

Flow Battery - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

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Report description:

The Flow Battery Market size is estimated at USD 0.88 billion in 2024, and is expected to reach USD 1.79 billion by 2029, growing at a CAGR of 15.41% during the forecast period (2024-2029).

In 2020, COVID-19 had a detrimental effect on the market. Presently, the market has reached pre-pandemic levels.

Key Highlights

- Over the long term, the applications of the flow battery market are likely to grow during the study period due to the growing penetration of the technology in long-duration energy storage applications, such as renewable power systems, and their long service lives.
- On the other hand, because battery cells don't hold much energy, the market may not grow as fast in the near future.
- Nevertheless, the new technological innovations to diversify the scope of flow batteries in new commercial areas create tremendous opportunities for market growth.
- The Asia-Pacific region is expected to grow at the fastest rate during the forecast period due to many upcoming renewable energy and storage projects in the region.

Flow Battery Market Trends

Vanadium Redox Flow Batteries are Expected to Witness Significant Growth

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- The Vanadium Redox Flow Battery (VRFB) is a Redox Flow Battery (RFB) that stores energy by using V²⁺/V³⁺ and V⁴⁺/V⁵⁺ redox couples of vanadium in the negative and positive half-cells, respectively. The power ratings and energy ratings of these batteries are not related to each other, and each can be optimized for a different type of use.
- Many countries have always worked to increase their energy needs without any gaps. As a result, many energy storage systems have been put in place in both stand-alone energy systems and renewable energy systems.
- Over the last decade, installed renewable energy capacity and generation have been rising steadily across the globe. During 2021, global installed renewable energy capacity stood at 3063.93 GW, increasing by nearly 9.1%. As renewable resources such as solar and wind generate power intermittently and at various levels, storing this energy during high demand is vital.
- Due to this, modern energy-storing systems (ESS) are becoming indispensable in renewable energy projects. The rapid growth in the renewable energy sector is expected to be one of the strongest drivers for the growth of the global ESS market.
- For example, in December 2022, Everdura, an industrial technology company in Taiwan, gave Invinity Energy Systems an order for 15 MWh. This shows that the need for VRF batteries is growing, which is what is expected to happen during the forecast period.
- With the development of newer, cheaper battery technologies, there are now a lot more residential, commercial, and industrial solar rooftop PV systems that also have ESS.
- Such developments are expected to propel the market during the forecast period.

Asia-Pacific is Expected to Dominate the Market

- Asia-Pacific is a major region for the manufacturing of batteries. The highest volumes of batteries worldwide are manufactured in this region. Countries like China and Japan have been instrumental in the development of batteries in the region. Another prominent driver for the region's battery market is the growing investments in energy storage projects, which are currently moving at the fastest pace in the region. Thus, many renewable energy and energy storage projects are expected to be announced in the coming years.
- Flow batteries have the advantages of easy transportability, modularity, and high efficiency. The batteries can be deployed on a large scale and can easily span the kW to MW range. As a result, stakeholders in Asia-Pacific are focused on developing power systems or grid energy storage systems in combination with renewable energy generation.
- Furthermore, China mandated energy storage systems for its solar and wind projects in its latest five-year plan (2021-25). This may also support the market's growth in the region during the study period.
- In August 2022, Rongkepower announced that a redox flow battery storage system would be used in a power project in the city of Dalian. The battery system can store energy from wind turbines and other sources for up to 400 megawatt-hours. The investment in the project is estimated to be around USD 281 million. As of August 2021, Rongke delivered a total of about 560 MWh of redox flow batteries. An additional 400 MWh of storage will be added to the Dalian project.
- Sumitomo Electric said in April 2022 that a 51 MWh flow battery project on the island of Hokkaido in northern Japan would be done. Hokkaido Island is a hotspot for clean energy because it has a lot of land that can be used. However, it has had trouble in recent years keeping up with the increased energy capacity on its grid, which is only partially connected to Honshu, Japan's most populated island, to its south. Hokkaido Electric has installed the new system at its Minami-Hayarai substation, and it will support the utility grid. Hokkaido Electric and the other stakeholders will split the costs of the battery operation.
- Thus, with new manufacturing facilities and projects for renewable energy and energy storage, the region is expected to lead the market over the next few years.

Flow Battery Industry Overview

The flow battery market is moderately fragmented. Some of the major players in the market are, in no particular order, VRB

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Energy, RedFlow Ltd., Invinity Energy Systems PLC, Primus Power Corporation, and ESS Tech Inc., among others.

Additional Benefits:

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

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