

# **Solid State Battery: Market Shares, Strategies, and Forecasts, Worldwide, Nanotechnology, 2020 to 2026**

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## **Abstracts**

LEXINGTON, Massachusetts (January 1, 2020) – WinterGreen Research announces that it has a new study on Solid State Batteries: Market Shares and Forecasts, Worldwide, 2020-2026. The 2020 study has 135 pages, 56 tables and figures.

Batteries are changing in response to the implementation of wind and solar energy systems. Solid state batteries represent the next generation of power storage for vehicles. Nanotechnology permits units to be miniaturized, standalone, and portable. Solid-state batteries have advantages in power and density: low-power draw and highenergy density. They have limitations in that there is difficulty getting high currents across solid –solid interfaces. Power delivery is different in solid state batteries, – there is more power per given weight. The very small and very thin size of solid state battery electrodes help to reduce the physical size of the sensor or device using the battery.

Units can stay in the field longer. Solid state batteries can store harvested energy. When combined with energy harvesting solid state batteries can make a device stay in the field almost indefinitely, last longer, power sensors better.

Temperature is a factor with batteries. The solid-state batteries work in a very broad range of temperatures, making them able to be used for ruggedized applications. Solid state batteries are ecofriendly. Compared with traditional batteries, solid state thin film batteries are less toxic to the environment.

Solid state battery market driving forces include response to IoT, creating business inflection by delivering technology that supports entirely new capabilities is a market benefit. Sensor networks are creating demand for solid state devices. Vendors doubled revenue and almost tripled production volume from first quarter. Multiple customers are

moving into production with innovative products after successful trials.

A solid state battery electrolyte is a solid, not porous liquid. The solid is denser than liquid, contributing to the higher energy density. Charging is complex. In an automotive application, recharge cycles go up, rendering a next generation battery. The cycles increase by the inverse of the depth of discharge. Long shelf life is a benefit of being a solid state battery. The fact that the battery housing does not need to deal with gases and vapors as a part of the charging/discharging process is another advantage.

Nanostructured or nano-enabled batteries are a new generation of lithium-ion batteries and battery systems to serve applications and markets. Nano-enabled batteries employ technology at the nano-scale, a scale of minuscule particles that measure less than 100 nanometers, or  $100 \times 10^{-9}$  meters.

Lithium ion battery markets reach \$1 trillion in 2026 in response to the adoption of solar and wind energy generation and the rapid adoption of electric vehicles that replace the gasoline powered vehicles. Global warming is forcing a shift from fuels that are burned to renewable energy generation. Solid state batteries represent the next generation of lithium ion batteries and will account for powering electric cars.

WinterGreen Research is an independent research organization funded by the sale of market research studies all over the world and by the implementation of ROI models that are used to calculate the total cost of ownership of equipment, services, and software. The company has 35 distributors worldwide, including Global Information Info Shop, Market Research.com, Research and Markets, Markets and Markets, Electronics.CA, Bloomberg, and Thompson Financial.

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