Residential energy storage germany

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Battery Charts is a development of Jan Figgener, Christopher Hecht, and Prof. Dirk Uwe Sauer from the Institutes ISEA and PGS at RWTH Aachen University. With this website, we offer an automated evaluation of battery storage from the public database (MaStR) of the German Federal Network Agency. For simplicity, we divide the battery storage market into home storage (up to 30 kilowatt hours), industrial storage (30 to 1,000 kilowatt hours), and large-scale storage (1,000 kilowatt hours and above).

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In total, some gigawatt hours of stationary battery storage is reported by now in Germany. The largest share of this is accounted for by home storage, which carries the overall market. Large-scale storage forms the second largest market ahead of industrial storage. For comparison: The national pumped-hydro storage systems have a total energy of 39 gigawatt hours.

Home storage systems are currently mainly used to increase solar self-consumption. Industrial storage systems are primarily used for solar self-consumption as well as peak shaving for businesses or fast charging of electric vehicles. In recent years, large-scale battery storage systems have been built almost exclusively to provide primary control power. Currently, however, three new areas of application are emerging:

Battery storage systems in most cases offer the possibility to be charged or discharged for more than one hour at full power. Therefore, the sum of cumulative storage power is also smaller than the sum of storage energy. The total power is a few gigawatts. The power is distributed roughly in proportion to the storage energy.

In addition to the cumulative presentation of the storage energy, the monthly additions are also shown. It is easy to see that the trend in new installations is clearly increasing. The current developments of rising electricity prices and the war in Ukraine strengthen the desires for self-sufficiency and for an own PV system including battery storage.

At the beginning of the home storage market, lead-acid and lithium-ion batteries had the highest market shares. Over time, however, lithium-ion batteries have clearly gained market shares and have taken up almost the entire market in recent years.

The commercial storage market also features a majority of lithium-ion batteries. It should be noted, however, that systems for uninterruptible power supply are not subject to registration in all cases and lead-acid batteries are still frequently used here.

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The variety of technologies in the large-scale storage market was greatest in the early years of the storage market. In addition to lead-acid and lithium-ion batteries, high-temperature and redox-flow batteries also exist here. Today’s new installations, however, are also predominantly lithium-ion based.

The MaStR also includes planned battery storage systems in part. The majority is accounted for by large-scale storage systems. This is mainly due to the fact that the smaller home storage systems and industrial storage systems are often not reported until they are installed.

The storage systems are distributed throughout Germany. While home storage and industrial storage are aggregated within districts, large-scale storage is presented as individual systems. For home and industrial storage, most of the systems are in the western and southern parts of Germany. On the other hand, the large-scale storage systems do not show a clear distribution.

This website visualizes the MaStR data of the German Federal Netword Agency. The data are available under license dl-en/by-2-0 at the website of the German Federal Network Agency https:// The analyses are based on our own evaluations of the published individual registrations, which are performed to the best of our knowledge.

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