

## **Substation Automation - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029**

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### **Report description:**

The Substation Automation Market size is estimated at USD 34.39 billion in 2024, and is expected to reach USD 47.13 billion by 2029, growing at a CAGR of 6.5% during the forecast period (2024-2029).

With the widening supply and demand gap, the power management has become one of the most critical worldwide concern areas. Energy consumption is increasing at one of the fastest rates globally; hence, the requirement of substation automation systems in the present-day substations to efficiently control and deliver power is highly sought.

#### Key Highlights

- Substation automation provides protection, control, automation, monitoring, and communication capabilities as a part of comprehensive substation control and monitoring solution. Today, the substation layout is much cleaner. One can probably eliminate entire writing racks and cabinets or make them much smaller depending on how users handle their I/Os to the IEDs (intelligent electronic devices). High-speed microprocessor-based remote terminal units or smart electronic devices are used for substation automation and protection.
- The migration toward the future transmission and distribution substation is taking place because of the desire to bring more automation and intelligence to the power grid network to address a myriad of utility concerns, such as how to reduce operational expenses to ways to meet new regulatory requirements, such as NERC-CIP (North American Electric Reliability Corporation - Critical Infrastructure Protection).
- According to Smart Energy International, it is estimated that Europe will spend USD 23.9 billion to automate or monitor secondary substations over the next decade. Utilities in countries including France, Italy, and Spain are expected to be the highest investors in equipment and services, enabling the automation of substations.
- The smart electric substation's role in smart cities has become more critical than the traditional one. The key benefits derived

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from substation automation are increased reliability, early detection of faults and quick diagnosis, improved worker safety, and enhanced utilization of the smart city infrastructure.

-Further, the companies are allying to help digitize the grid and make it data-driven to meet carbon neutrality. For instance, recently, Enedis, Capgemini, and Minsait have joined the edge for smart secondary substations alliance, formed to develop a standard, flexible, manageable, and interoperable platform for next-generation smart grids.

-Additionally, the Indian government allocated INR 6,450 crore (~USD 868 million) for the smart cities mission under Union Budget 2021-2022, compared to INR 3,400 crore (~USD 457 million) in FY2021.

-Furthermore, COVID-19 impacted the electric grid usage patterns in the initial stage. But as things started to get regular and the market gained traction, the demand for electricity increased, thereby increasing the need for the market studied. As per IEA, electricity consumption globally was 25,300 terawatt-hours in 2021 and 23,966 terawatt-hours in 2020.

## Substation Automation Market Trends

### High Demands Of Smart Grid to Drive the Market Growth

- The increasing demand for efficient electricity transmission, reduced operations, and management costs for utilities, and ultimately lower power costs for consumers drive the growth of smart grids in the market. Additionally, the increasing integration of large-scale renewable energy systems and improved security, among others, are fueling the growth of smart grids in substation automation.

- Innovative grid communication technology provides predictive data and recommendations to utilities, suppliers, and customers on how best to manage power. Moreover, smart grids are deployed by applying modern technologies in substations and power networks.

- To reach the intelligent grid, one needs complete information from substations in the transmission network to analyze and manage it. The trends towards upgrading and retrofitting the old conventional substations besides new modern substations are driving the market.

- Owing to the need for upgradation and replacing an aging energy infrastructure, the smart grid is one of the best solutions used in substation automation as it allows for automatic rerouting when equipment fails or outages occur and minimizes outages, and minimizes the effects. These Grid technologies are expected to further drive the market growth for substation automation.

- In Nov 2022, National Renewable Energy Laboratory (NREL) and Sacramento Municipal Utility District (SMUD) entered into a partnership to launch an automation tool for interconnecting customer solar to the grid. NREL developed PRECISE, a device that performs fast and automated interconnection assessments and seamlessly integrates with SMUD's existing business interconnection workflow.

### North America To Hold Significant Market Share

- According to the US Department of Energy, automation in switchgears (circuit breakers) and reclosers is categorized under the concept of distribution automation. It is estimated that with more than 60,000 distribution substations, 205,000 distribution circuits, and six million miles of distribution lines in operation, the United States has enormous potential for automation in its distribution network.

- The Public Utility Commission of Ohio has granted US utility AES Ohio approval to implement the first phase of its USD 249 million smart grid program that will help ensure the development of a modern, robust and efficient grid network with fewer customer outages.

- Furthermore, various industrial companies are expanding their substation with new development and partnership ecosystems,

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which leverages the market's growth. In Oct 2022, Potomac Edison, a subsidiary of FirstEnergy Corp. has, begun planning a new high-voltage transmission substation that will provide power for the first phase of Quantum Frederick, Quantum Loophole's 2,100-acre data center campus under development in Frederick, Maryland. The 230-kilovolt substation is expected to support the 240 megawatts of power anticipated for its first phase.

- Additionally, in September 2022, Siemens Smart Infrastructure and Shell Global Solutions International BV signed an MoU to collaborate on developing low-carbon and highly efficient energy solutions that support energy transition. The agreement will focus on projects that produce green hydrogen for industrial applications at Shell and its customers.

## Substation Automation Industry Overview

The global substation automation market appears to be highly competitive. Market leaders are investing in research and development to innovate their products continuously and increasingly seeking market expansion through various strategic mergers and acquisitions, innovation, and a cost-effective product portfolio. Some of the key developments in the market are:

- November 2022 - Hitachi Energy signed an agreement with Equinor to collaborate within electrification, renewable power generation, and low-carbon initiatives. The agreement depicts the commitment of both companies to accelerate the energy transition and advance a more sustainable, flexible, and secure energy system.
- April 2022 - ABB India announced the inauguration of its expanded digital substation products and digital systems factory in Vadodara, Gujarat. The new factory will meet the demand for a range of digital substation products and solutions in India and more than 50 countries.

### Additional Benefits:

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

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