A sunny outlook for PV, energy storage systems and e-mobility

Photovoltaics is booming, not least thanks to its integration with energy storage and electromobility, as decarbonization and sector coupling progress. This presents great opportunities for the electrical trade. The latest trends and innovations in this area will be showcased at The smarter E Europe. The continent's largest platform for the energy industry, and its four parallel exhibitions Intersolar Europe, ees Europe, Power2Drive Europe and EM-Power Europe from June 14th to 16th, at Messe München.

In terms of installations of new PV systems, energy storage systems and electric vehicle registrations, 2022 was another record year for Europe. In the face of ambitious climate protection goals, designs for energy sovereignty and the cost advantages of photovoltaics (PV), storage and electromobility, this is just the beginning of a new energy age.

Germany aims to become climate-neutral by 2045. By 2030, 80% of the electricity is to come from renewable sources, with the installed PV capacity to be increased to at least 215 gigawatts (GW). What's more, the German government wants to see 15 million fully electric passenger cars on its roads by 2030. This past year, 470,559 new e-cars were registered.

All of this means that PV markets have a bright future. According to the industry association SolarPower Europe (SPE), new solar power systems with a capacity of 41.4 GW were installed in the EU last year, an increase of 47% over the previous year. For this year, the association expects PV deployment to grow to at least 53.6 GW, and in an optimistic scenario to more than 67 GW.

The potential of alternative PV surface areas: parking lots

Next to freestanding and roof-top solar installations, attention is turning to alternative surface areas, such as parking spaces or even entire parking lots. The PV superstructure or canopy comes with many advantages. Developed land can be used for two purposes at the same time, the canopy provides sun and weather protection and, in conjunction with wallboxes and charging stations, the electricity can be used right where it is generated.

In the commercial sector, parking lot PV can ensure the self-supply of companies and commercial properties with solar power, and large public parking lots can be used to establish a comprehensive charging infrastructure for electromobility. Another positive side-effect is a considerable boost to the operator's reputation. By producing and using clean electricity, they fulfill their climate protection obligations and generate added value from parking lot areas. In addition, the canopy protects the surface of the parking lot.

According to Market Data Forecast statistics, in 2022 the global solar carport market reached a record high of 524 million US dollars and is predicted to grow to 685 million US dollars by 2028.

High performance PV modules for the residential market

The ambitious climate protection goals and surging energy prices continue to drive the demand for PV modules in the residential market. In turn, producers are improving their modules, increasing their output without making the modules larger than two square meters. The result is premium PV modules with impressive efficiency levels of between 22 and 23.5%.

In addition to this premium segment, the range of special products for roofs with reduced load-bearing capacity, green roofs, façades, balconies and private gardens continues to grow. This includes semi-flexible lightweight PV modules, innovative substructures and mounting systems, as well as different color schemes. A new trend is the simultaneous generation of electricity and low-temperature heat with so-called PVT modules, which is being promoted by the upcoming widespread deployment of heat pump technology.

PV plus storage: the perfect combination for private homes

Whether it's for a house or an entire country, a climate-neutral energy supply can only be achieved with enough storage capacity. Because while the generation of renewable energy may be clean and cheap, it is also volatile. After all, the sun does not always shine, wind fluctuates with the seasons and the water supply could become unreliable during droughts, for instance. However, this instability becomes irrelevant if excess energy from renewable sources produced during peaks can be stored. Furthermore, by supporting peak load management, storage systems contribute to a demand-based consumption of electricity, as well as grid stability.

According to the German Solar Association (BSW-Solar), 627,000 residential PV storage systems were installed in German households in 2022, an increase of 52% compared to the previous year. More than two-thirds of new PV systems on private properties have been installed in combination with a residential storage system. 'The combination with a storage device is becoming the norm when installing new PV systems,' says Carsten Körnig, CEO of BSW-Solar. Many existing systems are upgraded in this manner, especially in the commercial area.

According to a recent study by the industry association SolarPower Europe (SPE), Germany ranked highest in the European market for residential storage systems in 2021, with a share of 59% and 1.354 MWh of newly installed capacity. It will probably remain in this position until 2026, the period considered in the study.

SPE explains that Germany's leading position in the storage system market is essentially the result of surging electricity costs driving demand for systems that generate domestic or commercial solar power. At the same time, 70% of newly installed PV systems are being set up in conjunction with a storage battery.

