

**The smarter E Europe
The smarter E Europe conferences
Munich, May 10–13, 2022**

THE SMARTER E EUROPE TREND PAPER: PHOTOVOLTAIC STORAGE SYSTEMS AND E-MOBILITY IN GERMANY

The rapid expansion of photovoltaics means that electricity storage systems are becoming increasingly important. They firstly allow solar power generated on your own roof to be temporarily stored and used when the sun isn't shining. Secondly, they relieve some of the burden from power grids because energy no longer has to be consumed as soon as it is generated. Combining photovoltaics with storage systems is also gaining momentum thanks to the booming electromobility sector, be it for cost-effective and efficient charging or for the integration of electric vehicle batteries to help stabilize the power grid. And Germany has topped the table in all three of these sectors across Europe. The smarter E Europe, the continent's largest platform for the energy industry, comprises four energy exhibitions – that means it covers the full works when it comes to the new energy world. The innovation hub will open its doors from May 11–13, 2022 at Messe München.

More and more private home owners in Germany want to generate solar power on their building's roof. Half of all private PV installations are now equipped with an electricity storage system. Furthermore, the number of residential storage systems sold in Germany has hit double figures for the fourth year running. The number of new installations was estimated to be around 135,000 in 2021 – that's almost 30,000 more than in the previous year and puts the total number of installed electricity storage systems for private use in Germany over the 400,000 mark.

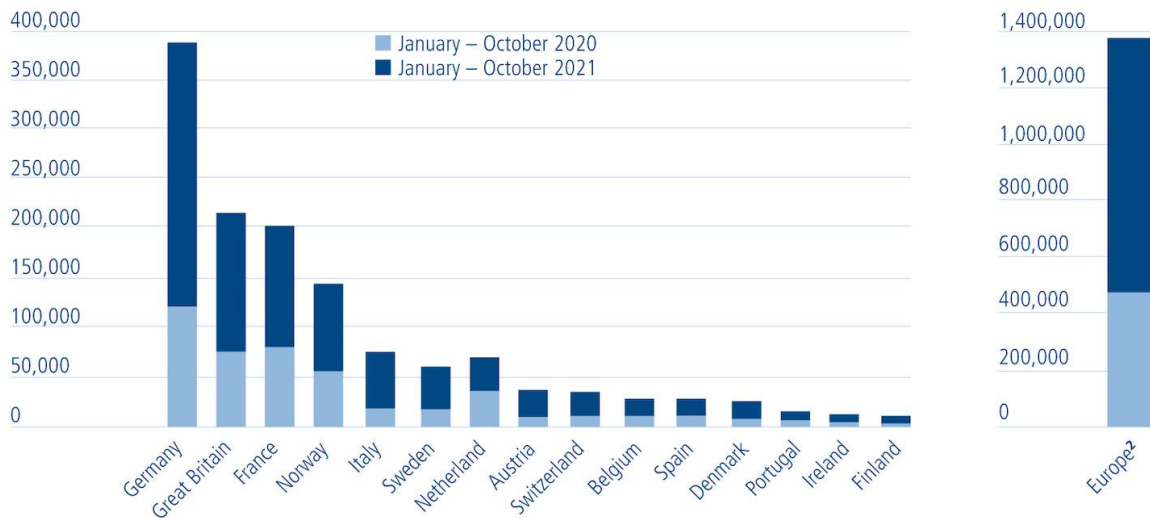
Self-consumption and storage systems increase size of private PV installations

Driven by a higher level of self-consumption, private PV installations are increasingly growing in size in Germany. This has been helped along by the rise in the de minimis limit for EEG levy payments for solar self-consumption from 10 to 30 kilowatts (kW) of installation output following a revision of the Renewable Energy Sources Act in 2021. The segment for roof-mounted photovoltaic systems with an output between 10 and 15 kW also enjoyed strong growth, increasing by 684 percent compared with 2021. The segment for roof-mounted photovoltaic systems with an output between 15 and 20 kW more than doubled in comparison with the previous year. From January to September 2020, the average installation output for the segment up to 20 kW was 7.9 kW. This rose to 8.3 kW for the same time period in 2021. According to EUPD Research, this goes hand in hand with increasing residential storage system capacities.

