

# SOLAR INVESTOR'S GUIDE



SIG 1/2026

## C&I storage systems

planning — installation — safety



photovoltaik Schwarzbirger



photo: Miltred Klaus

# C&I-Storage – cutting overheads, building resilience

Energy costs matter. They shape competitiveness, whether a company is trading internationally or serving the local market. And with fossil and nuclear prices heading in only one direction, renewable energy from sun and wind is looking less like an alternative and more like the smart money.

Solar PV is particularly attractive, affordable to plan and install, and adaptable to whatever space a business has available, be it rooftops, facades or underused land. Pair it with a capable commercial storage system and energy bills can come down considerably.

Payback periods typically range from three to eight years, depending on how many revenue streams the storage taps into. A single unit can run several at once (the multi-use approach) and this is where the real value lies.

Most C&I storage systems today do more than one job. They maximise use of rooftop solar, shave peak loads, snap up cheap grid power when it's available, smooth frequency fluctuations and keep the lights on when the grid falters. In short, they earn their keep.

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The Austrian company began building car battery chargers after the war. In 2025 it unveiled the Reserva energy storage system.

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## PREVIEW SIG 2/2026

### O&M for solar parks

Our next SIG will provide detailed insights into the operation and maintenance of solar parks and large storage batteries supporting the grid. To limit risks and damage, professional analysis, care and repair strategies are essential. It will be published on **7 April 2026**.



photo: EMC-direct

Control is digital, with AI managing the complexity behind the scenes. Better still, these systems can grow and adapt alongside the business in capacity, output and functionality, future-proofing the investment.

The upshot: the energy transition moves forward in commerce and industry while costs come down. Europe strengthens its hand in global competition, shoring up regional value creation and hundreds of thousands of jobs.

I wish you an informative and insightful read.

*Heiko Schwarzburger*

Heiko Schwarzburger  
editor-in-chief  
PV Europe & photovoltaik

## E-PAPER SOLAR INVESTORS GUIDE

### Minimising risks of solar projects

Investing in solar parks, expansive rooftop systems and cutting-edge battery storage demands patience and a truly long-term perspective. Such projects are typically designed to operate for twenty years or more, making it crucial to safeguard them against a broad spectrum of risks over their entire lifespan – a priority that remains all too often underestimated.

This issue of our Solar Investors Guide centres on the topic of risk. Our aim is not to cause concern, but to raise awareness and offer practical, actionable guidance for managing these challenges with professionalism.

We pay particular attention to technical aspects and the exceptional quality of the components used. Time and again, inspection engineers find that durability and high quality are not given enough consideration when selecting solar modules, inverters and storage batteries. As the saying goes, buy cheap, buy twice.

We also share advice on protecting your investment from unauthorised access – whether from thieves or from criminals seeking to access operational data and plant controls via the internet. The surge in cyberattacks over the past three years underscores just how critical this issue has become.

► <https://www.pveurope.eu/solar-investors-guide-6-minimising-risks-0>

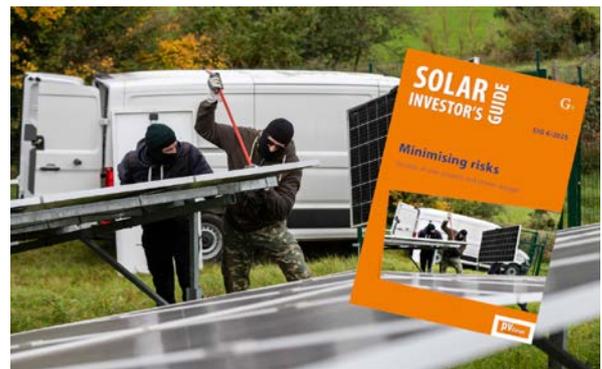


photo: Tobias Langner Branding & Design

In 2025, Solarwatt introduced a new commercial storage system.



photo: Hans Engels/Solarwatt



photo: Heiko Schwarzburger

Raoul Rotarius is Marketing Director Europe at Sofar Solar. He presents the new commercial storage solution PowerIn.

# More businesses are betting on battery storage

**Trends & products** ■ The market is developing dynamically across Europe as the supplier field expands with flexible turnkey systems, intelligent software and energy trading solutions. The result: lower electricity costs, rapid payback and smarter use of solar power in commercial operations.

by Niels H. Petersen and Heiko Schwarzburger

Germany leads the commercial battery storage market, with systems delivering around 1.14 gigawatt-hours of capacity by the end of 2025. Compared with residential storage (18.55 gigawatt-hours) and utility-scale systems (3.15 gigawatt-hours), the C&I segment is still the smaller sibling but it's growing up fast, having roughly doubled in a single year.

So what counts as commercial storage? Systems typically range from 30 kilowatts to one megawatt, with capacities between 30 kilowatt-hours and one megawatt hour. Their primary job is helping businesses make the most of the solar power they generate on site.

That's only part of the picture. Peak shaving is another compelling driver, smoothing out the demand spikes that occur when heavy machinery kicks in or a fleet of company EVs plugs in to charge. And increasingly, smart tariffs and merchant trading of solar power are opening up new revenue streams, though much depends on the regulatory setup in each country.

## Rapid payback

This is one reason Solarwatt has expanded its product portfolio to include storage solutions for commercial and industrial applications. The new systems offer flexible deployment options and help businesses trim their energy costs. Storage units and matching inverters are supplied as complete packages. "We are now in a position to serve large solar projects with in-

tegrated storage from a single source," explains Peter Bachmann, Manager at Solarwatt.

He has observed that more and more companies are opting for solar systems with battery storage to reduce their dependence on expensive grid electricity. "On average, a commercial solar installation with battery storage pays for itself in around seven years," he notes.

## AC or DC hybrid?

Further savings are possible through dynamic electricity tariffs, which already exist in many countries and have recently also arrived in Germany. Companies buy power from the grid when prices are low. During periods of weak demand, battery storage systems can bank this cheaper energy for later use. This can save businesses several thousand euros per year," Bachmann explains.

The new commercial storage systems come in both AC and DC hybrid variants. The AC unit delivers 125 kilowatts and can store 261 kilowatt-hours, with a water-cooled design that enables higher current throughput.

The air-cooled DC hybrid system reaches up to 60 kilowatts and 200 kilowatt-hours. Both types are suitable for retrofitting, and up to ten units can be connected in parallel. The systems are backup-power capable and built to the highest safety standards, with protection against overheating and fire.

photo: Helge Schwarzbinger



Solar Sofar's PowerIn is a small commercial storage solution.

## VIDEOS PV ON TOUR

### Conduct – enhanced protection for solar installations

PV on Tour – Conduct Technical Solutions is showcasing not only the PVshelter but also a smaller version, a protective enclosure designed for inverters up to 30 kW. New is the Batteryshelter, which enables the safe outdoor installation of home storage systems.

International Sales Director Steven Wirtz explains, how this innovation protects the battery from the elements, explosions and fires, while also helping to deter theft and vandalism. The RoofSupport cable tray system keeps rooftop cabling well organised.

### Solis – new C&I storage package

PV on Tour – Solis introduces its new Evercore series, a storage system offering 100 kilowatts of power and 120 kilowatt-hours of capacity, paired with a hybrid inverter rated at either 50 or 60 kilowatts. The larger version delivers up to 261 kilowatt-hours of storage. Both models integrate inverter, battery and energy management system in a single package.

Watch those videos here:

▶ <https://www.pveurope.eu/videos/pv-on-tour>

## Software simplifies planning

The units can be installed outdoors without shelter, which trims installation costs. An integrated energy management system monitors energy flows, optimises self-consumption and makes the most of dynamic tariffs.

