

Solid State Transformer Market Set to Surge to \$468 Mn by 2028 Driven by Renewable Energy and Electric Vehicles

Global Solid State Transformer Market Growing at 16.9% CAGR | Key Drivers: Renewable Power, Smart Grids & EV Charging

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The global [Solid State Transformer \(SST\) Market](#) is on track for remarkable growth, expected to reach \$468.0 million by 2028, up from \$141.5 million in 2020, growing at a CAGR of 16.9% between 2021 and 2028, according to a new report by Allied Market Research.



Solid-state transformers are revolutionizing power distribution by offering intelligent voltage regulation while remaining connected to the power grid. Unlike traditional transformers, SSTs can send real-time voltage information to smart grids and enable remote corrective actions. These capabilities make them essential for applications in renewable energy generation—such as wind turbines and solar panels—and electric mobility solutions.

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Solid State Transformer Market valued at \$141.5M in 2020, projected to hit \$468M by 2028, driven by renewable energy and EV adoption.”

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▣ Regional Market Dynamics

Europe led the market in 2020 with over 37% revenue share, benefiting from strong adoption of

renewable energy and electric vehicles in countries like Germany, France, and the UK.

Asia-Pacific is projected to grow at the fastest CAGR of 18.6%, with significant investments in China, India, Japan, and Australia accelerating market expansion.

□ Key Market Drivers

The growth of the Solid State Transformer Market is driven by several major trends reshaping the energy landscape:

Surging renewable energy installations: As governments and industries aim to reduce carbon emissions, wind and [solar energy](#) projects are expanding rapidly, boosting demand for advanced transformer solutions.

Smart grid implementation: New grid infrastructures require advanced power regulation and management systems that SSTs provide.

Electric mobility revolution: The rise in electric vehicle (EV) adoption fuels the need for efficient charging stations, a sector where solid-state transformers play a crucial role.

Advantages over traditional transformers: SSTs offer compact design, high efficiency, AC to DC conversion, and bidirectional power flow, making them an attractive alternative.

Additionally, the demand for electric vehicles is projected to open new market opportunities for SST technology, supporting the energy transition globally.

□□ Market Challenges

Despite the growth prospects, the SST market faces certain obstacles:

High costs: The initial investment for smart transformer systems remains substantial compared to conventional transformers.

Limited awareness: Many potential end-users are still unfamiliar with the benefits of SST technology, slowing widespread adoption.

Nonetheless, industry efforts to raise awareness and lower costs are ongoing. Notably, a collaboration in February 2021 between Hitachi ABB and Nanyang Technological University (NTU) Singapore aims to accelerate SST development and commercialization.

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□ Market Segmentation Insights

The global market is categorized by product type, application, and region.

By Product Type:

Power solid-state transformers held the largest market share in 2020, thanks to rapid adoption, cost-effectiveness, and growing industry awareness.

Traction solid-state transformers are projected to grow at the fastest CAGR of 17.7%, primarily driven by their potential use in locomotives and electric vehicles.

By Application:

The renewable power generation segment dominated the market in 2020, as wind and solar installations demand smart transformers for efficient energy management.

However, the electric vehicle charging segment is expected to experience the fastest growth, at a CAGR of 21.5%, fueled by increasing EV sales and rising investment in public and private charging infrastructure.

□ Industry Players

Prominent companies in the Solid State Transformer Market include:

Alstom SA

Eaton Corporation

General Electric Company

Hitachi ABB

Power Systems & Controls Inc.

Red Box Aviation

Schneider Electric

Siemens AG

Varentec Inc.

Vollspark

These industry leaders focus on innovation and strategic partnerships to develop advanced SST solutions and expand market presence.

□ COVID-19 Impact

The COVID-19 pandemic significantly affected the SST market:

Lockdowns reduced operational capacities in power distribution sectors, negatively impacting [transformer demand](#).

The renewable energy sector, the largest SST application, faced severe disruptions, especially since over 40% of the solar supply chain is reliant on China and Southeast Asia, areas heavily affected by the pandemic.

Delays in renewable project construction and commissioning slowed market growth during this period.

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□ Future Outlook

Despite short-term challenges, the long-term future of the solid-state transformer market looks promising. Increasing electrification projects, electric mobility trends, and renewable energy adoption are expected to drive market expansion. Ongoing innovations and strategic collaborations aim to reduce costs and improve awareness, further accelerating SST adoption.

As the energy sector evolves toward sustainability, solid-state transformer technology is positioned to become a key enabler of smart grids and renewable energy integration.

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