

TESVOLT  
*Free to go green.*

***Small commercial solutions***  
***Energy storage systems for***  
***smaller commercial enterprises***



*We're changing the world  
of energy together  
and shaping freedom.*

TESVOLT  
*Free to go green.*

## *Free to go green.*

*Sun, wind, water – nature provides us with limitless sources of energy, and we have the freedom to use them. Regardless of current weather conditions or political decisions.*

*As a society, we all bear responsibility for a successful energy transition – in particular large consumers such as business and industry.*

*TESVOLT products, innovations and ideas provide the flexibility we need to make use of renewable energies. We make them available at all times – all over the world.*

*We reconcile enterprise and sustainability: here and now, for future generations, for the preservation of our environment.*

*Greater freedom. Greater safety.*

## *For hidden champions with low energy requirements*

*Free yourself from fluctuating electricity  
prices and fossil fuels. With economically  
reliable, efficient and climate-friendly  
storage systems from TESVOLT.*

**No more rising electricity prices – it's time for greater independence. Our energy storage systems offer customers in skilled trades, catering, agriculture, trade and logistics a choice of cost-effective, sustainable energy supply solutions that pay their way.**

Whether you want to increase your self-consumption from renewable energy, safeguard your electricity supply in an emergency, or implement a self-sufficient off-grid solution, our storage systems are as flexible as your requirements.

We are committed to innovative "Made in Germany" technology, durable first-rate components, and maximum safety standards. Take your energy supply future into your own hands – with TESVOLT energy storage systems.

