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Solid State Transformer Market Forecasts to 2032 – Global Analysis By Type (Distribution Solid State Transformer, Power Solid State Transformer and Traction Solid State Transformer), Component (Converters, Switches, High-Frequency Transformers and Other Components), Voltage Transformation (High Voltage/Medium Voltage and Medium Voltage/Low Voltage), Application, End User and By Geography

https://marketpublishers.com/r/S3DD69008A4CEN.html
Date: May 2025
Pages: 150
Price: US$ 4,150.00 (Single User License)
ID: S3DD69008A4CEN

Abstracts

According to Stratistics MRC, the Global Solid State Transformer Market is accounted for $117.6 million in 2025 and is expected to reach $365.8 million by 2032 growing at a CAGR of 17.6% during the forecast period. A Solid State Transformer (SST) is an advanced electrical power transformer that uses semiconductor components, such as power electronics and high-frequency transformers, instead of traditional magnetic-based methods. SSTs provide voltage conversion, isolation, and power conditioning with higher efficiency, compact size, and better control over power flow. They enable smart grid applications, integration of renewable energy sources, and improved grid stability. SSTs also support bidirectional power flow, offering advantages for modern electrical networks.

Market Dynamics:

Driver:

Growing smart grid deployments

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Smart grids require advanced, efficient, and flexible power management solutions, and SSTs offer superior capabilities such as bidirectional power flow, voltage regulation, and integration with renewable energy sources. Furthermore, the global push towards digitalization and automation in the energy sector is accelerating investments in smart grid infrastructure, thereby fueling the demand for SSTs. These transformers are essential for supporting distributed energy resources and enhancing grid reliability, making them integral to modern power systems.

Restraint:

High initial cost

SSTs utilize advanced semiconductor components and complex control systems, which significantly increase their upfront investment compared to conventional transformers. Additionally, the need for specialized installation, maintenance, and a skilled workforce further escalates the total cost of ownership. This financial barrier can deter utilities and industries, particularly in cost-sensitive regions, from adopting SST technology on a large scale, thereby limiting its market penetration despite its long-term operational benefits.

Opportunity:

Government incentives for grid modernization

Many governments worldwide are rolling out policies and funding programs to upgrade aging grid infrastructure, integrate renewable energy, and improve energy efficiency. Moreover, these incentives often include tax benefits, grants, and low-interest loans for utilities adopting advanced technologies like SSTs. Such supportive regulatory frameworks not only reduce the financial burden on end-users but also encourage innovation and faster adoption of SSTs, thereby fostering market growth and technological advancements in the power sector.

Threat:

Competition from advanced traditional transformers

Traditional transformers have undergone significant technological improvements, resulting in enhanced efficiency, reliability, and lower operational costs. Additionally,

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their established supply chains, widespread familiarity among utilities, and proven performance make them a preferred choice for many applications. The reluctance to switch from conventional solutions, coupled with the higher costs and perceived risks associated with SSTs, can impede the market's growth, especially in regions with limited budgets for new technology adoption.

Covid-19 Impact:

The Covid-19 pandemic had a mixed impact on the solid state transformer market. While supply chain disruptions and project delays initially hampered market growth, the pandemic also accelerated digital transformation and the adoption of smart grid technologies. Utilities and governments prioritized resilient and flexible power infrastructure to support remote operations and fluctuating energy demands. Additionally, stimulus packages and recovery plans included investments in grid modernization, indirectly benefiting the SST market. As a result, the sector demonstrated resilience and is expected to recover steadily, driven by renewed focus on advanced energy solutions.

The power solid state transformer segment is expected to be the largest during the forecast period

The power solid state transformer segment is expected to account for the largest market share during the forecast period. This dominance is attributed to the widespread application of power SSTs in utility grids, renewable energy integration, and electric vehicle charging infrastructure. Furthermore, power SSTs offer enhanced efficiency, compact size, and superior control capabilities, making them ideal for high-capacity and critical power distribution applications. Their ability to support bidirectional power flow and manage complex grid scenarios positions them as a preferred choice for modernizing large-scale electrical networks, thereby driving their significant market share.