Solarwatt has also developed new software to help businesses plan their solar installations with commercial storage. The tool analyses a company's load profile and calculates the optimal system size and storage capacity. It simulates key metrics such as return on equity, degree of self-sufficiency and payback period. It can also assess the retrofit or future dimensioning of EV charging infrastructure.

## An example from Saxony

One example: a company building in Saxony was equipped with photovoltaics and battery storage. The project saw total of 698 solar modules with a combined output of 313.65 kilowatts installed on the roofs.

The battery storage system buffers 215 kilowatt-hours and the total investment comes in at around half a million euros. The result: 63.8 percent of the solar electricity is now used on site, covering nearly 52 percent of the company's electricity needs.

## Manufacturers hoping for tailwinds

Large grid-scale storage still dominates the market in many EU countries, while smaller systems for commercial and industrial use are still finding their feet. Unlocking their full potential will require clearing barriers and adapting regulations. Germany, as so often in the energy transition, is out in front.

The EU aims to further simplify the deployment of commercial storage systems and reduce bureaucratic hurdles. Both industry and storage providers are calling for permitting processes to be streamlined and accelerated.

## Fresh momentum from the energy market

Dynamic electricity tariffs are giving C&I storage fresh momentum. When electricity prices respond to supply and demand, storage systems act as a buff-

## SOLAR INVESTORS GUIDE PODCAST

### Cybersecurity – Villains come via the Internet

Cybersecurity is a burning issue for inverters and solar storage systems. Uri Sadot is Cybersecurity Program Director at SolarEdge and Chairman of Digitalization at the European industry association SolarPower Europe. In this talk, he explains risks and incidents and analyzes gaps in the security of systems and installations. He says:

Those who take pre-cautions avoid criminal access. Those who wait risk significant damage – from economic losses to system failure and grid disruptions. Duration of the podcast: 1:09 hours

▶ <https://www.pveurope.eu/podcast>



photo: SP/Enivate



photo: Vosatz Media



photo: Vosatz Media



photo: Vosatz Media



photo: Vosatz Media

er, absorbing excess capacity from the grid during periods of surplus power and low prices, then feeding stored energy back in when prices rise due to supply shortfalls. This helps support voltage and frequency across the network.

### Multi-use in practice

Most commercial storage systems perform several functions at once, a concept known as multi-use. They optimise self-consumption of rooftop so-

lar, shave peak loads, buy in low-cost grid electricity, smooth out frequency fluctuations and protect businesses against blackouts.

Control is digital and artificial intelligence supports the management of complex processes. Yet another advantage: these systems can evolve alongside the business, adapting in power output, storage capacity and functionality alike.

► <https://www.pveurope.eu/solar-storage>

## CEO TALKS & PRODUCTS ON VIDEO

### AkkuSys – Smart inverter with innovative system architecture

PV Guided Tours – Midea's new inverter combines power electronics with energy management in one device. AkkuSys demonstrates how this integration reshapes system architecture and benefits both installers and end users. A closer look behind the technology reveals its potential for future applications.

### Atmoce – Low voltages increase safety

PV Guided Tours – Atmoce presents two new innovative products. It is a micro inverter and a low-voltage battery. The M-ELV battery operates at less than 30 volts, increasing safety for installers and simplifying day-to-day work. Intelligent energy management system connects both components. The low-voltage technology is designed to benefit private households as well as commercial users.

### EcoFlow – More intelligence, more yield

PV Guided Tours – Intelligent systems are replacing standalone components – AI now manages storage systems, wall boxes and energy flows to make the most of solar power. It's not science fiction, it's already here. Still sceptical? Prepare to be surprised!

### Fenecon – Innovations driving C&I storage

CEO Talk – The market for home storage is sluggish while C&I and large-scale storage are slowly on the rise. To increase sales, the right strategy is essential. The key question: What factors determine success on the market? Franz-Josef Feilmeier, CEO of Fenecon explains.

### Fenecon – Three new storage systems for C&I

PV Guided Tours – Fenecon presents the Industrial XL with 1.5 megawatts and four megawatt hours, a new container format for large-scale projects. Also on offer: a new flexible power pack for SMEs and the updated Commercial 92 in an innovative split tower design.

### Huawei FusionSolar – Storage system with hybrid cooling technology

PV Guided Tours – The system supplies three-phase backup power and utilises an intelligent EMS. The focus is on safety and efficiency clearly - also for the new, hybrid-cooled Luna2000-215kWh battery storage system for C&I. It has been awarded the highest safety certificate by TÜV Rheinland.

### Huawei FusionSolar – Utility storage with Prime security certificate

PV Guided Tours – Huawei FusionSolar is unveiling its new Luna2000 utility-scale battery storage system with a capacity of five MWh. The current 4.5 MWh systems have already received the Prime safety certificate from TÜV Rheinland.

### SAX Power – Efficient all-round AC storage without inverter

PV Guided Tours – SAX Power offers an AC storage system that operates without a battery inverter. It is also a multi-talent – suitable for both new solar systems and retrofits. Is this storage system really as simple as the provider promises?

### Sigenery – New App optimises energy management with AI

PV Guided Tours – The new app uses AI to optimise energy management, with new features that support the integration of DC optimisers, bidirectional charging and energy trading. Good news for cost-conscious users, the second-generation hybrid inverter is now available, with battery packs and easy retrofit options.

### Sofar – New C&I storage systems

CEO Talk – Power storage for C&I applications is booming. Sofar is expanding its portfolio with the launch of the new PowerIn system this year, and is ramping up sales across Europe. What's the strategy behind this push? That's what we're about to explore.

### Tesvolt – New outdoor storage container

PV Guided Tours – The new Tesvolt Forton battery system allows commercial enterprises to participate profitably in energy trading for the first time. Thanks to high-temperature cells with LFP technology, classic applications such as peak load capping and solar self-consumption are now more cost-effective. A 15-year performance guarantee with two full cycles per day ensures that the investment is secure.

Watch all the videos here:

► <https://www.pveurope.eu/videos/pv-guided-tours-2025>







photo: BayWa r.e. Solar Trade

The warehouses need to be cleared quickly to make room for new goods.

Forty years in solar business, Kai Lippert does really know, what he is talking about. He has seen the rising of PV industry and value chains all over Europe. “Above all, the past years have taught us that the PV market moves in cycles, but always with a clear upward trend”, he says. “Availability and prices for key components will continue to fluctuate, but the industry will consolidate, and prices should stabilise over time.”

### Forty years of experience

In 1985 he founded EWS, a famous wholesaler located near the German-Danish frontier. “The most important factor has always been strong relationships with our customers, namely the installers, and with our suppliers”, Lippert resumes. “We carefully select the products and services we offer, providing only what we truly believe in. We share values with our business partners, which allows us to deliver on our promises authentically throughout the value chain.”

Lippert has worked as CEO of EWS since the beginning. For thirty years, he has worked with international brands increasingly from Asia. “Business practices among Chinese suppliers are just as varied as those among European suppliers. There are opportunists chasing quick profits in China, but no more than here”, the expert explains. “In PV, we’ve seen many international brands come and go – Kyocera, Shell Solar, BP Solar, Siemens Solar, to name a few.”

### Detailed due diligence process

Now it comes to storage systems, a new category of products. “We have developed a detailed due diligence process to evaluate potential suppliers and compare them with our standards. We analyse more than 35 criteria that determine the quality of cooperation. We share these objective assessments regularly with all our suppliers, making improvement areas transparent and

understandable. Our focus is on long-term partnerships – that’s the foundation of our success.”

He observed that storage in C&I will come, but slowly. “We’ve been developing this sector for three or four years, offering training and adapting our software. But interest in commercial systems is still growing very slowly. The economics of self-consumption in C&I are compelling, but we need to communicate this more effectively to potential operators.”

