

FFD POWER Launches 800V Battery Energy Storage Platform to Drive Scalable, Cost-Efficient PV-BESS Deployment

Turnkey 800V BESS solutions reduce installation complexity, cut system losses, and improve economics for grid services and PV-BESS collocation projects.

CHINA, December 29, 2025

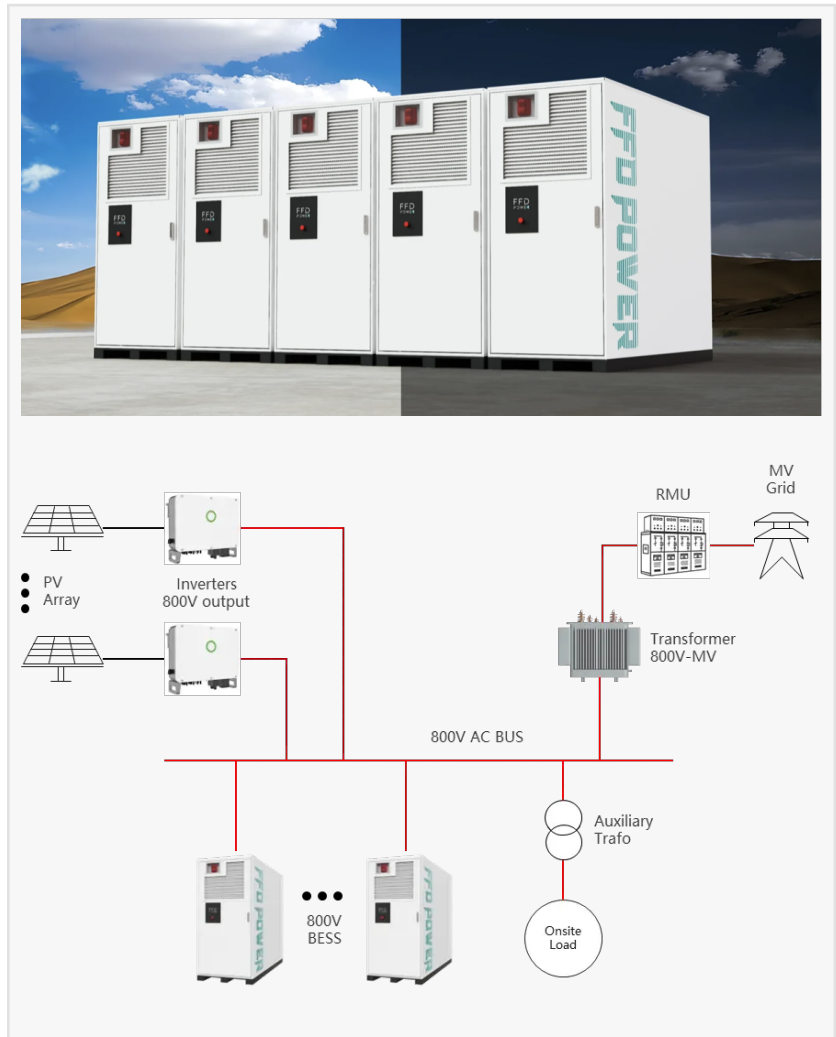
/EINPresswire.com/ -- [FFD POWER](#), a leading provider of commercial and industrial (C&I) battery energy storage systems (BESS), has officially launched its next-generation [800V BESS platform](#)—a fully integrated, turnkey energy storage solution engineered to meet the growing demands of megawatt-scale PV-BESS collocated projects and advanced grid-connected applications.

Designed to align with the industry's transition toward higher-voltage AC architectures, the 800V platform enables system developers, EPCs, and asset owners to significantly improve efficiency, scalability, and total project

economics. By doubling the AC voltage level compared to conventional low-voltage systems, FFD POWER's 800V BESS dramatically reduces operating current, electrical losses, copper consumption, and balance-of-system complexity—key constraints in modern C&I solar-plus-storage installations.

Driving Efficiency Through Higher Voltage Architecture

As global PV capacity continues to scale, the photovoltaic industry is undergoing a structural shift toward 800V-class AC systems, driven largely by next-generation string inverter platforms. This transition is reshaping how energy storage systems are designed, particularly for large C&I and



utility-adjacent projects where efficiency, space utilization, and simplified electrical design are critical.

An 800V Battery Energy Storage System is a low-voltage AC storage architecture developed to match the output voltage of modern PV inverters. By delivering the same power at higher voltage and lower current, 800V systems reduce conductor size, thermal stress, and electrical losses when compared with traditional 400V or 690V designs—while also improving system reliability and long-term operability.

FFD POWER's 800V BESS portfolio reflects this industry evolution, providing a future-aligned solution for PV-integrated and grid-connected energy storage applications.

Current Reduction as a Key Engineering Advantage

In three-phase AC systems, current decreases proportionally as voltage increases. At megawatt scale, this relationship becomes a defining engineering factor. For example, a 2 MW system operating at 400V requires nearly 2,900 A of current, while the same power at 800V operates at approximately half that level.

