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Global Energy Storage System (ESS) Market: Analysis By Technology (Pumped Hydro, Electrochemical Storage, Thermal Storage and Electromechanical Storage), By End User (Utilities, Residential and Non Residential), By Region Size & Forecast with Impact Analysis of COVID-19 and Forecast up to 2028

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Abstracts

A technique or group of technologies that stores and releases energy on demand is referred to as an energy storage system (ESS). ESS is critical to the effective and dependable control of energy in a variety of applications, ranging from small-scale home installations to large-scale grid systems. Energy storage systems are becoming increasingly important as renewable energy sources such as solar and wind power are integrated into the grid. In 2022, the global energy storage system market was valued at US$219.90 billion, and is probable to reach US$355.40 billion by 2028.

The market's expansion may be ascribed to rising demand for energy storage and transportation, which is being fueled by the global adoption of renewable energy, and soaring expenditures in grids are expected to drive market growth in the coming years. Furthermore, the rapidly expanding demand for energy around the world is expected to drive further expansion in the global energy storage system market in the future. The global energy storage system market value is projected to grow at a CAGR of 8.33%, during the forecast period of 2023-2028.

Market Segmentation Analysis:

By Installations: The report includes the global cumulative energy storage system market by installations. Growing demand for efficient and competitive energy resources

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is likely to propel market installations growth over the coming years. In addition, changing consumer lifestyle and a rising number of power outages are projected to propel utilization in the residential sector. Of the additional capacity estimated to be installed, more than half is expected to be devoted to energy-shifting applications consisting of utility-scale energy storage solutions to perform arbitrages and provide capacity to meet demand peaks.

By Technology: According to the report, the global energy storage system market is segmented into four technology: Pumped Hydro, Electrochemical Storage, Thermal Storage and Electromechanical Storage. Pumped Hydro segment acquired majority of share in the market in 2022 as there are ongoing investments in North America and Asia Pacific to modernize energy infrastructure and boost on-grid capacity are projected to benefit the pumped hydro market. Whereas, the Electromechanical Storage segment has the fastest CAGR as the growing demand for dependable and efficient energy storage systems has prompted the use of electromechanical energy storage system.

By Ends User: According to the report, the global energy storage system market is bifurcated into three end users: Utilities, Non Residential and Residential. Utilities segment acquired majority of share in the market in 2022, due to increased investment in utility size power plants. In addition, the utilities industry is growing due to an increase in construction projects such as decentralized renewable power plants, rural electrification projects, and commercial buildings. Whereas, Non Residential segment is expected to have the highest CAGR in the future as the commercial and industrial (C&I) sector is using renewable energy sources like solar and wind power more and more to power their own buildings. So, the C&I sector is likely to use energy storage systems more and more to increase the amount of renewable energy it uses.

By Region: The report provides insight into the energy storage system market based on the geographical operations, namely North America, Europe, Asia Pacific, and Rest of the World. Asia Pacific energy storage system market enjoyed the highest market share in 2022, primarily can be traced mostly to the region's rapidly expanding demand for energy as a result of rapid urbanization. Further, the rapid growth in industrialization in the countries such as India, China, Korea, and so on is also accelerating energy consumption on a huge level that is also projected to contribute to the market growth in the region. Rapid urbanization and population increase are also taking place in the developing countries, increasing the demand for power. India plans to have 275 GW of total wind and solar capacity, as well as 72 GW of hydroelectricity and 15 GW of nuclear power, by 2027. Also, the global cumulative ESS market installations is segmented by region (The US, Germany, UK, China and Rest of the World). China and the US

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became the largest markets, accounting for over half of the global installation in 2022.

Global Energy Storage System Market Dynamics:

Growth Drivers: With reference to renewable energy sources, energy storage systems are complementary to solar and wind energy production as they help address the issue of weather intermittency, which is a major problem in renewables at both the local and grid levels. Therefore, an increase in demand for sustainable energy sources would probably trigger higher demand for energy storage system. Further, the market is expected to increase due to rising demand for electric vehicles, upsurge in investments in renewable energy, mounting home improvement, higher energy costs, surge in the demand for batteries, etc.

Challenges: The supply chain for energy storage systems involves various components, raw materials, manufacturing processes, and global logistics. Energy relies on a large number of outsourced components which allows it to focus more on the value-added activities such as design and engineering. The other challenge that energy storage system market faces is safety risks associated with lack of proper infrastructure, etc.

Trends: A major trend gaining pace in energy storage system market is Thermal Energy Storage (TES). Thermal energy storage entails storing and releasing thermal energy for later use, allowing energy consumption to be shifted to more efficient or cost-effective time periods. TES systems are critical in the integration of renewable energy sources into the grid. Because renewable energy generation, such as solar and wind, is intermittent and weather dependent, TES assists in overcoming the fluctuation and mismatch between energy supply and demand. More trends in the market are believed to augment the growth of energy storage system market during the forecasted period include, government initiatives, technology advancements, sustainability, etc.

Impact Analysis of COVID-19 and Way Forward:

The global spread of coronavirus and the ensuing lockdown in several countries have had a severe influence on the global energy storage systems business. This has affected the supply chain, slowing automobile production around the world. Manufacturers in the global energy storage market are recovering from losses caused by disrupted ecosystems and a reduction in the installation of battery energy storage systems worldwide. Following a successful business recovery, players in the global energy storage systems market are focusing on boosting production capacity in order to reap revenue gains. The increasing production of electric vehicles will play a significant

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role in the growth of the global energy storage systems market in the future years.

Competitive Landscape and Recent Developments:

Global energy storage system market is fragmented, with just a few players of varying sizes depending on their positioning along the value chain. Tesla, Pylon and BYD are among the top three residential ESS solution suppliers globally. Key players of global energy storage system market are:

Toshiba Corporation
ABB Group
Siemens AG
SolarEdge Technologies, Inc.
Hitachi, Ltd.
Electrovaya Inc.
NextEra Energy, Inc.
The AES Corporation
Vistra Corp.
BYD Co. Ltd.
Alpha ESS
Sungrow Power Supply Co., Ltd.
Convergent Energy and Power Inc

The key players are constantly investing in strategic initiatives, such as new product launches, introducing their products to emerging markets and more, to maintain a competitive edge in this market. For instance, in February 2022, the partnership between FIMER and Vega Solar supplied 14 PVS-100 inverters, a three-phase string solution, to Albania. The PVS-100/120-TL is a cloud-connected three-phase string inverter by FIMER designed for cost-effective decentralized solar systems on both ground and rooftops. Also, in May 2022, Salient Energy, a company developing proprietary zinc-ion batteries as an alternative to lithium-ion batteries in residential energy storage, announced that it had formalized a partnership with Horton World Solutions (HWS), a sustainable homebuilder whose proprietary composite framing system enables best-in-class energy efficiency and construction time.

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