### More advice for customers

That means: Commercial customers need more advice, as their projects are more complex than residential ones. The dealers provide installers and planners with the necessary arguments in partnership with their suppliers and train them in how to use these products. Private PV systems remain an important pillar for local trades, but the potential in the commercial sector is much greater and largely untapped.

Europe’s main wholesaler in solar business is BayWa r.e. Solar Trade from Tübingen in southwest Germany. “We are operating in a buyer’s market: prices are exceptionally low, and in many countries the return on investment has never been so favourable”, says CEO Frank Jessel. “Yet demand remains muted. With prices at this level, now would be the optimal moment to invest in a solar system, ideally including additional components such as storage, a wallbox, a heat pump and an energy management system.”

### Strong partners in C&I segment

In his analysis he recognises a decline in private installations. But there is light in the market, too, mainly by ramping up sales of larger storage solutions. “These include industrial-scale or commercial storage systems for C&I customers”, he explains. “Last August we announced an exclusive distribution partnership with WHES for the European market. This has broadened our



photo: EVYS

Delivery logistics is a huge challenge for the solar business.



photo: Bettina Meyer

Storage systems are the most important revenue generator in solar wholesale business.

portfolio to include premium battery storage systems, which we will distribute in the key European markets going forward, with exclusive contracts in Germany, Italy, Belgium, Luxembourg, Spain, Portugal, Austria, Switzerland, plus Lithuania, Greece, Albania and Kosovo.”

In many countries the installers are increasingly focusing on the C&I segment, but entry is not straightforward. The requirements are very different from private installations. “We are seeing a clear shift in that direction in the storage market”, Jessel confirms. “In residential, demand continues to grow for high-capacity home storage systems with greater energy density. Overall, the trend is towards larger and more capable systems. We are working with partners to develop innovative concepts and are investing in a range of initiatives to help our installers benefit from this shift.”

### New products from BYD and Fronius

For many years, BayWa r.e. Solar Trade has been a strong partner of BYD and Fronius. Since summer the new Reserva and the HVB storage units of those partners are on sale. At the Munich trade fair, BYD launched its new HVB storage product. Jessel reports: “This caused demand for older BYD models to collapse almost overnight. HVB has nearly displaced its predecessors.”

Another wholesaler with long experience and activity in many European countries is IBC Solar from Bavaria. “The benefits of storage for commercial and industrial investors are clear and visible”, says Founder and CEO Udo Möhrstedt. “But it should be moving faster.”

### Growing pressure on investors

Last he year he gave the leadership to his son, Julius Möhrstedt. “I think businesses operate from a different logic than we do in the industry. For homeowners, solar plus storage pays off over ten to twelve years”, Julius Möhrstedt explains. “Companies often expect returns within four to five years, typically matching the typical tenure of managing directors. Why would they invest in benefits they might never see? That’s not the only reason, but it’s a factor.”

Still, the appeal of predictable energy costs and avoided grid fees is making self-supply increasingly attractive. It just takes time for the message to spread. “Falling prices are helping the market along”, Julius Möhrstedt hopes. “Since 2018, retail storage prices have fallen by at least half. That’s a remarkable drop. As specialist distributors, our challenge is to keep operations stable despite falling prices and rising costs.”



photo: Bettina Mayer

Solar modules, inverters and storage systems are on sale from regional warehouses.

## Cooperation with Fenecon

IBC Solar cooperates with Fenecon. The Bavarian company is specialised on C&I storage and was one of the pioneers ten years ago. But innovations never stop. “We have quite some innovations in the hardware area. We have a new commercial system, 50 Kilowatt, backup ready, PV direct connection, and with stackable LFP battery modules, as the installers like to use them”, tells Franz-Josef Feilmeyer, founder and CEO of Fenecon. “Our commercial systems are now quite able for clustering, even more than one megawatt-hour in the standard systems, as the wholesalers and installers know it. And of course, for the large systems, which we built ourselves based on EV batteries, there we have different product types for different applications. Quite interesting market right now.”

## Importance of service

Quite often underestimated is the quality of after-sales service in C&I business. “If you’re not going to have after-sales service, then it’s going to be very difficult after half a year to convince investors to continue buying your product”, warns Kenneth Frey, President for Europe at SofarSolar. The Chinese company develops and supplies C&I storage solutions and power electronics for AC and DC installation. “Our focus goes clearly there that our technical director basically has more or less the majority of the manpower in his team. The split between pre-sales and after-sales shows a strong tendency to after-sales. Our concept is, of course, to work with our customers to make sure that the installer has the right support.”

- ▶ <https://solar-distribution.baywa-re.com/en/>
- ▶ <https://pv.de/en>
- ▶ <https://www.ibt-solar.com/>
- ▶ <https://fenecon.de/en>
- ▶ <https://sofarsolar.eu/>

## SOLAR INVESTORS GUIDE PODCAST

### Supply chains increasingly going green

Specialist retailer BayWa r.e. Solar Trade is setting standards for emissions-free logistics. Suppliers, transportation, buildings, and packaging are all in focus, with significant successes already achieved. Dominik Dohr is Global Head Supply Chain and Logistics at BayWa r.e. Solar Trade. He has a clear vision: Renewable energy and sustainability go hand in hand. Europe’s largest solar retailer wants to cut emissions across the board – in internal processes, logistics, and supply chains.

▶ <https://www.pveurope.eu/podcast>



photo: BayWa r.e. Solar Trade private

Installation of a commercial storage system outside the factory.



# Fire protection at the heart of battery storage

**Heat** ■ Lithium-ion batteries are subject to especially stringent requirements for fire protection and containment. Pre-configured containers provide comprehensive safety for your investment.

**a field report**



photo: Denios

Stationary battery storage systems are fundamental to the future of e-mobility. They reduce peak loads, enable greater use of renewable energy and minimise the need for grid expansion. These are key factors in building robust, high-performance fast-charging infrastructure.

Lithium-ion storage offers high energy density, but also brings fire and explosion risks, for example from thermal reactions triggered by external impacts or technical faults. Fire-protected enclosures, such as technical containers, shield the storage system from external hazards and protect the environment in case of an incident. As part of a holistic fire protection strategy, these ready-to-connect solutions also simplify regulatory compliance and accelerate permitting.

### Don't underestimate risks

Even with extensive safety mechanisms at both the cell and system level, lithium-ion storage systems remain susceptible to thermal runaway (TR), an un-

controlled, self-reinforcing process triggered by thermal, electrical or mechanical stress. Within seconds, temperatures can soar to several hundred degrees Celsius, releasing flammable gas mixtures.

This can result in fires or explosions that are particularly difficult to control, as the reaction occurs within the cells and continually releases new energy. Water cannot be used to extinguish such fires. Only cooling can help to prevent the spread to adjacent cells (propagation).

### Low fire risk

High-quality storage systems that meet technical standards and are professionally installed have a very low intrinsic fire risk, especially when operated within design parameters. The situation becomes critical, however, if an external fire reaches the storage system.

Stored energy can significantly intensify a fire event. It is therefore essential to ensure that fire cannot spread to or from the storage system, endangering adjacent buildings or facilities.

### Building regulations

In Germany, no specific building regulations currently exist for stationary battery storage systems. As a result, projects are typically classified as (unregulated) special structures by the relevant building authority following expert consultation.

As part of the building permit process, a fire protection certificate in accordance with Section 11 MBauVorlV, the German model building regulation, is generally required. This is reviewed by the local building authority or by fire protection engineers or experts, and may take the form of a site-specific fire protection concept.

