

Residential Battery - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2021 - 2029

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Report description:

The global residential battery market is expected to reach USD 13.01 billion by the end of the current year, and it is projected to register a CAGR of 17.89% during the forecast period.

Although the market studied was affected by COVID-19 in 2020, it recovered and reached pre-pandemic levels.

The declining prices of lithium-ion batteries are expected to drive the growth of the market studied during the forecast period. However, the environmental disadvantages of lead-acid batteries are expected to hamper the growth of the market studied during the forecast period. An increase in off-grid solar utilization is expected to create lucrative growth opportunities for the global residential battery market during the forecast period.

Asia-Pacific is dominating the market studied, and it is expected to witness the highest CAGR during the forecast period. This growth is attributed to the increasing investments and the adoption of residential rooftop solar installations in China, India, and Japan.

Residential Battery Market Trends

Lithium-ion Battery Segment Expected to Dominate the Market

Lithium-ion (Li-ion) batteries offer various technical advantages over other technologies, such as lead-acid batteries. Rechargeable Li-ion batteries, on average, offer cycles more than 5,000 times compared to lead-acid batteries that last around 400-500 times.

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Li-ion batteries do not need as frequent maintenance and replacement as lead-acid batteries. Li-ion batteries maintain their voltage throughout the discharge cycle, allowing greater and longer-lasting efficiency of electrical components, whereas the voltage of lead-acid batteries drops consistently throughout the discharge cycle. Despite the higher upfront cost of Li-ion batteries, the true cost is much lesser than lead-acid batteries when considering lifespan and performance.

Batteries play a crucial part in energy storage systems and are responsible for a major portion of the total cost of the system, especially used in residential energy storage systems. The total installed capacity of renewable energy sources is increasing at a significant rate worldwide, and so is the installation of solar rooftops on residential buildings.

The increase in solar rooftop capacity is likely to foster an increase in the demand for battery energy storage. Therefore, the emergence of new energy storage systems (ESS) for residential applications is expected to boost the demand for lithium-ion batteries during the forecast period. Properties of lithium-ion batteries, such as less weight, low charging time, a higher number of charging cycles, and declining cost, make it preferable for this application.

Due to their declining prices, lithium-ion batteries have recently gained popularity as battery storage systems for residential solar and home inverters. In 2021, the price of the lithium-ion battery was USD 123/kWh, which declined by 81.58% from USD 668/KWh in 2013. The residential energy storage policies to date are quite nascent. However, countries, like the United States and Germany, through state policy action and regulatory action, are creating opportunities in the local energy storage markets.

For instance, in October 2022, as part of the President's Bipartisan Infrastructure Law, the US Department of Energy (DOE) announced the first set of projects to expand domestic manufacturing of batteries, materials, and components imported from overseas. A total of USD 2.8 billion will be awarded to the 20 companies for building and expanding commercial-scale facilities in 12 states for extracting, processing, and demonstrating new approaches, such as manufacturing components from recycled materials, lithium, graphite, and other components battery materials. In November 2021, Duracell launched a lithium iron phosphate (LFP) battery compatible with new or existing residential PV systems in the United States. The battery has a power rating of 5 kW and a storage capacity of 14 kWh. It has a voltage range from 44.5 to 53.5 V and a maximum charge and discharges current of 74.0 A. The roundtrip efficiency is over 85.7%, with a guaranteed performance of over 6,000 cycles.

Therefore, owing to the above-mentioned factors, the lithium-ion battery segment is expected to dominate the market during the forecast period.

Asia-Pacific Expected to Dominate the Market

Asia-Pacific has multiple growing economies with substantial natural and human resources. The region holds the majority share in revenue, with China and India being the major contributors. These countries are anticipated to exhibit immense growth potential during the forecast period.

Due to the government's policy and regulatory support, the Chinese residential battery market is expected to grow during the forecast period. The Chinese government has already shown its ability to stimulate high growth in domestic demand for solar-related equipment through subsidies and installation targets.

In the first nine months of 2020, China's total residential rooftop solar capacity installed stood at 7.41 GW, which increased by 64.61% in 2021. The country added 2.14 GW of residential rooftop solar capacity in September 2021. In February 2022, Bslbatt unveiled a modular lithium-ion battery for off-grid solar energy storage in China. The battery has a storage capacity ranging from 5.1 to 30.7 kWh and can provide steady operation for up to 6,000 charge cycles. Thus, such new battery technologies in the residential sector are anticipated to increase the growth of the market studied during the forecast period.

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Another important country in the region is India, which accounts for the world's fifth-largest power generation capacity, with an installed capacity of 393.83 GW, as of December 2021. However, India faces power outages. The Government of India aimed to supply electricity 24 hours a day by significantly adding to renewable energy generation capacity, including rooftop solar power, which is anticipated to increase the demand for residential batteries.

With the government of India pushing to install lithium-ion battery manufacturing plants in India and start production in 2022, the cost of lithium-ion batteries is expected to drop. For instance, in October 2022, the Central Electrochemical Research Institute (CECRI) started building an indigenously-developed lithium-ion battery manufacturing plant in Chennai, India, with the capacity to produce 1,000 batteries per day. The facility will be completed by 2024 at the Council of Scientific and Industrial Research (CSIR) Madras Complex at Taramani.

Asia-Pacific is home to the fastest urbanizing countries, which is anticipated to create a significant demand for residential batteries for various applications, including consumer electronics, backup power supply systems, etc.

Residential Battery Industry Overview

The residential battery market is fragmented. Some of the major companies in the market (in no particular order) include FIMER SpA, Amara Raja Batteries Ltd, Samsung SDI Co. Ltd, NEC Corporation, and LG Energy Solution Ltd.

Additional Benefits:

- The market estimate (ME) sheet in Excel format
- 3 months of analyst support

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