

## India's Energy Storage Revolution: Unlocking the potential of battery systems

As India advances toward its ambitious renewable energy targets, new opportunities are emerging to strengthen the nation's clean energy transition. With a goal of achieving 500 GW of renewable capacity by 2030, the growth of solar and wind power is transforming the energy landscape. However, their variable nature brings unique challenges for maintaining grid stability and reliability. This is where innovation steps in. Battery Energy Storage Systems (BESS) are rapidly evolving into a game-changing solution, enabling seamless integration of renewables, enhancing grid flexibility, reducing reliance on fossil fuels, and ensuring uninterrupted power supply. By adopting BESS at scale, India is poised not only to achieve its green energy ambitions but also to build one of the most resilient and sustainable power infrastructures in the world.



### The Scale of India's Energy Storage Opportunity

India's energy storage market represents one of the world's most compelling growth stories in the clean energy sector. Current projections indicate the market will expand at an extraordinary rate of over 20% annually as India plans to have 74 GW of battery energy storage system capacity by the financial year 2031-32, with a total projected energy storage of 236.22 GWh. India aims to achieve 50% of its energy from renewable sources by 2030 and has a net-zero emissions target by 2070.

This growth trajectory translates into substantial economic opportunities, with the BESS market alone projected to reach INR 2.78 Lakh Crore (USD 32 billion) by the end of the decade, growing at a compound annual growth rate of 27%.

This remarkable expansion is driven by multiple converging factors that create a perfect storm of opportunity and necessity. The government's National Energy Storage Mission, coupled with

ambitious renewable energy targets, provides the policy framework necessary to support large-scale deployment. The increasing adoption of renewable energy sources across the country creates an urgent technical requirement for storage solutions that can manage the inherent variability of solar and wind power generation.

### The Critical Role of Battery Energy Storage Systems

The significance of BESS technology extends far beyond simple energy storage capabilities. These systems serve as the technological bridge that transforms intermittent renewable energy sources into reliable, dispatchable power comparable to conventional generation methods. When solar panels generate excess electricity during peak sunlight hours or wind turbines produce surplus power during optimal wind conditions, battery systems capture and store this energy for release during periods when renewable generation is insufficient to meet the demand.

For commercial and industrial facilities, BESS technology offers immediate economic benefits through peak shaving and load shifting capabilities. These systems enable businesses to reduce their peak demand charges by drawing power from stored batteries during high-demand periods rather than pulling electricity from the grid at premium rates. This peak shaving function not only reduces operational costs for individual facilities but also helps balance overall grid demand, creating system-wide efficiency improvements. There are immense opportunities for companies with the expertise and resources to navigate the complex landscape. Established infrastructure companies with experience in power sector projects are particularly well-positioned to address these obstacles while developing viable business models for energy storage deployment.



### The Strategic Significance of Industry Leadership

The entry of major infrastructure companies into the BESS market signals



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a critical evolution in India's energy storage ecosystem. When established player like SPML Infra Limited venture into battery storage systems, the involvement represents more than business diversification; it addresses fundamental infrastructure needs that are essential for the country's energy transition.

SPML Infra Limited, India's leading infrastructure development company has entered into an exclusive agreement with Energy Vault, USA, a global leader in advanced energy storage solutions. This strategic partnership aims to accelerate the manufacturing and deployment of Energy Storage Systems (ESS) in India. As part of the agreement, Energy Vault will transfer its state-of-the-art B-VAULT Battery Energy Storage System (BESS) technology and VaultOS Energy Management System (EMS) software to SPML, enabling localized production and faster adoption of clean energy infrastructure in India.

Our strategic partnerships are driving faster technology adoption in India's energy sector. SPML Infra, in collaboration with Energy Vault (USA), is working to adapt advanced global storage technologies to meet India's unique environmental conditions, including extreme temperatures, high dust levels, and humidity challenges. By tailoring these solutions locally, we can significantly enhance system performance, ensure long-term reliability, and lower costs by avoiding reliance on expensive imported systems designed for very different climates. This initiative not only strengthens India's self-reliance in energy storage but also supports the nation's clean energy transition and sustainability goals.

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