Compliance with permit requirements remains the operator's responsibility. For property protection, additional requirements may arise beyond building law. Involving the insurer early in planning is advisable.

### Structural fire protection

Structural fire protection is central to any comprehensive fire safety concept for stationary battery storage. Measures must be tailored to local conditions and protection goals.

### EXPERT VIDEO

#### Denios: Storing energy safely

PV Guided Tours: The new integrated system Power Store, combining a C&I battery storage unit with a safety container, offers comprehensive protection in the event of thermal runaway. When designing storage systems for commercial applications, both customised system design and rapid amortisation are essential considerations. Watch the video and learn more!

► <https://www.pveurope.eu/videos/pv-guided-tours-2025>



photo: Vorschlag Media

The fire protection certificate requires information on the fire performance of materials (material class) and components (fire resistance class). This ensures that all elements can withstand fire for a defined period without losing structural integrity. All materials undergo rigorous testing and are certified to relevant standards, such as DIN 4102 or EN 13501.

## The importance of fire compartments

A further key aspect is the creation of fire compartments. Dividing a building or site into fire compartments effectively contains the spread of fire and smoke.

This approach is the most effective way to minimise damage, preventing fire from spreading unchecked throughout a building or to adjacent fire loads. Each compartment is designed to contain fire for a specified time, providing emergency services with valuable time and limiting damage. Fire compartments are established through structural measures, such as fire protection rooms, or by maintaining safety distances.

## Individual approval

If no certificate of suitability is available, individual approval (ZiE) can be sought as a project-specific building authority permit. This route is used when there is no harmonised standard or generally accepted technical rule, and the product is needed only for a specific project.

The time from application to approval depends on product complexity and the extent of review. This process can take several months depending on the federal state.

## Technical fire protection

Technical fire protection is another essential element of a holistic fire safety concept for stationary battery storage. It encompasses a range of systems and devices that work together to detect, extinguish and continuously monitor fires. Fire alarm systems play a central role. Smoke and heat detectors in the battery storage area detect and locate fires, enabling rapid response and minimising damage, especially to the surroundings.



Installation of a commercial storage system outside the factory.

## Certified containers

A steel-constructed technical container with fire-resistant wall panels protects the storage system from external fire hazards. Some models feature bidirectional fire protection to also contain internal fire events. This design minimises the required footprint to the dimensions of the fire protection shell, allowing installation near buildings or in densely built-up areas.

If the container manufacturer provides a European or national certificate of suitability, such as a European Technical Assessment (ETA) or a general building approval (abZ), structural fire protection is generally considered fulfilled. In Germany, this usually means the container provides 90 minutes of fire resistance, ensuring sufficient time to initiate effective countermeasures in the event of a fire.

## Integrating extinguishing systems

Extinguishing systems are another critical component. For battery storage, the cooling effect is particularly important to slow thermal reactions or prevent the spread from one battery module to another. Water-based systems such as fine-spray sprinklers effectively fight fires, bind smoke gases and significantly reduce ambient temperature.

Other suitable extinguishing agents may also be used. Systems designed solely for fire suppression are not sufficient to control a major fire in the long term and serve only as a supplement. In sensitive water protection areas, measures to retain extinguishing water must be coordinated with the authorities.

## BMS must shut down quickly

Modern storage systems are equipped with a battery management system (BMS) that continuously monitors parameters such as cell temperature and charging/discharging currents. These data should be integrated into central system monitoring to enable early response to potential hazards. In the event of an incident, the BMS can automatically shut down the storage system to reduce further risk.

Rather than planning and installing all these measures individually, they are combined in a compact, pre-installed unit known as the technical container. Sensors continuously track smoke, temperature and the release of hazardous gases to identify risks early.

## Interfaces for emergency services

In a critical incident, extinguishing systems can be activated automatically to contain fires. Ventilation and extraction systems safely remove heat and gases, while pressure relief devices minimise the risk of explosions. By connecting to fire alarm systems and providing interfaces for emergency services, the technical container becomes a full-featured fire protection system that actively monitors the battery storage and responds rapidly in an emergency.

## Organisational fire protection

Organisational fire protection ensures a fast, effective response in an emergency. Training and instruction for personnel are fundamental.

Anyone working near battery storage systems must receive regular training on specific hazards and emergency procedures. Well-informed staff are able to respond quickly and correctly, helping to prevent damage and injury.

### Regular maintenance

Routine maintenance of both battery storage and fire protection equipment is crucial for reliable operation. Fire alarm systems, extinguishing systems and monitoring equipment must be checked and serviced at regular intervals.

Maintenance intervals are defined by both manufacturers and legal regulations. Relying on the manufacturer's maintenance service allows operators to focus on their core business.

## Fire protection infrastructure

A well-designed fire protection infrastructure enables effective and rapid fire-fighting. This includes providing suitable extinguishing agents and clearly marking access points for emergency services.

Effective emergency planning and alerting require reliable notification chains and close coordination with emergency services. Firefighters must have safe, quick access to the storage system, meaning access points must be clearly marked and unobstructed.

Information on specific fire hazards and the location of extinguishing agents should also be provided to emergency services. Collaboration and regular

drills with the fire brigade help prepare responders for emergencies and improve the effectiveness of rescue operations.

## Hand extinguishing is not sufficient

To reduce risk for emergency personnel, firefighters should not have to enter or open the battery room to introduce extinguishing or cooling agents. Suitable openings must be known and clearly labelled.

To extinguish fires near the battery storage at an early stage, fire extinguishers should be placed in visible and easily accessible locations. They are effective for fighting small, still-controllable fires before they spread to the storage system.

However, hand extinguishing is generally neither practical nor safe for stationary storage. Staff must be clearly instructed that fire extinguishers are primarily for external incipient fires and should not be used to fight a storage fire.

## Emergency and alarm systems

Alarm systems must be clearly defined and easily accessible to ensure rapid response in an emergency. All components of the fire alarm system should be connected to central monitoring.

The system must provide a reliable notification chain so that a fire can be detected and reported to a permanently staffed location at any time. Acoustic and visual alarms such as sirens and flashing lights should be installed to alert everyone near the facility.

## Detailed emergency plans

Comprehensive emergency plans, regularly reviewed and updated with emergency services, ensure smooth cooperation if an incident occurs. These plans should include the location of the battery storage system, specific fire risks, and available extinguishing agents, and should also be accessible to emergency services. Ongoing information exchange between the operator and emergency services is essential to discuss new developments, potential hazards and improvements.

## Technical containers in many variants

Denios has been recognised as an expert in hazardous materials storage and handling for nearly 40 years. In recent years, the company has expanded its expertise to the safe storage of lithium-ion batteries. From transport boxes and charging cabinets to technical containers for battery storage, Denios offers a comprehensive portfolio of solutions.

For stationary battery storage, Denios provides several concepts. Customers can choose technical containers with integrated battery storage ranging from compact systems with 80 kilowatt-hours to large-scale units exceeding 1.6 megawatt-hours, or containers for housing their own battery technology. Power Safe and Power Store

The walk-in Power Safe technical container features certified fire protection (REI 90/REI 120) and forms its own fire compartment, suitable for indoor and outdoor installation. The Power Store battery storage system consists of two non-walk-in, fire-protected compartments. The technical section houses secondary electronics such as inverters and air conditioning, while the battery section contains the storage technology. This separation minimises the risk of a fire in the technical section spreading to the battery compartment.

Both the Power Safe and Power Store models come with integrated battery storage. Denios also offers technical containers for integrating battery technology from other manufacturers, in which case the batteries are not included.

Denios technical containers stand out for their proven construction. They are modular, configurable and can be individually equipped with safety technology such as early fire detection, climate control, extinguishing, ventilation and extraction systems. Customers also benefit from free expert advice, comprehensive project support and reliable service and maintenance.