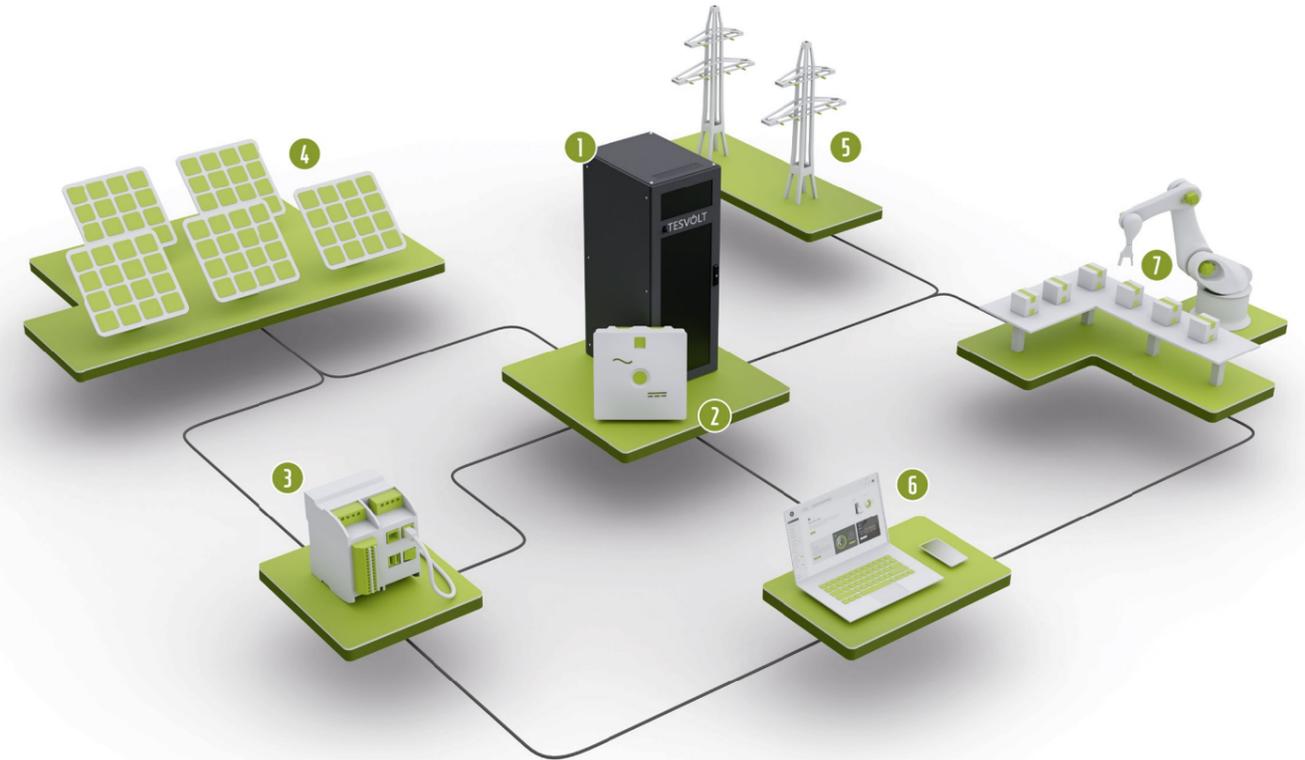


**Configure a product  
for your requirements  
now**



*System structure*

*Our goal is your independence*



### **1. Battery storage system**

The TESVOLT battery storage system is the key component for integrating renewable energies within the overall system. It stores the energy generated, enables load compensation, ensures security of supply, and helps reduce costs.

### **2. Inverter**

The combination of battery storage system and inverter ensures an efficient energy supply through the flexible conversion of direct and alternating current and compensation for grid fluctuations.

### **3. Energy management system (EMS)**

The EMS optimises the energy flow and controls consumers and energy resources as well as the charging and discharging of the battery storage system, which enables a multitude of applications.

### **4. Energy resources**

The wide range of energy sources in the system design, such as photovoltaics or wind power, generate the required electricity, which the battery storage system stores without environmental impact.

### **5. Utility grid**

The utility grid acts as an additional back-up resource for times when renewable energy production is low. In combination with a battery storage system, it actively relieves the pressure on the public utility grid and provides a reliable supply of electricity, particularly at peak load times.

### **6. Portal**

For efficient and transparent management of the energy balance and to ensure a customised energy supply, the portal allows users to monitor energy flows, track the system status and analyse energy consumers.

### **7. Consumers**

Every consumer has their own individual energy requirements. All system components are tailored to these requirements and work together to ensure a sustainable and cost-efficient supply.

*Our TESVOLT storage systems help you ensure security of supply and independence from energy suppliers.*



### Self-consumption optimisation

In combination with a system for generating renewable energy, e.g. photovoltaic installations, battery storage systems can increase the use of your self-generated electricity by as much as 80%. If your yield exceeds current consumption, the excess energy is stored and you can use it when production is low or stopped altogether.

#### Potential users

Businesses with a photovoltaic or wind power installation or an area suitable for one, e.g. haulage companies, agricultural operations, workshops, factories.

Other

*Discover  
key areas of application  
for our storage technology in  
small and medium-sized  
commercial enterprises.*



### Back-up power

Power outages are a crucial consideration for many businesses. With a battery storage system, either as a stand-alone solution or in combination with a diesel generator, you enjoy reliable protection. The storage system takes over the power supply within milliseconds, and your business keeps running without interruption.

#### Potential users

Businesses that depend on a reliable power supply, e.g. livestock farming and cold stores.

# From the real world, for the real world

## TESVOLT projects

**Our broad product portfolio offers a whole host of applications for a huge range of sectors. All our solutions prioritise high levels of economic efficiency, safety, and a long service life. An investment in a TESVOLT battery storage system often pays for itself in next to no time, and it will also protect you against rising energy prices in the long term.**

### Keeping milk and electricity flowing

Matthias Kampert's dairy farm has been in his family for over 100 years. Today, the farm is home to a total of 130 animals. To save electricity, Kampert has installed a photovoltaic system on the roof areas of the farm. The problem is that because he still doesn't have a robotic milking system, he always has to milk the cows when the sun is low in the sky. The solution is simple. With a high-performance battery storage system, Kampert can spread the electricity he produces himself across the day so that he can use as much of it as possible himself. And because TESVOLT storage systems can be expanded even several years later, the dairy farmer will still be well set-up if buys a robotic milking system.