The high voltage/medium voltage (HV/MV) segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the high voltage/medium voltage (HV/MV) segment is predicted to witness the highest growth rate. This growth is driven by the increasing demand for efficient power transmission and distribution systems in urban and industrial areas. Additionally, the integration of renewable energy sources and the expansion of electric vehicle charging infrastructure require advanced HV/MV SST solutions. The

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segment’s rapid adoption is further supported by technological advancements that enhance performance and reliability, making HV/MV SSTs essential for addressing the evolving needs of modern power grids.

Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market share. This dominance is primarily due to rapid urbanization, substantial investments in grid modernization, and the proliferation of renewable energy projects across countries like China, India, and Japan. Furthermore, government initiatives promoting smart grid deployment and energy efficiency are driving the adoption of advanced transformer technologies in the region. The presence of leading manufacturers and a robust industrial base further contribute to Asia Pacific’s significant share.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR. The region’s impressive growth rate is fueled by increasing energy demand, aggressive renewable energy targets, and large-scale infrastructure development projects. Additionally, supportive government policies, rising investments in smart grid technologies, and the growing adoption of electric vehicles are accelerating the need for advanced SST solutions. The dynamic economic landscape, coupled with a strong focus on sustainable energy, positions Asia Pacific as the fastest growing region.

Key players in the market

Some of the key players in Solid State Transformer Market include ABB, Alstom, General Electric, Eaton Corporation, Siemens AG, Schneider Electric, Hitachi Energy, Mitsubishi Electric, Varentec, Power Systems & Controls, Vollspark, AMETEK Solidstate Controls, SPX Transformer Solutions, Red Box Aviation, Electric Research and Manufacturing Cooperative (ERMCO), Kirloskar Electric Company, Synergy Transformers and Maschinenfabrik Reinhausen.

Key Developments:

In May 2025, GE Vernova Inc. announced it has been chosen by Power Grid Corporation of India Limited (POWERGRID) to supply over 70 extra high-voltage transformers and shunt reactors for key transmission projects across India. The 765 kV class units will support transmission infrastructure for renewable power evacuation

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projects under India’s Tariff-Based Competitive Bidding (TBCB) framework. The order has been booked through GE Vernova T&D India Limited, listed entity of GE Vernova’s Electrification business in India.

In March 2025, ABB has acquired a minority stake in North Carolina Company DG Matrix to support the commercialization of solid-state power electronics for generative AI data centers and renewable microgrids. The company’s Power Router platform replaces conventional systems with an all-in-one solution that is up to five times smaller and has best-in-class energy efficiency of 98 percent.

In April 2024, Hitachi Energy announced an order from SP Energy Networks to design and deliver a pioneering power quality solution. While not explicitly labeled as an SST, this solution combines advanced power electronics and control systems to stabilize the grid and enhance the flow of renewable energy from Scotland to England.

Types Covered:

- Distribution Solid State Transformer
- Power Solid State Transformer
- Traction Solid State Transformer

Components Covered:

- Converters
- Switches
- High-Frequency Transformers
- Other Components

Voltage Transformations Covered:

- High Voltage/Medium Voltage (HV/MV)

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Medium Voltage/Low Voltage (MV/LV)

Applications Covered:

Renewable Power Generation

Electric Vehicle Charging Infrastructure

Smart Grids / Power Grids

Traction Locomotives

Other Applications

End Users Covered:

Energy and Utilities

Transportation

Industrial

Commercial

Other End Users

Regions Covered:

North America

US

Canada

Mexico

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  - UK
  - Italy
  - France
  - Spain
  - Rest of Europe
- Asia Pacific
  - Japan
  - China
  - India
  - Australia
  - New Zealand
  - South Korea
  - Rest of Asia Pacific
- South America
  - Argentina
  - Brazil
  - Chile
  - Rest of South America

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Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:
- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

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Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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