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photo: Denios

# The tiger's roar in lithium cell innovation

**BYD** ■ The Chinese tech giant is now a front-runner in energy storage and electric vehicles. Ten years ago, the company decided to build a modern battery cell factory. The author was there at the time and revisits a pivotal moment in BYD's rise.

by Heiko Schwarzbürger

Time tunnel: In May 2025 BYD celebrated 10 years of lithium-ion-batteries.



photo: Heiko Schwarzbürger



photo: Helko Schwarzbücher

The Hexagon: BYD's engineering center in Shenzhen.

For just over a decade, the storage industry has been powered and defined by lithium cells. Until then, lead-acid batteries set the standard – bulky, inefficient and loaded with toxic heavy metals. Not surprisingly, there was no talk of a true storage sector.

The real breakthrough for energy storage arrived with the emergence of solar power and lithium cells. Exactly ten years ago, the then little-known Chinese company BYD launched its first production line for lithium iron phosphate cells. Spanning nearly 600 metres, the line coated, wound, connected and completed cell components in a seamless roll-to-roll process.

### Over 50 tonnes of powder daily

The process was as follows: Each day saw over 50 tonnes of lithium and iron phosphate powder combined for cell production. The resulting slurry was applied to metal foils with high precision.

Graphite on copper foil acted as the negative electrode, with the coating thickness varying by no more than twelve micrometres – a reflection of the machines' accuracy. Each minute, 100 metres were coated, with each roll holding up to 6,000 metres.

After drying, the electrodes were wound together with a separator to keep them apart. This assembly was placed in an aluminium box, where a vacuum process removed air and water vapour before the cell was filled with an organic solvent as electrolyte and sealed by laser welding.

### Gigantic expansion

Over the years, this process has been further improved, refined and accelerated. In parallel, BYD introduced its Blade cells, which provide notable advantages in manufacturing and assembling battery modules. Today, the company ranks fifth among the world's largest lithium cell producers, behind CATL (China), LG (South Korea), Panasonic (Japan) and Samsung (South Korea).

In the modern era, the market is driven by the demands of electric vehicle manufacturers, a sector in which BYD has been active for more than a decade. In this field, the Chinese "tiger" has even surpassed Tesla and continues to gain market share.

### The first B-Box

In 2015, I visited the site with Franz-Josef Feilmeier, who had recently founded the energy storage company Fenecon. He saw the potential of the new lithium storage technology and became the first importer of BYD's battery box,

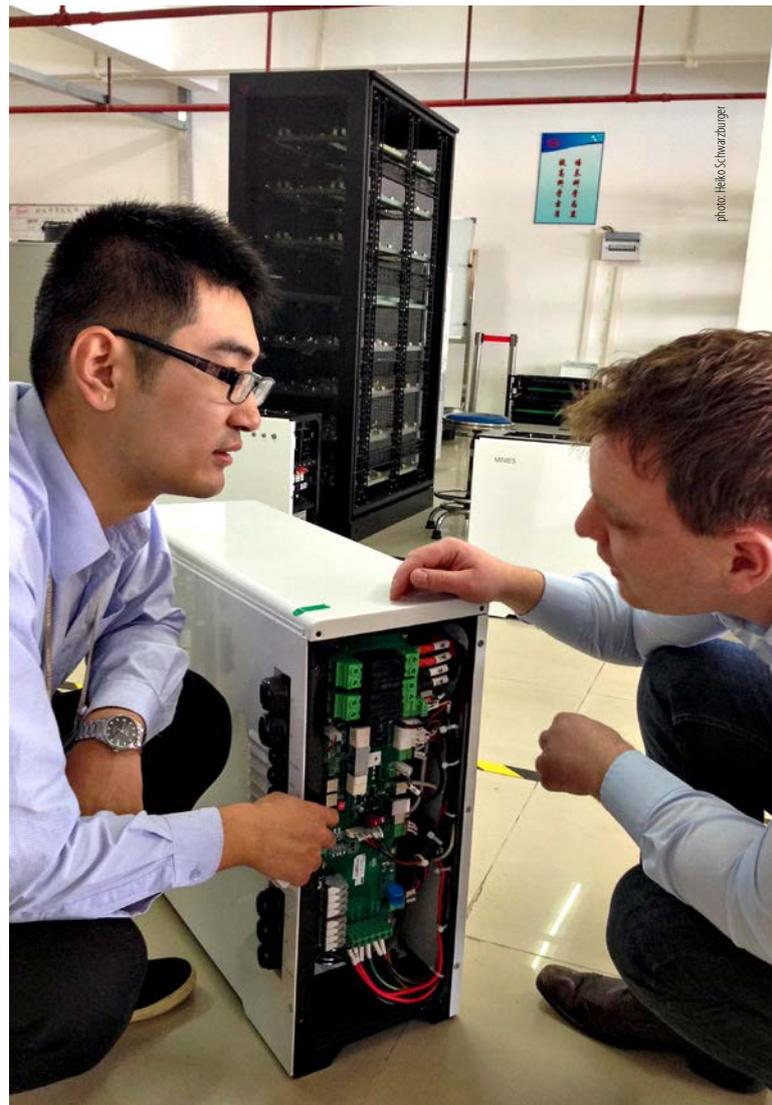


photo: Helko Schwarzbücher

Back in 2015: Discussion about first generation B-Box in Shenzhen with Franz-Josef Feilmeier (right) of Fenecon.

the B-Box. We tested this novel product in the lab and discussed its usability, features and potential.

At the invitation of our Chinese partners, we flew to Hong Kong, greeted the bronze statue of Bruce Lee on the Tsim Sha Tsui promenade and crossed the Kowloon hills to the border. In a modest kiosk between the enclave and mainland China, a customs officer from the People's Republic was dozing.

When she saw us, she woke up, looked at us sternly, but allowed us to pass into the Shenzhen Special Economic Zone without issue. Founded by Deng Xiaoping, it is now home to China's major tech corporations, a kind of Silicon Valley in the Middle Kingdom. To me, it feels more like the tiger cage of big business.

## Visionary decisions

Looking back over a decade, it's clear how forward-thinking BYD's managers were in recognising market opportunities and potential. The factory operated almost fully automatically. As in photovoltaics, Asian manufacturers aimed to lead cell and battery module production.

They have succeeded; no one doubts it now. At this year's Smarter E Europe in Munich, BYD showcased its impressive history, introducing the latest generation of the B-Box alongside numerous other milestones, including a new generation of Blade cells. It is clear that BYD counts among the world's most successful and innovative suppliers of lithium-based storage cells and modules.

BYD has consistently focused on cell and battery production, emphasising mass manufacturing and cost reduction. The DC battery is distributed through partners who integrate their own power electronics using hybrid inverters from Fronius, SMA or Kostal, or battery inverters for AC solutions.

## Rapid rise since 1995

BYD was founded in 1995 with start-up capital of a quarter of a million renminbi. Today, the group employs 900,000 people worldwide, including 100,000 in research and development. Annual revenue exceeded €100 billion in 2024; in 2015, it was just seven billion US dollars, or six billion euros.

The pace at which BYD advanced lithium technology is remarkable. By the end of 2015, a second production line was already operating, giving the company a manufacturing capacity of ten gigawatt-hours. By 2021, this had increased to 20 gigawatt-hours.

At that stage, BYD was still building its expertise in battery technology. The company produced lead-acid batteries and nickel-cadmium cells, and acted as an OEM supplier for around 300 different microbatteries (lithium polymer cells) used in electronics and mobile phones. Notably, BYD did not yet have its own brand.



The author (second right) with Franz-Josef Feilmeier of Fenecon (second left) during a reception at BYD HQ in 2015.