The e-mobility boom in Germany

This growth is being driven by the increasing popularity of electromobility in Germany. 325,449 plug-in hybrid vehicles (+62.3 percent compared with the previous year) accounted for a 12.4 percent share of newly registered cars in 2021. 355,961 battery electric vehicles (BEV) made up 13.6 percent, which marked a staggering increase of 83 percent. Put together, electric vehicles (PHEV and BEV) have a 26 percent share and every third electric car drives on German roads. Things continued to go downhill for passenger cars with conventional internal combustion engines. According to the latest Federal Motor Transport Authority statistics, gasoline engine cars made up a mere 37 percent (2020: 46.7 percent) and diesel just 20 percent (2020: 28.1 percent) of the market share. And the signs point towards further growth for electric vehicles thanks to performance and range increases, government subsidies as well as climate policy targets. According to the goals set out by the new German government, by 2030 at least 15 million fully electric passenger cars are to be on German roads and one million publicly accessible charging stations are to be set up.

Cumulated registration figures for e-vehicles¹ – Top 15 countries in Europe²



¹ Battery Electric Vehicles (BEV)

² EU + UK + EFTA (Switzerland, Norway, Liechtenstein, Iceland)

Graphic: @Solar Promotion GmbH | As of: 10/2021

Source: The European Electric Car Flash Report Edition 10.2021 (Schmidt Automotive Research)



Private charging stations are becoming increasingly popular

Alongside the expansion of public charging infrastructure, private charging stations that allow self-generated solar power to be used directly to charge electric vehicles also play a crucial role. Private charging infrastructure in Germany is becoming increasingly popular, not least because of government subsidies. The program “Charging stations for electric cars in residential buildings” already helped put 200,000 subsidized, private charging points into operation by the end of 2021, according to the National Centre for Charging Infrastructure. In total, 800 million euros will go towards the installation of 900,000 private charging points as part of the program. Almost 40 percent of the subsidized charging points feed electricity into the charging station from their own photovoltaic installation, whilst almost a fifth use their own battery storage system.

Using solar power efficiently and compatibly for charging

Battery storage systems work in harmony with energy management systems, modern inverters and wallboxes to facilitate intelligent charging. This ensures that solar power is used as efficiently as possible in a way that is compatible with the grid. The required technical optimizations are made with the support of big data and artificial intelligence (AI). Cloud solutions also offer a host of opportunities, including the ability to use virtual electricity credit on an app to charge an electric vehicle using solar energy from your own roof at public charging stations both in Germany and abroad.

V2H and V2G are the way forward

The next step is bidirectional charging with more accurate vehicle-to-home (V2H) and vehicle-to-grid (V2G) systems. This means that electric vehicle batteries are not just charged using electricity, but that the energy stored in them can also be used in the home or fed into the grid, turning electric vehicles into both storage devices and charge boosters. Whilst this technology is still in its infancy, it is advancing quickly and network operators are conducting numerous pilot projects with the aim of integrating bidirectional charging into virtual power plants.

GHG quota – e-cars as an additional source of profit

E-car owners have had the chance to earn extra money with their vehicles since January 1, 2022 thanks to the greenhouse gas reduction quota (GHG quota), which can be sold on to companies. Owners of purely battery powered cars, motorbikes and scooters can register their vehicle with service providers or electricity suppliers. These companies will then sell the saved carbon emissions on to fuel producers following verification and certification by the German Federal Environmental Agency. Fuel producers across the EU are required to reduce their greenhouse gas emissions and are permitted to offset them using the electricity consumed by electric vehicles. Vehicle owners can receive up to 350 euros a year under this scheme.

Industry meeting point – The smarter E Europe 2022

The smarter E Europe 2022 will be held from May 11 to 13 at Messe München under the motto "Creating a new energy world". With its four energy exhibitions – Intersolar Europe, ees Europe, Power2Drive Europe and EM-Power Europe – Europe's largest platform for the energy industry provides the ideal opportunity to gain the latest information about the rapidly growing photovoltaics, energy storage and e-mobility market in Germany and in Europe as well as to make new business contacts.

The smarter E Europe conferences and exhibition forums:

At the specialist conferences and exhibition forums held as part of The smarter E Europe, visitors can learn about all aspects of the new energy world and engage in discussions with leading industry experts. Examples of topics include the decentralization, digitalization and sector coupling of the energy supply, technological trends in photovoltaics and energy storage, and the latest charging technologies for electric vehicles. If you are interested in finding out more about the four specialist conferences, please visit: <https://www.thesmartere.de/ein-ticket-vier-konferenzen>

The smarter E Europe 2022

Date: May 11–13, 2022
Venue: Messe München (Halls A1–A6, B1–B6)
Exhibition space: 132,000 sqm
Exhibitors: 1,450
Visitors: 50,000+ (expected)

For further information, please visit:

www.thesmartere.de

www.intersolar.de

www.ees-europe.de

www.powertodrive.de

www.em-power.eu