

THE ALL-IN-ONE SOLUTION

Multifunctional battery storage system with quick charging feature



PROFILE

Client:

TIT Imhof AG/TIT Imhof Group

Business:

Transport, construction, waste disposal

Special characteristics:

Plug-and-play multifunctional storage system

Region, country:

Thurgau, Switzerland

THE BACKGROUND

The TIT Imhof Group has been operating as a family business in the transport, construction and waste disposal sectors since 1986. At its locations in the cantons of Thurgau and Schaffhausen, the company employs around 130 workers and runs an extensive vehicle fleet as well as its own landfill sites and waste disposal centres. TIT Imhof offers its customers customised handling and transport solutions, and wide-ranging services in the area of waste disposal and recycling, as well as in earthworks and demolition.



THE CHALLENGE

The TIT Imhof Group has set itself the target of becoming carbon neutral. Among other initial measures, the company has started to replace vehicles from the company fleet with electric models. As of April 2023, three electric trucks, seven electric cars, one electric digger and two electric forklifts have joined the fleet, substantially reducing emissions. To continue improving its carbon balance, the company wanted to charge these vehicles using PV electricity produced in-house from its own 250 kWp installation.

However, as the vehicles are in use during the day, the charging has to take place in very narrowly defined time slots as well as at night. Quick charging for the large batteries used by e-trucks in particular also requires an extra powerful grid connection, which is very expensive. During the day, TIT Imhof experiences peak loads of up to 800 kW. With a demand rate of over EUR 12/kWh, this quickly adds up.

The obvious solution: charging the vehicles with a powerful battery storage system

that is charged primarily from the PV installation and secondarily from the grid connection over a longer time period.

Requirements for a storage solution:

- Compact design
- Movable system that can be relocated easily
- Smart battery management system, which also enables external electricity marketing



OFF-GRID



POWER QUALITY



MULTI-USE



ANCILLARY SERVICES



PEAK SHAVING



INCREASED SELF-CONSUMPTION

THE SOLUTION

Thanks to a special collaboration, it was possible to translate the requirements into an innovative storage system product: the energy supplier EKT AG, the systems integrator Schaper Group and the storage system manufacturer TESVOLT worked together to produce the eCube – a plug-and-play battery storage system with a quick charging feature. Now with patent pending, the eCube is marketed by a spin-off company of the TIT Imhof Group: eSpectrum AG. Meanwhile, at TIT Imhof, the eCube now supplies the entire site with electricity in addition to the electric vehicles.



“We’re very happy with the storage system – it shows that there’s no contradiction between our company philosophy and our economic efficiency.”

Dominic Imhof, CEO, TIT Imhof

“We can barely keep up with the enquiries coming in. With the eCube we’ve created a storage concept that meets every demand, and TESVOLT battery modules are at the heart of it.”

Roger Ackermann, Head of System Development and Services, eSpectrum

THE BENEFITS

- **25% reduction in the purchase price of e-trucks:** The storage system has made it possible for TIT Imhof to purchase significantly lighter electric trucks with lower battery capacity, as – thanks to top-up charging in the lunch break – the capacity only needs to last for half a day and no 1 MWh long-range trucks are needed.
- Between 8 pm and 6 am, when the full capacity of the storage system is not required as only low truck charging currents are being drawn (the quick charging feature is deactivated at night), the storage system generates **additional revenue** by marketing the surplus electricity.
- Thanks to peak shaving, TIT Imhof can expect **amortisation within 10 years**. Self-consumption optimisation and income from providing ancillary services improve the financial situation further.
- Plug-and-play means the eCube is **operational within five minutes**.
- **Individually configurable:** The eCube is made up of battery storage system and charging station modules, which are installed in a 20- or 40-foot container. The modules can be assembled individually according to the customer’s requirements and conditions.

FACTS AND FIGURES

Storage system	eCube 20
Energy/output	1152 kWh/680 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	-10 to +50°C
Battery inverter	TESVOLT PCS
Installer	Schaper Group – Schaper Elektrotechnik GmbH & Co. KG

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