

Energy Storage-Integrated Charging Market Forecasts to 2032 – Global Analysis By Integration Type (Microgrid Storage Solutions, Grid-Tied Storage Systems, Renewable Energy Systems, EV Charging Infrastructure Solutions, Industrial Load Management Solutions, Residential Smart Storage Systems and Other Integration Types), Connectivity (On-Grid, Off-Grid and Hybrid Systems), Technology, Application, End User and By Geography

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Abstracts

According to Statistics MRC, the Global Energy Storage-Integrated Charging Market is accounted for \$8.41 billion in 2025 and is expected to reach \$41.4 billion by 2032 growing at a CAGR of 25.6% during the forecast period. Energy Storage-Integrated Charging is system that combines electric vehicle (EV) charging infrastructure with energy storage technologies, such as batteries. This integration enables optimized energy management by storing electricity during off-peak hours or from renewable sources, then delivering it efficiently during peak demand or charging events. It enhances grid stability, reduces energy costs, and supports sustainable mobility. These systems are particularly valuable in areas with limited grid capacity or intermittent renewable energy availability, improving overall charging reliability and flexibility.

Market Dynamics:

Driver:

Rapid increase in the number of EVs

As governments push for cleaner transportation and phase out internal combustion engines, the need for fast, reliable, and grid-resilient charging solutions is surging. Energy storage systems (ESS) embedded within charging stations help manage peak loads, reduce grid dependency, and ensure uninterrupted service during outages. Moreover, the rise of fleet electrification and commercial EV deployments is amplifying the pressure on existing charging networks, making integrated storage a strategic necessity. This trend is further supported by falling battery costs and growing consumer preference for sustainable mobility.

Restraint:

Complex regulatory and policy frameworks

Varying standards across regions for grid interconnection, safety compliance, and energy tariffs complicate deployment strategies for manufacturers and operators. Additionally, permitting processes for installing storage-backed charging stations can be lengthy and inconsistent, delaying project timelines. The lack of unified policies around energy storage incentives and demand response participation further limits scalability. These regulatory complexities often discourage investment, especially among smaller players, and slow down the pace of infrastructure expansion.

Opportunity:

Integration of energy storage with charging stations

By coupling battery systems with charging infrastructure, operators can optimize energy usage, participate in grid services, and reduce operational costs. This integration enables load balancing, peak shaving, and renewable energy utilization, making charging stations more sustainable and efficient. Innovations such as vehicle-to-grid (V2G) technology and smart energy management platforms are enhancing the value proposition of storage-backed chargers. As cities aim for carbon neutrality, these hybrid systems are poised to become central to future mobility and energy strategies.

Threat:

Vulnerable to cyberattacks

As energy storage-integrated charging stations become more digitally connected, they

are increasingly exposed to cybersecurity risks. These systems often rely on cloud-based platforms, IoT sensors, and real-time data exchange, making them susceptible to hacking, data breaches, and operational disruptions. A successful cyberattack could compromise user privacy, disable charging operations, or even destabilize local grids. The lack of standardized cybersecurity protocols across manufacturers and operators exacerbates the threat.

Covid-19 Impact:

The COVID-19 pandemic had a dual impact on the energy storage-integrated charging market. Initially, lockdowns and supply chain disruptions led to delays in infrastructure projects and component shortages, slowing market momentum. However, the crisis also accelerated the shift toward clean energy and digital transformation. Governments introduced stimulus packages focused on green recovery, which included investments in EV infrastructure and energy storage. Remote work and reduced travel highlighted the need for decentralized energy systems, boosting interest in microgrids and storage-backed chargers.

The microgrid storage solutions segment is expected to be the largest during the forecast period

The microgrid storage solutions segment is expected to account for the largest market share during the forecast period due to their ability to provide localized energy resilience and support high-demand charging environments. These systems enable seamless integration of renewable energy sources, such as solar and wind, with EV charging stations, reducing reliance on centralized grids. Their modular design allows for scalable deployment across urban, suburban, and remote areas. Additionally, microgrids offer backup power during outages and facilitate energy arbitrage, making them attractive for commercial and municipal applications.

The thermal energy storage (TES) segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the thermal energy storage (TES) segment is predicted to witness the highest growth rate driven by its cost-effectiveness and environmental advantages. TES systems store energy in the form of heat, which can be used to support auxiliary functions at charging stations, such as climate control or pre-conditioning of EV batteries. Innovations in phase-change materials and hybrid TES technologies are expanding their applicability, making them a compelling alternative to

traditional battery storage in specific use cases.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share propelled by robust EV adoption, favorable policies, and advanced grid infrastructure. The region benefits from strong government incentives, such as tax credits and grants for energy storage and charging station deployment. Major automakers and tech companies are investing heavily in building nationwide charging networks with integrated storage capabilities. Additionally, the presence of leading energy storage manufacturers and a mature regulatory environment enhances market stability.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR driven by rapid urbanization, rising EV sales, and aggressive infrastructure development. Countries like China, India, South Korea, and Japan are investing in large-scale charging networks and energy storage projects to meet growing energy demands. Government initiatives promoting clean transportation and renewable integration are accelerating market expansion. The region also benefits from a strong manufacturing base for batteries and EV components, enabling cost-effective deployment.

Key players in the market

Some of the key players in Energy Storage-Integrated Charging Market include Fluence, Tesla Energy, NextEra Energy Resources, LG Energy Solution, Contemporary Amperex Technology Co., Limited (CATL), Powin Energy, BYD, Siemens Energy, General Electric, Samsung SDI, Enphase Energy, Sungrow Power Supply Co., Ltd., Highview Power, Energy Vault, Form Energy, Nostromo Energy, Hitachi Energy, Canadian Solar, VARTA AG and Toshiba Corporation.

Key Developments:

In September 2025, CATL signed a five-year deal with Li Auto to deepen collaboration on battery safety and supercharging. The partnership includes global expansion and integration of high-performance battery systems.

In August 2025, FlexGen acquired key assets and IP from Powin, expanding its global

energy storage footprint to 25 GWh. The move ensures continuity for Powin customers and enhances FlexGen's HybridOS platform.

In March 2025, Samsung SDI unveiled robot and autonomous vehicle batteries at InterBattery 2025. It introduced the 46-series cylindrical lineup and announced a joint battery R&D MoU. The event highlighted SDI's push into robotics and mobility tech.

Integration Types Covered:

Microgrid Storage Solutions

Grid-Tied Storage Systems

Renewable Energy Systems

EV Charging Infrastructure Solutions

Industrial Load Management Solutions

Residential Smart Storage Systems

Other Integration Types

Connectivities Covered:

On-Grid

Off-Grid

Hybrid Systems

Technologies Covered:

Electrochemical Storage

Mechanical Storage

Thermal Energy Storage (TES)

Chemical Storage

Other Technologies

Applications Covered:

Energy Arbitrage

Frequency Regulation

Renewable Capacity Firming

Black Start Services

Transmission & Distribution (T&D) Upgrade Deferral

Peak Shaving / Demand Charge Management

Backup Power & Resilience

Other Applications

End Users Covered:

Utility-Scale

Commercial & Industrial

Residential

Transportation

Other End Users

Regions Covered:**North America**

US

Canada

Mexico

Europe

Germany

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

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

Energy Storage-Integrated Charging Market Forecasts to 2032 – Global Analysis By Integration Type (Microgrid S...

customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

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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