But other European countries are seeing growth in this area as well. Thanks to the extremely successful Superbonus 110 incentive program, Italy was able to secure second place in the ranking of European countries with most battery storage in 2021 with a market share of 14%, followed by Austria at 6%, the United Kingdom, with 6% and Switzerland, with 3%. Together, these five countries cover 88% of the European residential storage system market. The remaining European markets are also catching up quickly. Poland and Sweden could move up to third and fourth place respectively in the European rankings by 2026.

E-mobility continues to drive PV and storage deployment

Another driver of PV deployment in combination with storage systems is electromobility. The demand-based storage of self-generated solar power lets you charge battery electric vehicles, and other electric vehicles, inexpensively and in a climate-friendly way using electricity straight from your own rooftop. This is turning consumers increasingly into prosumers.

In Germany, the government bases its Charging Infrastructure Master Plan, or 'Masterplan Ladeinfrastruktur', on the assumption that about 85% of all charging processes take place at home or at work. The combination of PV, storage systems and e-mobility is creating a number of new business models for companies, such as operating commercial charging infrastructure.

The industry is providing a variety of components to help merge PV, storage systems and electromobility with each other, from smart wallboxes, to energy management systems, scalable battery storage systems and multifunctional inverters. User-friendly, efficient, versatile and modular products that are easy to install are currently the most popular, and producers are increasingly offering package deals.

Installers: opening doors and paving the way for sector coupling

With PV, storage systems and e-mobility merging, the demand for electrical trade services is increasing, as installers are responsible for opening doors and paving the way for these trends in sector coupling. They are the point of contact for planning and monitoring the electrical infrastructure, offering specialist consultation on the use of each component, as well as on tariffs and funding opportunities. Furthermore, they offer support for professional installation and maintenance.

There's also a growing demand for digital know-how, because it is essential for the photovoltaic system, storage system and wallbox to communicate efficiently in order to maximize solar e-car charging without putting too much of a burden on the grid.

This is both a challenge and an opportunity for the professional electrical trade. The demand for qualification and further training is growing while great economic opportunities are arising. More and more companies are aware of this and are getting involved in these new growth markets. However, to benefit from the up-and-coming market combining PV, storage and e-mobility, the electrical trade has yet to improve. In Germany, only 47.4% of guild companies in the electrical trade have installed PV systems since 2019, according to a business survey conducted by the German Central Association of Electrical and Information Technology Contractors (ZVEH) from September 2022. At least some 85.2% have been involved in the field of ev charging installations.

Cleverly combined at The smarter E Europe 2023

The latest trends and innovations in the fields of PV, storage systems and e-mobility will be presented at The smarter E Europe, the continent's largest platform for the energy industry, and its four parallel exhibitions Intersolar Europe, ees Europe, Power2Drive Europe and EM-Power Europe from June 14th to 16th, at Messe München.

At these exhibitions, visitors will learn more about the latest applications and intelligent combination solutions. More than 2,200 exhibitors will be presenting their products on 180,000 square meters across 17 exhibition halls and an outdoor area, to an international audience of 85,000 visitors. Intersolar Europe 2023 will also feature products and applications for PV carports.

Visitors may expand their expert knowledge at the four accompanying conferences, seven topical exhibition forums and numerous side events. At the Intersolar Europe Conference 2023, they will learn what drives the industry today and what could soon be amongst the most lucrative and future-proof business models of the new energy world.

Experts will also discuss how solar energy can contribute to decarbonization, providing exclusive insights into key market developments. There will be one session on financing PV projects to give an overview of the fragmented financing and investment landscape of Europe. Applications such as floating and agricultural PV, rooftop PV on residential buildings and PV power plants will also be discussed, along with the renaissance of PV production in Europe. And of course, the latest technological trends, such as hybrid power plants, will be covered as well.

The Intersolar Europe Conference, along with ees Europe Conference, Power2Drive Europe Conference and EM-Power Europe Conference, will take place at the International Congress Center München ICM from June 13th to 14th, 2023. Attendees will have access to all four conferences with just one ticket, giving them the opportunity to learn about the rules of the new energy world and the key developments in international markets.

http://www.thesmartere.de/