One of BYD's factories in Shenzhen near Hongkong.

## New launches from Munich

Things have changed significantly since then. At the Munich trade fair, BYD showcased a broad portfolio of new systems, all building on the proven and continuously developed Battery-Box.

The Battery-Box HVS plus is a home storage system for single-family houses. With capacities from 5.1 to 12.8 kilowatt-hours, it offers flexibility to meet a variety of needs. Up to three battery towers can be connected in parallel, providing up to 38.4 kilowatt-hours.

The modular plug-in system permits straightforward installation with no internal wiring, and can be expanded at any time. The charge and discharge power reaches up to 12.8 kilowatts per battery tower.

## Solutions for small businesses

The Battery-Box HVM plus was developed for small commercial operations. Three to eight battery modules provide 8.3 to 22.1 kilowatt-hours per tower. Three towers connected in parallel deliver up to 66 kilowatt-hours. This storage system supplies continuous currents up to 50 amperes and peak currents of 80 amperes. Integrated balancing optimises cell use and ensures long service life. With plug-and-play installation, the system is easy to expand.

The Battery-Box HVB offers up to 29.69 kilowatt-hours per system and uses the new Blade cells. As a result, the battery delivers high power density and is notably compact.

Each battery module weighs less than 30 kilograms and can be installed by one person. With efficiency above 95 percent and currents up to 30 amperes, each module forms part of a powerful and robust storage system.

► <https://www.bydbatterybox.com/>



BYD's first assembly line for lithium ion cells in 2015.

PowerMagic Mini is a storage product for commercial use by Sofar Solar.



photo: Heiko Schwarzbücher

# From chaos to control in peak load management

**Multi-use** ■ Commercial storage systems can help lower energy costs and reduce strain on the grid. But in day-to-day operations, every 15-minute metering interval and sudden surge in demand can make a real difference. In fact, power consumption spikes often lead to higher costs for businesses.

a field report

In industrial settings, it's not just the amount of electricity used that matters, but also the timing of when it's drawn from the grid. Short bursts in power demand, known as peak loads, can carry a significant cost for companies.

Energy prices are rising, grids are becoming more volatile and e-mobility is gaining ground in business operations, all of which is putting peak load management firmly in the spotlight. Commercial storage offers an effective way to cut energy costs, improve predictability and boost supply security.

## Energy demand fluctuates sharply

For many commercial and industrial operators, energy demand rarely follows a steady curve. Instead, it shifts unpredictably, reflecting the dynamic nature of modern business processes. For example, when machines start up, large refrigeration units are powered on or several devices are activated at once

Facilities with shift work, automated logistics or temperature-controlled processes are especially prone to sudden, high power draws. These so-called



photo: Varta

Commercial storage system Varta Flex.

peak loads present a real challenge for energy supply, as they can put significant strain on the grid and lead to much higher electricity costs.

## E-mobility driving the issue

A major factor currently pushing this issue up the agenda is the electrification of mobility. Companies operating electric vehicle fleets or offering charging stations for staff are facing new challenges.

Charging multiple vehicles at the same time, especially at high power, can cause substantial peak loads. These don't just occur during regular working hours, but also at off-peak times, for example in the evening or overnight when delivery fleets or company cars are plugged in.

## Photovoltaics are reshaping load profiles

The growing use of photovoltaics is also changing the load profile for many companies. While an in-house solar installation allows for the use of low-cost,

emission-free energy, availability depends on the weather and the time of day. All of this only serves to make targeted load control more difficult.

This is where commercial storage systems can help smooth things out by storing solar power and releasing it as needed during peak loads. The result is a higher rate of self-consumption and less strain on the grid.

## An economic challenge

Peak loads have evolved from being a purely technical hurdle to a significant economic concern for today's businesses. The highest measured power draw is a key factor in calculating grid fees. Even a single, poorly timed peak can lead to persistently higher costs, as it sets the benchmark for billing.

Effective peak load management delivers clear benefits, starting with lower energy bills. When the system automatically detects a critical load situation, the storage can step in and deliver energy for a short period, helping avoid expensive draw times.

But the benefits go beyond the bottom line. Companies also gain stronger cost predictability and planning confidence, providing a solid basis for investment and price negotiations.

### Cutting emissions

Commercial storage now plays the dual role of helping companies meet tightening regulatory standards and actively improving their environmental footprint. By making smart use of self-generated energy stored on site, emissions can be reduced.

Actual savings depend largely on how the storage is charged, for example with solar power. The proportion of renewables in the grid mix at any given time also plays an important role.

### Responding to dynamic tariffs

There's also an opportunity to respond to dynamic electricity tariffs. Energy can be stored when it's cheapest and used flexibly as needed.

Participation in flexibility markets, such as grid stabilisation, is technically possible with well-integrated storage systems. For smaller commercial storage units below around 100 kW, there are still some restrictions, even though the technical prerequisites are often already in place.

### Technical requirements

Not every storage system is automatically suitable for peak load management. Technologically, such systems must meet high standards. Above all, they need to react quickly, as power surges may last only minutes or even seconds. High discharge power and precise control are essential for the reliable handling of peak loads.

The storage system should also integrate smoothly with existing or planned PV systems, inverters and control units. Modern systems come with standardised interfaces for easy integration into monitoring and energy management. Ideally, intelligent load management is included, analysing historical data, recognising current grid conditions and optimising charging and discharging accordingly.

### What to look for in storage systems

When selecting a system, technical specs are important, but practical considerations can make all the difference. Manufacturers should provide reliable information on control speed, maximum discharge power and system architecture. Compliance with applicable standards such as grid compatibility is also a key criterion.

Systems should offer robust monitoring that clearly presents current and historical load data, making it easier to optimise operations and plan for future expansions. Maintenance friendliness and long-term service concepts are also vital for reliable operation over many years.

### Support from the wholesaler

Delivering effective peak load management requires more than just technical know-how; it demands genuine expertise and a holistic grasp of complex electrical systems. Electrical wholesaler Sonepar has made its mark as a true solutions provider, delivering a broad product portfolio with hands-on, practical support from planning through to installation, always working in close partnership with experienced specialists.

From analysing load profiles to selecting the right components and integrating them into the energy infrastructure, Sonepar delivers tailored solutions that meet both economic and technical needs.

### Knowing your peak loads

Peak load management only delivers its full potential when it's carefully planned and matched to a company's specific requirements. It all starts with a detailed analysis of load profiles, ideally with quarter-hourly resolution over several months. Only once it's clear when and how often peaks occur can the storage system be sized to fit.

Understanding electricity tariff models is just as important. When do base, mid or peak rates apply? Which tariffs can be managed dynamically? These factors have a big impact on the economics of storage. Connection and reporting obligations to the grid operator must be considered, as well as compatibility with existing generation assets.

### Professional installation

A comprehensive simulation helps determine the optimal storage size, control strategy and integration with on-site generation. In practice, professional installation is crucial, covering fire protection, safety concepts and ongoing maintenance.

Sonepar rounds out its technical and conceptual planning with a broad product portfolio, expert advice and a network of qualified implementation partners, making it possible to deliver custom storage solutions from a single source.

### Safety, monitoring and protection

As energy systems become more complex, professional safety concepts are increasingly important. Commercial storage must include robust protection mechanisms to reliably handle technical faults and external risks.

Fire protection standards include temperature management, smoke detectors, fireproof enclosures and, in some cases, inertisation systems for fire prevention. Surge protection on both the DC and AC sides is essential not only for plant protection but also for insurance purposes.

