

Global Energy Internet Energy Storage



Overview

Battery storage is the fastest growing power technology today. In 2025, 108 GW of new battery storage capacity was deployed worldwide, 40% more than in 2024.

Key Takeaways

Energy storage is a critical enabler of the global energy internet, balancing renewable energy supply, enhancing grid stability, and supporting efficient energy utilization worldwide. Role of Energy Storage in the Energy Internet Energy storage technologies are essential for the energy internet, which integrates distributed renewable energy sources like solar and wind into a connected, intelligent grid. Storage systems help mitigate the intermittency of renewables, ensuring that energy generated during peak production periods can be stored and dispatched when demand is high or generation is low.

This improves grid reliability, resilience, and energy quality, allowing utilities to respond to sudden demand spikes or unexpected outages.

Key Energy Storage Technologies

The energy internet relies on a diverse set of storage technologies: Electrochemical storage (batteries): Lithium-ion batteries dominate due to high energy density, low self-discharge, and adaptability for residential, commercial, and utility-scale applications. Nickel-based chemistries (NMC, NCA) and lithium iron phosphate (LFP) are widely used, with ongoing innovation in solid-state and sodium-ion batteries. Pumped hydro storage: Converts excess electricity into potential energy by pumping water to elevated reservoirs, then releases it to generate electricity when needed.

Flywheels and thermal storage: Provide rapid response and grid stabilization, complementing battery systems.

Market Trends and Growth

The global energy storage market is experiencing rapid expansion. Investments reached \$37 billion in 2023, reflecting a threefold increase from 2021. BloombergNEF projects 94 gigawatts (247 GWh) of new storage capacity in 2025, with a compound annual growth rate of 14.

7% through 2035, reaching 220 GW/972 GWh. Major markets include China, the US, Japan, South Korea, and Europe, with utility-scale projects driving growth. Policy incentives, grid modernization, and corporate adoption of renewables are key drivers.

Policy and Regulatory Frameworks

Successful integration of energy storage into the energy internet requires robust policies and regulations. Governments provide tax incentives, grants, and subsidies to encourage adoption, while evolving market rules allow storage systems to participate in wholesale electricity markets, providing capacity and ancillary services. Collaboration between industry, academia, and regulators is crucial to foster innovation and ensure fair competition.

Future Prospects

Emerging technologies such as solid-state batteries, hydrogen storage, and advanced thermal storage promise higher efficiency, safety, and longevity. As the global transition to sustainable energy accelerates, energy storage will play an increasingly pivotal role in enabling decarbonization, renewable integration, and a resilient energy internet. In summary, energy storage is not only a technical necessity for the energy internet but also a strategic investment opportunity, supporting the global shift toward sustainable, reliable, and efficient energy systems.

Article Content

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The provision of low carbon energy to our society is a key issue at the heart of sustainable development of global energy supply. The Global Energy Interconnection (GEI) Journal publishes original research

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Global Energy Storage Market

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Uncover Deloitte's latest insights on global energy storage and how digital technologies and market innovation are helping accelerate battery storage deployment.

How about energy storage in energy internet | NenPower

The evolution of the energy landscape, specifically the emergence of the energy internet, calls for effective energy storage solutions. At its core, energy storage encompasses various

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