**Storage system type:** TS 48 V  
**Capacity/output:** 38.4 kWh/18 kW  
**Client:** Matthias Kampert, dairy farmer  
**Business:** Agriculture, SME  
**Region, country:** Lüdinghausen, Germany



*"I'm delighted not only that the storage system manages so many cycles but also that I'll be able to expand it if we buy a robotic milking system."*

Matthias Kampert, owner of the farm

### A room with a vision

Sporthotel Schönblick in Meersburg has 18 rooms, a gym, and a spa area with a sauna and jacuzzi, as well as a heated outdoor swimming pool and a charging station for electric vehicles. To save on heating costs, a combined heat and power (CHP) unit is already in operation. The next step is to drastically reduce the electricity costs, because with several thousand guests each year, power consumption is not only very high but volatile as well. The solution: a high-performance, reliable storage system with a high depth of discharge in combination with a PV installation to produce more power in future and to enable them to consume more of the electricity generated by the CHP unit.

**Storage system type:** TS 48 V  
**Capacity/output:** 38.4 kWh/18 kW  
**Client:** Sporthotel Schönblick  
**Business:** Hospitality, SME  
**Region, country:** Lake Constance, Germany



*"My objective was to stop receiving power bills. The storage system helps to make that a reality. I don't even notice it happening – and that's a good thing."*

Alfred Nebel, operator

### **High performance without compromise**

Our Small Commercial storage systems are optimised for continuous use in commercial enterprises. With a maximum power rating of 1 C, they can be fully charged or discharged within just one hour, and our efficient balancing systems also ensure an efficiency of up to 98%. Top performance that you can rely on at all times.



### **Impressive efficiency**

A high energy density thanks to high-quality battery cells, 100% depth of discharge, and a system and performance guarantee of up to 10 years mean our storage systems are a safe investment in an independent energy future. Choose efficiency that pays off for your company and for the environment.



### **High safety**

With prismatic battery cells from Samsung SDI, permanent monitoring of all system components, and extensive protection mechanisms, our energy storage systems meet the highest safety standards – so you can be sure that your independent energy supply is secured at all times.



### **Long lifespan**

Innovative technology "Made in Germany", first-rate, high-quality components – such as our prismatic Samsung SDI battery cells – and efficient balancing and control systems give our energy storage systems a lifespan of up to 30 years and 8,000 full cycles. Plan your electricity supply for the long term – just like we do.



***Our storage systems ensure your company is fit for the future – with first-rate performance, financial certainty and reliable components.***

## Storage technology

# Greater than the sum of its parts

The individual components and the way they interact are a key factor in the performance, lifespan and safety of a storage system. With this in mind, we exclusively use high-quality components and innovative in-house developments. This includes high-performance prismatic cells from our partner Samsung SDI, our efficient ABO or DBO control systems, inverters from SMA, and robust cabinet systems to protect against mechanical influences. All of our systems are produced in Europe's first car-

bon-neutral gigafactory for energy storage systems, in Lutherstadt Wittenberg. Because we believe that climate protection and the active switch to sustainable energy begin with manufacturing. And, of course, every battery module undergoes detailed inspection on our own end-of-line test track prior to delivery. Our storage systems are characterised by first-class performance, efficiency and cost-effectiveness – so you can expect reliable performance at all times without worrying about the bill.



### Battery module

Our battery modules are the heart of our storage systems. Depending on the model, a module consists of 14 or 22 battery cells connected in series. In addition, our specially developed integrated balancing system (Active Battery Optimizer/DynamiX Battery Optimizer) controls the charging and discharging of each individual cell and ensures outstanding efficiency of up to 98%.



### Active power unit (APU)

The APU is part of our battery management system and provides built-in protection of the battery system at cell and module level. It continuously monitors for safety as well as the state of charge and the ageing of the battery cells, and enables communication with all other control components.

### a) Overcharge safety device (OSD)

Automatically interrupts the current if a cell is overloaded.

### b) Overpressure valve

Opens in the event of overpressure at an automatic threshold.

### c) Ceramic protective layer (SFL)

Protective layer on the anode to prevent short circuit within the cell. Ensures safety by reducing ageing mechanisms.