Effective monitoring is fundamental, as it allows users to keep an eye on charge states and energy flows, and to spot faults or irregularities early. Remote access and integrated alarms enable a rapid response when necessary. Ideally, emergency protocols ensure an orderly shutdown and safe restart of the system.

### A strategic tool for the energy transition

Today, peak load management has gone beyond a technical option to become a strategic lever for economic and sustainable energy use across business and industry. In a world of volatile grids, rising power prices and increasing regulation, intelligent storage solutions are gaining ground.

Businesses that take charge of their energy flows stand to gain on all fronts—from reduced costs and enhanced supply security to a stronger environmental track record. The prerequisite is a well-conceived overall concept, from analysis and planning through to professional implementation. Commercial storage is becoming a cornerstone of future-proof energy supply.

► <https://www.sonepar.com/>

#### ABOUT THE AUTHOR

#### Stefan Schröder

is an expert in sustainable energy systems at Sonepar in Germany. After training in the electrical trade, he passed his master craftsman's exam in 1995 and installed his first PV system in 1999. Since 2006, he has been a renewable energy trainer at Sonepar. In 2008, he qualified as an energy consultant for residential and non-residential buildings and is listed as an energy efficiency expert with Bafa and Dena. In 2015, he was certified as an expert for building and utility technology.



photo: Sonepar

Günter Fronius founded the company after WW2.



photo: Fronius

## Eight decades of innovation and vision at Fronius

**History** ■ The Austrian company began its journey building car battery chargers in the aftermath of the war. By 1992, the company had entered the solar inverter market, and in 2025 it unveiled the Reserva energy storage system – a testament to continuous innovation.

by Heiko Schwarzburger

In June 1945, just six weeks after the end of the Second World War, resourceful electrician named Günter Fronius registered a small business in Pettenbach, Upper Austria, where he repaired radios and electrical appliances. Televisions were still a thing of the future.

In the post-war years, households boiled their water on coal stoves, wood-fired ovens or with electric immersion heaters. Amid such everyday realities, Günter Fronius announced his services in the local newspaper, with ads printed in lead type on coarse paper – a far cry from today's internet and websites.

### From workshop to global player

Eighty years on, television, the internet and increasingly AI are part of daily life, and that small workshop has become a global enterprise. With welding

equipment, solar inverters and battery chargers, Fronius has established itself as a leading brand.

The workforce now numbers around 7,000. The modern production plant in Sattledt and headquarters in Wels are milestones on the company's path.

### A spark of an idea

Progress was slow at first, as with much in the post-war years. But Günter Fronius soon identified a profitable niche in the market: starter batteries had a short lifespan, and replacements were scarce and expensive.

In response, the young electrician developed an innovative solution to recharge old car batteries and extend their service life. This battery charger laid the foundation for Fronius's success and set a precedent for the inventive spirit that defines the company to this day.



A glimpse into the workshop of the company founder.

photo: Fronius

## Transformers for electric welding

Just five years later, Fronius expanded its portfolio to include transformers for electric welding, establishing itself as a solid mid-sized business. In 1980, the company passed to the next generation: Brigitte Strauß and Klaus Fronius bought the business from their father, took the helm and steered it into international markets.

With 37 subsidiaries worldwide, Fronius evolved into a global solutions provider for welding and battery charging technology. In 1992, the Sunrise string inverter marked its entry into photovoltaics. Alongside SMA and Sunways, Fronius became a pioneer and innovation driver in the industry.

## A driving force in solar technology

In 1998, Fronius launched the Solarix off-grid inverter, ahead of Germany's Renewable Energy Sources Act (EEG) in 2000, which made grid feed-in of solar power standard.

The Fronius IG inverter followed in 2002, and the IG Plus in 2007 – one of the first inverters for commercial solar installations, including agriculture.

One milestone after another

Momentum gathered quickly: the Symo arrived in 2013, followed by the Snap-Inverter concept in 2014. In 2020, Fronius introduced the Gen24, Gen24 Plus hybrid inverter and the Tauro, a robust, high-performance inverter designed for demanding commercial applications.

By 2024, half a million Gen24 units had been produced. In 2025, Fronius launched its first in-house battery storage system for solar power. The Reserva was an instant hit with installers and once again set the benchmark for technology.

## AC to DC and back again

Across all business areas, Fronius is about the task of converting alternating current to direct current, and vice versa. Today, solar energy has be-

come a central pillar of the company's strategy and growth. "We remain firmly committed to our vision of 24 hours of sun," says Elisabeth Engelbrechtsmüller-Strauß.

Since 2012, the company has been led by the founder's granddaughter. "The solar market has always had its ups and downs," she notes. "The effects of the recent crisis are still clear. But our 80-year history has taught us never to give up, even in challenging times. We emerge stronger from these experiences."

## Challenging times remain

The head of the company is candid about the ongoing challenges in solar technology. After major investments in a new factory, Fronius faced falling demand, following record years in 2022 and 2023. Compounding these challenges, rooftop PV is currently struggling across Europe.

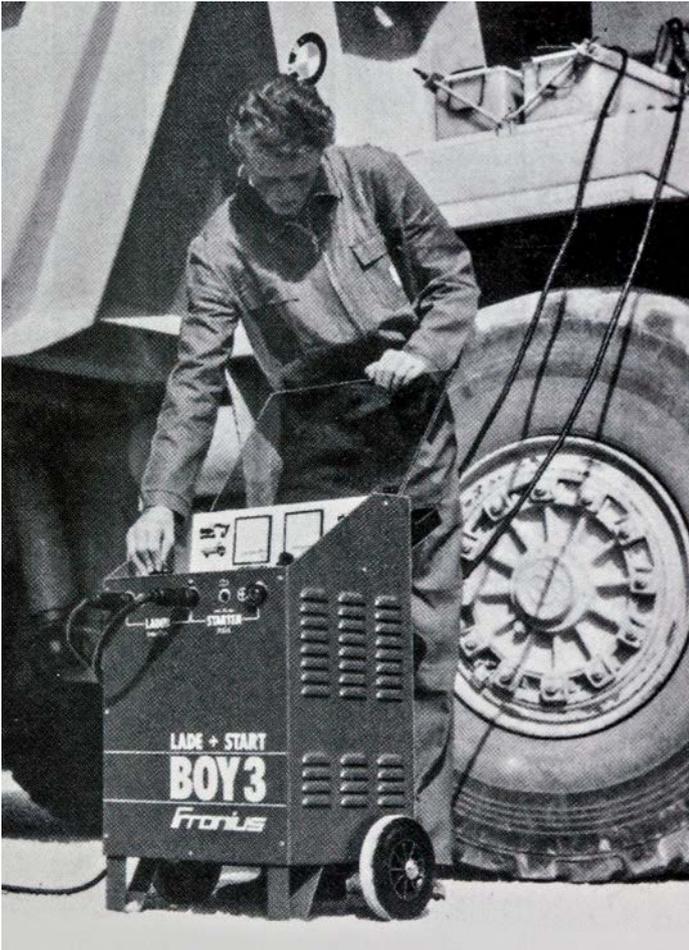
Head of Sales Harald Scherleitner explains how the company navigated the crisis. "2024 was a very difficult year for us," he admits. "Stock levels at wholesalers and installers were extremely high. In fact, there were virtually no new orders."

## Streamlining, adapting, staying the course

Fronius had to slim down, reorganise and streamline its structures. Even under pressure, the company continued to develop new products, as seen at its impressive Intersolar presence in May. "We made our production more flexible and reduced the number of shifts at our plants," says Scherleitner. "Unfortunately, that was unavoidable. Every farewell to an employee is painful."

Solar technology and batteries are now united in a single business unit. Three business units have become two powerful divisions. Welding technology remains the strongest pillar.

photo: Fronius



Fronius became famous with electric welding machines.

