High efficiency, high performance storage

Michael Geib, Vice President of Global Sales and Christian Went, International Account Manager at TESVOLT, came in to PES to catch us up on their latest lithium-ion battery storage systems. The UK market is of interest, one reason being the flexible tariffs.

Michael Geib

Christian Went

PES: We are pleased to welcome you back to PES Solar/PV magazine. For our new readers, could you please begin by explaining a little about the background of your organisation and how you currently serve the solar/PV industry?

Christian Went: TESVOLT specialises in high-performance lithium-ion battery storage systems. These systems are used primarily in the commercial and industrial sectors, where battery performance requirements differ from those in the domestic storage market. To meet these requirements, we combine top quality battery inverters and lithium cells with a proprietary battery management system (BMS).

Our aim is to minimise the loss of power when the battery is being charged and discharged. Lithium batteries are more energy-efficient than other storage technologies and thanks to the unique BMS from TESVOLT, they can be flexibly combined and easily expanded, even after several years.

Our systems can be configured to any value from 4.8 kWh up to several megawatt hours, depending on the client's requirements. The exceptional reliability, high output and long service life of our storage systems is due to their prismatic cells, developed by Samsung SDI and

Tesvolt battery TS commercial allrounder

TESVOLT's proprietary Active Battery Optimizer.

Michael Geib: Our company, which is based in Wittenberg in Germany, was founded in 2014 by Daniel Hannemann and Simon Schandert with the aim of promoting the use of renewable energies generated by the sun, wind, water and biogas. From the outset, the company's intellectual capital included the extensive experience that many TESVOLT employees had acquired in the photovoltaic sector.

The need for battery storage systems is growing at the same rate as the expansion of renewable energies, especially photovoltaic energy. Storage systems are used to even out consumption to compensate for the daily and seasonal fluctuations in energy yields, thereby helping clients to time shift as much as possible and improve their self-sufficiency rate.

The range of potential applications is extremely wide and storage systems can also be used to meet needs such as, emergency power or peak load capping. Here in the UK our energy storage systems have become a valuable option for avoiding Triad, Red Zone, or CM levy charges.

PES: What makes this product stand out and how does TESVOLT intend to stay one step ahead of the competition?

CW: The service life and the operating costs over this period are among the factors that determine the cost-effectiveness of a battery system. We therefore needed a solution that guaranteed a high level of efficiency while, at the same time, preventing faults and defects in order to ensure a long operating life.

This is why we advise our clients to take into account the total cost of ownership when deciding which battery storage system to invest in.

MG: The centrepiece of the storage systems is TESVOLT's proprietary Active Battery Optimizer, which maximises the performance of each individual connected cell. The energy stored is distributed between the cells more quickly and efficiently. Scarcely any energy is lost during the charging and discharging of our battery systems, because the energy does not flow from cell to cell: instead, each cell is controlled directly by the system.

It therefore delivers a consistently stable performance, prevents faults and damage, and ensures a service life of 30 years and – in conjunction with our high-voltage storage system – an overall degree of efficiency of 92 per cent.

Moreover, our new battery systems are fitted with prismatic cells on a nickel-manganese-cobalt-oxide base, which are manufactured by Samsung SDI and are very reliable and extremely efficient. They were initially produced for the automotive industry and are used, for example, by BMW who doubled the range of electrically powered vehicles.

PES: You launched your TS HV 70 high-voltage lithium storage system at Intersolar 2017. Can you please tell us a bit about it?

CW: Of course. Our TS HV 70 high-voltage system features a battery voltage of between 575 and 1,000 volts. The 30-year service life and the use of extremely efficient power electronics and cell technology make the new storage system extremely cost effective for use in commercial and industrial applications.

MG: We have designed this model with profitability in mind – maximum performance maximum reliability and maximum efficiency. With this system, clients can achieve storage costs of less than 9p per kWh. This is an investment that pays off within a very short period of time, thanks to the 98% efficiency of the battery system and a combination of diverse features such as peak load capping and participation in the capacity market.

Tesvolt battery storage system

PES: What motivated TESVOLT to develop such a project?

MG: Our primary objective is to quickly create cost-effective applications for storage systems, in the commercial and industrial sectors. The technology and the demand are there. We must now create new opportunities so that clients will be encouraged to invest in a battery storage system.

Our storage systems are used in different ways, depending on the region – whereas increasing self-consumption and providing grid services are key issues in European countries, in countries with less developed power grids, our aim is to provide people with a basic electricity supply.

PES: Which markets are you targeting – domestic, industrial, utility or all three?

CW: The global market for energy storage systems is expected to grow to approximately 50 billion US dollars by 2020, of which 2.8 billion USD will be spent on stationary energy storage devices such as those offered by TESVOLT.

We are therefore focussing on commercial and industrial applications. This does not mean however that our storage systems do not also meet the needs of the residential market.

MG: In conversations at exhibitions and conferences, we have observed, time and time again, that clients are becoming more and more sensitive to being at the mercy of fluctuations in the price of electricity. They would prefer to decide for themselves when to draw electricity from the grid and they would like to consume as much self-generated electricity as possible.

PES: Which applications are you focussing on in the UK?

CW: We are zeroing in on two interesting trends in the UK: the UK is further along than Germany in developing flexible electricity prices. This makes it possible, for example, for companies or even entire communities to rely on a single PV installation, in conjunction with a storage system, to cover their total energy needs during periods with 'Red Zone' tariffs, thereby avoiding higher electricity prices.

The storage system can also store low priced electricity at night and release it again during the day.

The other development concerns the provision of grid services. In exchange for a fee, the owner of a TESVOLT storage system, can offer to provide EFR (enhanced frequency response) to the capacity market, minimum 2MW power requirement, in advance, thereby generating additional income. All these factors make Great Britain a very attractive market for us.

PES: What are the advantages of this system for the end user in terms of investment and yields? Is it cost effective?

CW: Broadly speaking, our clients are already familiar with their business model and know exactly what they can earn or save with an energy storage system. The increased round trip efficiency and long service life of our systems allow them to increase their calculated annual return many times over.

The storage systems are especially profitable, if they are operated in combination with systems that generate renewable energies and when they take advantage of more functions than simply time shifting.

However, the storage systems also ensure a stable supply of electricity for off-grid applications, which allowed TESVOLT to supply the world's largest decentralised off-grid storage system to Rwanda.

Although there is less demand for off-grid solutions in the UK, TESVOLT has already carried out off-grid projects here, for example in combination with wave power machines.

PES: Has 2017 been a good year so far for TESVOLT? How are things looking for the last quarter of the year?

MG: With three new products for every requirement, we are well equipped to implement our international sales strategy. Moreover, the market for battery storage devices continues to grow rapidly.

As product cycles are very short, we are always on the lookout for innovative ideas, and we count on our in-house R&D department to evaluate new possibilities. The aim for this year and the years to come remains unchanged: to revolutionise the battery storage market.

www.tesvolt.com