Lower current translates directly into smaller switchgear, reduced copper busbars, fewer parallel feeders, and simplified thermal management. While 690V systems offer partial improvement, market momentum—driven by inverter roadmaps and PV-BESS standardization—is increasingly centered on 800V, making intermediate voltage upgrades less attractive for long-term project planning.

Native Integration with Modern PV Systems

One of the most significant advantages of the 800V BESS architecture is its direct alignment with modern 800V PV inverter outputs. When both PV generation and energy storage operate on the same 800V AC bus, systems can often be integrated without the need for additional low-voltage step-up transformers on the storage side.

This shared voltage level simplifies system topology, reduces equipment count, shortens installation timelines, and lowers capital expenditure. As a result, 800V architecture is increasingly regarded as a clean, scalable foundation for PV-BESS collocation projects requiring streamlined low-voltage layouts.

System Architecture and Operating Logic

FFD POWER's 800V BESS solutions are typically deployed as AC-coupled, low-voltage systems. LFP battery racks are connected on the DC side to bidirectional Power Conversion Systems (PCS), which output approximately 800Vac to a common PV collection bus. Power is then stepped up to medium voltage through a transformer for grid interconnection.

Each system integrates comprehensive DC protection, PCS units supporting both grid-following and grid-forming operation, and an advanced Energy Management System (EMS). The EMS

coordinates active and reactive power dispatch based on defined priority logic—exporting excess PV energy, supplying on-site loads, charging batteries with surplus generation, and reserving capacity for backup or grid-support functions.

This flexible architecture supports a wide range of applications, including microgrids, grid services, virtual synchronous generator (VSG) operation, and black-start-capable BESS, subject to project configuration and local grid codes.

Optimizing the Low-Voltage Side of MV Transformers

At megawatt scale, the low-voltage side of the step-up transformer often becomes an overlooked constraint. High current at 400V or 690V requires oversized LV switchboards, multiple parallel cable runs, and results in higher thermal losses.

By significantly reducing LV current, the 800V approach simplifies transformer integration, improves LV switchgear manageability, and enhances overall system reliability—particularly valuable in space-constrained PV-BESS collocation projects.

Modular Plug-and-Play Deployment with Next-Generation EMS

FFD POWER offers a modular deployment model for its 800V BESS platform, centered around an all-in-one, liquid-cooled cabinet with a typical configuration of 418 kWh energy capacity and 210 kW output at 800V AC. These cabinets are designed as true plug-and-play BESS units, enabling rapid installation, phased capacity expansion, and reduced on-site engineering effort.

The control layer is built on an industrial-grade SIEMENS PLC-based EMS, operating reliably across wide environmental conditions (-25°C to 60°C, up to 95% non-condensing humidity, and high electromagnetic interference). Deterministic PROFINET communication enables power response and frequency measurement at the 10 ms level, ensuring fast and precise PCS charge-discharge control for applications such as FCR, peak shaving, and transformer capacity support, without control latency that could impact grid stability or revenue performance.

Compliance and Global Readiness

The 800V BESS platform is engineered for international deployment and regulatory alignment, with compliance covering IEC 62619, IEC 63056, CE-EMC, UN transportation standards, MSDS, and major European grid codes, including EN 50549, VDE 4110, and CEI 016.

Cybersecurity and long-term maintainability are addressed through the use of industrial, non-cloud-dependent control components—ensuring predictable system behavior, extended lifecycle support, and suitability for critical energy infrastructure.

Economics of the 800V BESS Approach

From an economic standpoint, reduced operating current directly translates into lower copper usage, fewer feeders, improved thermal margins, and simplified installation. FFD POWER's all-in-one cabinet systems deliver cost structures comparable to utility-scale container solutions, while

offering greater flexibility in regions where logistics, site access, or permitting limit containerized deployment.

As PV systems continue to scale and inverter platforms converge on higher-voltage AC outputs, 800V BESS architecture is increasingly recognized as a future-proof foundation for commercial and industrial energy storage—providing a consistent, efficient, and scalable framework across modular cabinets and larger system configurations.

For more information, visit: <https://ffdpower.com/800v-bess/>.

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About FFD POWER

FFD POWER has become a global leader in commercial and industrial (C&I) energy storage solutions. As a leading innovator in energy storage technology, the company specializes in high-performance EMS, BESS integration, and grid-friendly solutions, committed to driving the global energy transition. To date, FFD POWER has delivered more than 2,000 pre-integrated, plug-and-play BESS across over 30 countries—including Germany, Italy, France, Spain, Norway, the USA, Brazil, Israel and more—serving a wide range of applications such as energy arbitrage, frequency control (FCR), microgrids, AI-driven DC management (AIDC) and PV-BESS collocation. Combining industrial-grade hardware, standardized protocols, and user-centric design, FFD POWER delivers reliable, efficient, and future-proof energy storage systems that enhance reliability, optimize energy efficiency, and enable advanced grid interactions for industrial, commercial, and utility clients worldwide.

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