	6,000 to 8,000 (0.5C to 1C at 23°C +/−5°C with 100% depth of discharge)
Operating temperature	10 to 50°C
Battery inverter	SMA STPS 60
Installer	EXPIRION B.V.

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