

# **Excitation System Market Opportunity, Growth Drivers, Industry Trend Analysis, and Forecast 2025 - 2034**

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## **Abstracts**

The Global Excitation System Market was valued at USD 3.1 billion in 2024 and is estimated to grow at a CAGR of 6.2% to reach USD 5.5 billion by 2034. This growth is fueled by the accelerating global transition toward renewable energy sources. As utilities and industrial operators expand their use of solar, wind, and hydroelectric power, they are facing increasing demands for sophisticated grid management and voltage regulation. Excitation systems play a vital role in these setups, as they enable smooth generator output control, helping maintain power stability in grids that are now dealing with more variability from renewables.

The market is also responding to a broader push for improved energy efficiency and enhanced grid reliability. The steady rise in electricity demand across both industrialized nations and emerging economies is driving power plants to upgrade their infrastructure. Aging systems are being modernized with advanced excitation technologies that support better frequency and voltage control. These systems are especially critical in high-demand environments, where even brief disruptions can have cascading effects on grid performance. Automation has become a central focus, and modern excitation systems are increasingly integrated into smart control frameworks that support real-time operational adjustments.

With growing infrastructure complexity, the need for digital solutions is more evident than ever. Digital excitation systems are becoming the preferred choice due to their ability to provide advanced diagnostics, automated system responses, and seamless integration with SCADA platforms. These capabilities not only reduce manual intervention but also allow for more precise system tuning, contributing to better overall efficiency. As a result, the digital technology segment is expected to record a CAGR

exceeding 6.2% through 2034, indicating strong demand for next-generation control systems that align with evolving grid architectures.

Among the various system types, the brushless excitation segment is projected to see significant growth, with its market value expected to surpass USD 2.1 billion by 2034. Brushless excitation systems are gaining traction primarily because they eliminate components prone to wear and tear, such as brushes and slip rings. This results in reduced maintenance needs and longer equipment life cycles, making these systems an attractive option for large-scale power producers and industrial facilities aiming to minimize downtime and lower operational costs.

The market's momentum is particularly visible in North America, where the United States continues to exhibit strong demand. In 2024 alone, the U.S. excitation system market was valued at USD 518.2 million, growing steadily from USD 498.6 million in 2023 and USD 480.6 million in 2022. The U.S. economy remains one of the most influential on the global stage, with its Gross Domestic Product (GDP) reaching USD 29.16 trillion in 2024. This economic growth, combined with nationwide efforts to enhance energy efficiency and reduce carbon emissions, is pushing enterprises to adopt newer and smarter excitation technologies that align with sustainability goals.

Stricter environmental policies and corporate ESG initiatives are compelling power operators to limit energy loss and improve grid performance. With electricity consumption continuing to rise, companies are under increasing pressure to deploy systems that not only meet current performance demands but also position them for future energy challenges. Excitation systems, as a core part of power generation and distribution, are at the heart of this transition.

The industry landscape remains competitive, with global manufacturers maintaining a strong presence. Key players, backed by decades of experience in energy and automation, have managed to capture more than 20% of the global market share. Their success is anchored in technological innovation, extensive portfolios, and the ability to deliver turnkey solutions for diverse energy applications. These firms continue to invest in R&D and digital transformation, further solidifying their role in shaping the future of excitation systems.

## **Companies Mentioned**

ABB, ANDRITZ GROUP, Basler Electric, Emerson, F&S Prozessautomation, General Electric, Goltens, JEUMONT Electric, KinetSync (Kinetics Industries, Inc.), Mitsubishi

Electric, NIDEC Corporation, REIVAX, Siemens, VOITH Group, WEG

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