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Balcony solar systems in the private sector are currently booming, and companies are also making an important contribution to the record growth. The rising demand accordingly requires more solar cables. Photo: Pixabay

A hands-on project with sunny prospects

The solar industry is at the heart of what is happening. For 2023, Solar Power Europe expects that 341 GW will be newly fed into the electricity grid worldwide – which would correspond to a growth of 43 percent compared to the previous year. A development that is strongly boosting the production of solar cables and cables for the expansion of infrastructure.

The solar industry was already booming in 2022. 239 GW of new solar energy have been installed worldwide. “That is 45 percent more solar power capacity than in the previous year. The positive market developments in the first months of 2023 promise another solar boom year,” explains Solar Power Europe. In 2023, 341 GW are expected to be newly fed into the electricity grid, a further increase of 43 percent. An increase of up to 800 GW per year would be possible as early as 2027. Sunny prospects.

The energy transition has reached the people

A major growth driver, for example, is the solar industry in Germany. In the first seven months of 2023, for example, about 593,000 new solar systems with 7,927 MW were already connected to the grid. For the same period in 2022, there were

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“only” 198,200 new plants with 4,239 MW. “The high solar growth clearly shows that the energy transition in Germany has reached the people and has become a hands-on project,” says Dr. Norbert Allnoch, Director of the International Economic Forum for Renewable Energies (IWR). The IWR attributes the enormous expansion to the boom in small balcony solar systems in the private sector in particular.

Companies that want to make themselves independent of unpleasant price jumps in their energy supply with solar systems also contribute an important part to record growth. For example, the pipe manufacturer Uponor is installing a photovoltaic system on the roofs of the factories at its German headquarters in Haßfurt in order to minimize the ecological footprint. For this purpose, photovoltaic modules are installed on an area of 4,300 square meters.

New production capacities for the boom

The solar industry is responding to the significantly increased demand by building new capacities. For example, HoloSolis SAS, a company founded in 2022 by EIT InnoEnergy, IDEC GROUP and TSE, plans to set up a production line for PV solar cells and modules near the Franco-German border in the Sarreguemines district. “The manufacturing facility is scheduled to go into operation in 2025, with a production capacity of five gigawatts per year at full capacity,” reports the Fraunhofer ISE Institute, which is supporting HoloSolis with technology selection and factory planning in the conceptual design and construction phase. From 2025, production will be gradually ramped up to ten million photovoltaic modules per year with products for the private and commercial PV market.

The backend production laboratory of Fraunhofer ISE's PV-TEC photovoltaic technology evaluation center: In this R&D laboratory, production processes for crystalline silicon solar cells are developed and optimized. *© Fraunhofer ISE / Photo: Dirk Mahler*

Largest floating solar system in Germany

In addition to the typical solar projects for the private and entrepreneurial sector, cables and pipes are also used for rather unusual projects that could be forward-looking: On the mining lake in the Lusatian area, the starting signal was given for the construction of the largest floating solar system in Germany.

Not only solar cables are used within the floating system. The anchoring based on a total of 34 dolphins (piles) is the technological highlight of the project. “This is a proven technology for anchoring sea bridges, but they are being used for the first time in a floating PV project,” explain the energy company LEAG, the project developer EPNE and the city of Cottbus. The solar modules will be securely anchored to 15-metre-long steel pipes during and after the flood on the 1,900-hectare lake: Around 51,000 solar panels on almost 1,900 floating bodies will be attached to the 34 dolphins (piles). The floating PV system is scheduled to come into operation in the second half of 2024.

At 29 MW (peak), Germany's largest floating PV system is being built along the Cottbus Baltic Sea. Photo: LEAG

Efficient and safe solar cables

Cables play a central role in photovoltaic systems. They connect the individual modules, which consist of several solar cells, to each other and wire them to the inverter. Alternating current is in turn transferred from the inverters to the household grid. Specially designed cables are used to make this possible. Because UV rays, heat, cold, moisture and chemicals are special challenges for solar cables – and quality products from cable manufacturers are therefore a must.

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“Despite these sometimes adverse environmental conditions, the solar cables must function reliably in the long term: Manufacturers and operators calculate with a service life of the systems of 20 to 30 years,” explains the cable manufacturer Helukabel. Therefore, special sheath materials and insulating materials are used. However, the insulation is not comparable to that of normal cables. This is because conventional cables in photovoltaics could lead to safety problems and failures; they are rather used to supply power to electrical devices.

In addition to safety and durability, efficiency is also important for the transport of solar power. The choice of suitable cables is therefore crucial. In addition to conductivity and dielectric strength, the cable cross-section plays an important role – it allows the

current to be transferred with minimal losses. If a cable is too thin, it can overheat and, in the worst case, lead to fires.

Grid expansion must be driven forward

As a result of the solar boom, reliable and high-performance solar cables from manufacturers are in greater demand than ever. However, not all is sunshine. “Solar growth represents a revolution for Europe's power grids, which were originally designed for centralized power generation,” explains Solar Power Europe. “Interconnection delays due to grid congestion and lengthy grid expansion permits drive up PV installation costs and jeopardize the competitive advantage of solar energy.” That is why the industry advocacy group demands that states should ensure that “network planning covers all aspects, taking into account the need for infrastructure expansion as well as network digitization and flexibility provision”. Only when the surrounding infrastructure of solar systems is developed can they fully unfold their enormous potential – and secure a place in the sun for their users.

Trends and highlights from the wire, cable and tube industry can be experienced at wire & Tube Expo from 15 to 19 April 2024 in Düsseldorf. Current industry and product information can be found on the internet portal at www.wire.de and www.Tube.de and on LinkedIn: https://www.linkedin.com/showcase/wire-and-tube-leading-international-trade-fairs/.

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