### Combining charging technology and photovoltaics

Battery charging technology and photovoltaics have been brought together, reflecting trends in both sectors. Today, almost every solar system is installed with storage; the industry is moving away from grid feed-in.

Self-consumption is now front and centre, especially for residential and commercial systems. “At Intersolar, for example, we showcased the new Verto inverters, the Verto Plus hybrid inverter and our DC battery Reserva,” says Scherleitner. “The storage system is off to a strong start, not least because it meets the needs of commercial customers.”

### Signs of recovery

Solar inverters and charging management for EVs are also gaining ground. Enquiries are up, including for the new Argeno commercial inverter. Since spring, the trend is positive. “Orders are coming in now,” says Scherleitner. “However, we expect the global market this year to be about 20 percent below 2022 and 2023 sales.”

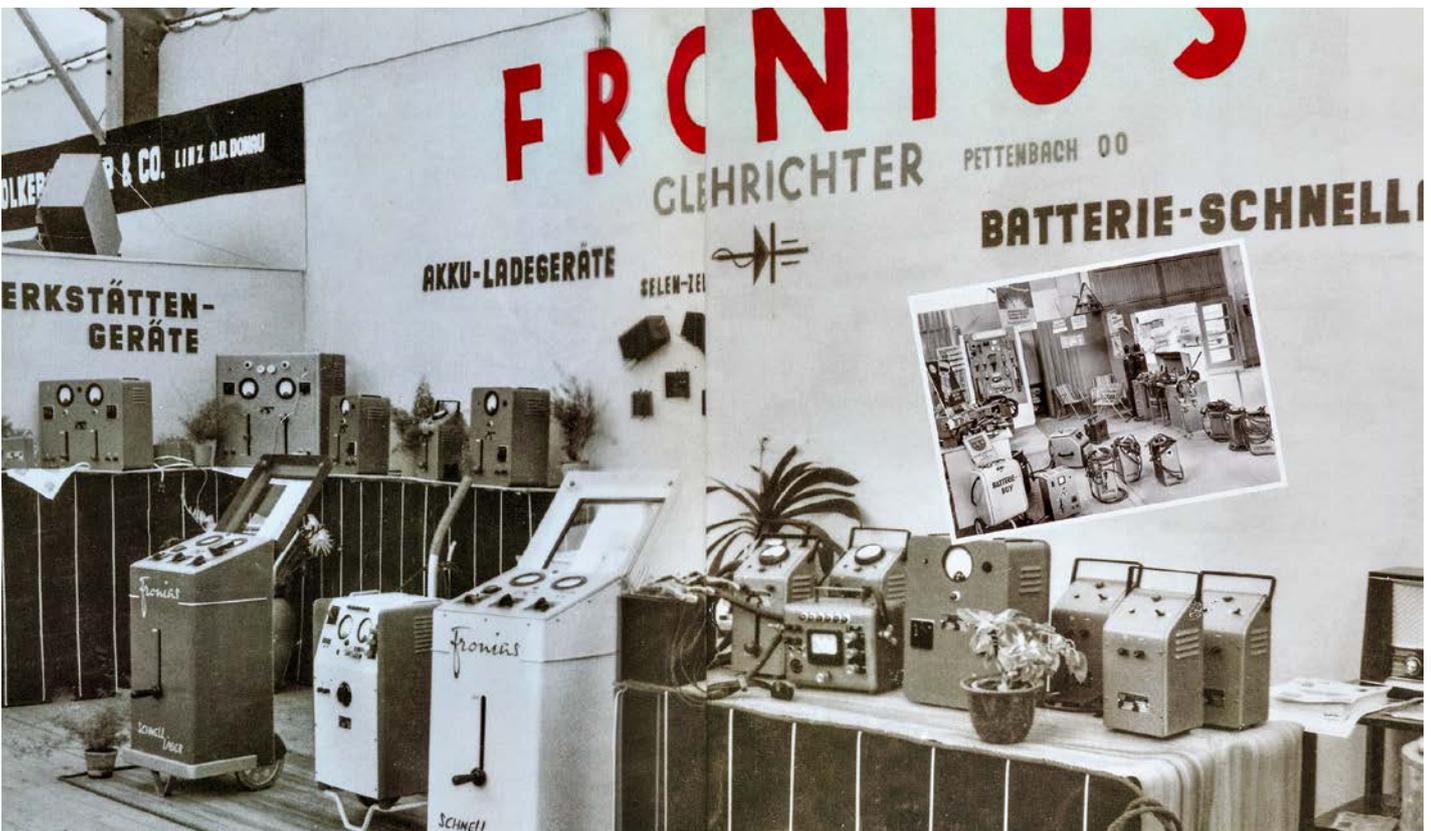
Old stock has been sold off, and new orders are flowing. Throughout the crisis, Fronius relied on a strong network of specialist dealers and loyal installers.

### Reliable partners, deep expertise

Externally, the restructuring is barely visible. “On the contrary: we are making better use of the synergies between solar and battery technology,” says Scherleitner. “Our customers always have a dedicated contact with deep expertise.”

Specialist installers remain Fronius’s most important partners in solar. The network has grown over 30 years and weathered many downturns. “We have experienced genuine loyalty, which has helped us immensely,” Scherleitner confirms. “Together we can expand our position. We support installers with a wide range of components from a single source.”

Every year, between 5,000 and 6,000 installers attend training in Wels. Across both business units, more than 28,000 participants join, either on site or online.



Exhibition of Fronius’ products in 1956.

photo: Fronius



photo: Fronius

The factory and research center in Sattledt, Upper Austria.

## Backup power and the new Reserva storage system

With the new Reserva storage system and the Verto, Verto Plus and Argeno inverters, installers now have more options for their customers. The Fronius Reserva energy storage system is perfectly matched to Fronius's hybrid inverters.

Designed for both residential and commercial use, the storage system features capacities ranging from 6.3 to 15.8 kilowatt-hours, with two to five battery modules allowing flexible adaptation to customer needs. Operating data is stored on European servers.

The new Verto Plus hybrid inverter is powerful, efficient and versatile. It provides reliable backup power in the event of a grid outage and optimises energy yield.

## For farms and small business

The device suits farms, small businesses and multi-family homes. The multi-MPPT concept handles high currents and a wide input voltage range.

Paired with the Reserva battery storage system, the hybrid inverter ensures a reliable power supply at all times. Even large loads can be supplied with three-phase backup power around the clock and during grid outages.

The Backup Power Boost function allows temporary output increases in emergencies to restore power to critical loads immediately. With a battery, the system increases the usable output of the PV installation by up to 150 percent.

Intelligent shading management with Dynamic Peak Manager ensures high yields even in challenging conditions. Integrated, replaceable AC and DC surge protection, IP66 protection class and automatic arc fault detection (AFCI) provide robust protection.

The Argeno C&I inverter was developed for commercial applications. It delivers up to 125 kilowatts and achieves 99.1 percent efficiency. Power transistors are made from silicon carbide.

With ten MPP trackers, it optimises energy yield from strings with different module types and orientations. It can be oversized by up to 200 percent, with integrated type 1 and type 2 surge protection.

► <https://www.fronius.com/en-gb/uk/solar-energy>

## PUBLISHER'S INFORMATION

**PV Europe photovoltaik**  
solar technology and applications SOLARTECHNIK FÜR INSTALLATEURE | PLANER | ARCHITEKTEN

**Date of publication**  
February 2026

**Publisher and publishing house**  
Gentner Energy Media GmbH  
Forststr. 131, 70193 Stuttgart  
PO box address:  
Postfach 101742, 70015 Stuttgart

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### Layout and design

GreenTomato GmbH, Stuttgart

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