### d) Safety fuse (CID)

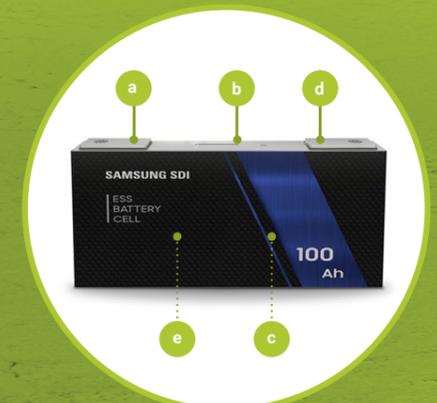
Prevents overloading of the cell by automatically cutting off the power in the event of short circuit or overcurrent.

### e) Nail safety device (NSD)

Protection against short circuit in the event of mechanical damage to the cell.

### Samsung SDI cell

We exclusively use lithium-NMC cells from our partner SAMSUNG SDI, which were specifically developed for use in stationary energy storage systems. For lifespan, special safety mechanisms and energy density, these cells offer uniquely impressive performance. They also boast a recycling rate of over 90%.



## TS 48 V

### The flexible one: a plus for performance



**Modular expansion in 4.8 kWh units**

**Up to 8,000 full cycles**

**Flexible configuration and expansion**

**Charging speed 1C\***

**Safe cell technology**

\* The C-rate indicates how quickly a storage system can be charged or discharged. 1C means that a storage system can be fully charged or discharged within an hour.

#### As versatile as your requirements

Our TS 48 V lithium storage system offers maximum flexibility and can be optimally adapted to every application. State-of-the-art prismatic lithium battery cells from Samsung SDI and innovative technologies such as the Active Battery Optimizer ensure maximum efficiency and performance. With a lifespan of up to 30 years or 8,000 full cycles and a potential continuous power rating of 1C, the TS 48 V offers investment security and economic returns.

The modular structure makes it easy to replace individual battery modules for flexible capacity expansion. As your company grows, we'll always have the right storage solutions for you.

#### Sunny Island inverter and energy management system

The inverter from our partner SMA forms the interface between generation and storage, offering top performance in both on-grid and off-grid installations. The high degree of protection, broad temperature range and extreme overload capacity ensure top safety at all times, while the intelligent load and energy management safeguards operation even in critical situations.

#### Overview of areas of application

- Self-consumption optimisation
- Back-up power
- PV-diesel hybrid optimisation
- Off-grid
- Time of use
- Charging station control
- Micro-grid
- Forecast-based charging
- Ancillary services
- Zero feed-in
- Direct marketer interface

## TS HV 30 E

### The new benchmark for commercial storage systems



**Optimised for continuous use**

**Your choice of energy management system**

**Compact design, reduced space requirements**

**10-year system and performance guarantee**

**Charging speed of up to 1C\***

\* The C-rate indicates how quickly a storage system can be charged or discharged. 1C means that a storage system can be fully charged or discharged within an hour.

#### Overview of areas of application

- Free Basic version:**
- Self-consumption optimisation
  - Physical peak shaving
  - Zero feed-in
  - Load control
  - Generation control
  - Charging station control\*

#### Fee-based Pro version:

- RLM peak shaving
- Multi-use\*\*
- Charging station control
- Forecast-based charging
- Time of use
- Direct marketer interface\*\*\*

#### Suitable for every application

Whether you want to use your storage system for standard applications like self-consumption optimisation and peak shaving, controlling your charging stations, or using different applications in parallel with the multi-use function, the TS HV 30 E is the battery storage system for every application.

Its advanced, cost-optimised design ensures unbeatable cost efficiency without compromising on quality and performance. At the same time, the TS HV 30 E is extremely robust, suitable for even the toughest of tasks, and one of the most durable and high-performance products on the market.

#### Your choice of energy management

The energy management system already integrated into the SUNNY TRIPOWER X inverter from our partner SMA is particularly suited to standard applications such as self-consumption optimisation or peak shaving, for example.

And the Pro version with our TESVOLT EMS even meets complex requirements such as forecast-based charging, the controlling of charging stations or multi-use functionality for combining different applications. We have the right system for you, whatever the application.

\* Additional project planning costs for extra charging stations.

\*\* Combination of two operational management strategies: self-consumption optimisation (SCO) with peak shaving (physical or RLM PS), SCO with time of use (ToU) or ToU with PS.

\*\*\* Project-based

*Control and monitoring made easy*

# *Digital. Integrated. Individual.*

*Energy flows can be recorded, controlled and monitored with the innovative TESVOLT energy management system, which consists of the TESVOLT Energy Manager and the myTESWORLD portal. By configuring individual operational management strategies, you can combine a wide range of applications and perfectly adapt the system to your needs.*



**Get to know the  
myTESWORLD  
portal!**



**The TESVOLT energy management system  
Comprehensive. Powerful. Efficient.**

### **Tailored to your needs**

The free Basic version of the TESVOLT energy management system already covers traditional requirements such as self-consumption optimisation and straight-forward charging station control. However, it is in the Pro version that the EMS really comes into its own, with special features tailored to individual needs. Enter a world of transparency and control.

### **Fully digital**

All generators and consumers on the TESVOLT compatibility list can be visualised in the myTESWORLD portal via a Modbus protocol.

### **Maximum efficiency and cost-effectiveness**

Numerous energy services ensure the optimisation of local energy consumption and load control (e.g. charging stations).

### **Absolute transparency**

All generators and consumers are visualised in the myTESWORLD portal and in the app. Energy data can be stored and evaluated.

### **Local networking, global thinking**

Our vision: all storage and generator systems are networked in a virtual combined storage power plant irrespective of location, while excess electricity is jointly marketed on the electricity exchange.



# TESVOLT services Plan your independence

Choosing the right storage system is not an easy matter. That's why we not only offer you extensive guarantees, we have also developed a series of simple tools so you can make a wide range of calculations and select the product from our portfolio that's right for you.

### Guarantees

In our storage systems, safety and quality take top priority. We are committed to trusting collaboration with accredited partners, first-rate components and comprehensive performance testing. That's why we provide you with a 10-year system and performance guarantee on new storage systems.



### TESVOLT LCOS calculator

It's not just the price that determines whether a storage system is worthwhile. More important is the levelised cost of storage (LCOS). This considers all the costs that arise during the lifespan of the storage system as well as the energy generated, so it represents the true price of a kilowatt hour of electricity drawn from the storage system.

Our LCOS calculator allows you to calculate these actual costs for a stored kilowatt hour of electricity based on a TS HV 80 E compared to your chosen storage system. The calculation is based on the costs for the complete storage system, consisting of the battery and battery inverter, as well as the relevant depth of discharge [DOD], the system efficiency [%], and the energy content [nominal capacity in kWh] of the storage system.

*For a world  
in which everyone  
can chose to  
use green energy.*

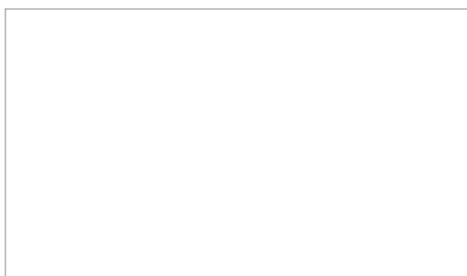
TESVOLT  
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# Free to go green.

TESVOLT AG is an innovation and market leader for commercial and industrial energy storage system solutions in Germany and Europe. As an agile company, it enables its customers to reduce their dependence on power companies and play an active part in the energy transition thanks to intelligent lithium storage systems.

Excellent quality, TÜV-certified safety and a wide range of capacities – from 10 kWh to 20 MWh – meet even the highest product demands.

All storage systems are series-produced in the carbon-neutral TESVOLT gigafactory in Lutherstadt Wittenberg – from where they are delivered worldwide.



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**Subject to technical changes. Errors excepted. All the services described are offered in selected markets only. Ask your TESVOLT Field Service Team at any time.**

This brochure is strictly informational and is not legally binding. The exact specifications and/or product features (particularly in the case of further development of the products) may differ somewhat from the information provided here. Subject to errors and changes. Please read the safety and installation instructions carefully and in full before using the product. Purchases are subject to the current guarantee policies and the general terms and conditions of delivery and business of TESVOLT AG.

You will need to register on the manufacturer's myTESWORLD portal (<https://mytesworld.tesvolt.com>) before you can use the TESVOLT Energy Manager energy management system (EMS). To use the Data Manager M energy management system (EMS), you will need to register on the Sunny Portal powered by ennexOS and run by the manufacturer SMA.

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