



Modular batteries target growing commercial energy storage market

APsystems is expanding into the commercial and industrial (C&I) energy storage sector with the launch of a new modular battery platform offering capacities from 60 kilowatt-hours to several megawatt-hours. Stéphane Lajust-Debat, Business Development Manager for the C&I segment in Europe, including storage, outlines the approach behind the new offering and how it fits into the company's broader strategy for the market.



25 MW Microinverter powered project, Nanjing, China

APsystems is known for its multimodule solar microinverters, designed to support two, four and up to eight high-performance PV panels, as well as residential AC-coupled storage solutions. Drawing on more than 16 years of experience in solar product development, it is now targeting the commercial and industrial battery market, reflecting growing demand for energy storage systems.

Flexible design

The modular battery platform offers scalable systems with storage capacities ranging from 60 kilowatt-hours to several megawatt-hours per cabinet or container. This flexible configuration is intended to meet a wide range of commercial project requirements, allowing systems to be tailored to specific operational demands, grid connections and applications.

Hybrid configurations

The energy storage system is available in hybrid configurations or as a complete

AC-coupled solution. Depending on the application, the systems use either air or liquid cooling to support operational lifespan. Charge and discharge rates range from 0.25C to 1C, with 0.5C as a typical configuration.

The C-rate represents the ratio of instantaneous AC power to DC capacity, indicating how quickly a battery can be charged or discharged relative to its total capacity. For example, a system rated at 100 kW and 200 kWh operates at 0.5C, corresponding to a two-hour discharge duration.

The systems are compatible with both 400 V or 800 V AC infrastructures.

More than 2 gigawatt-hours installed

The company reports more than 2 GWh of installed storage capacity worldwide, primarily through its subsidiary AES, acquired in 2023. This experience is being applied to the European market, where demand for C&I storage is increasing.

The market for commercial and industrial energy storage systems is expanding rapidly, driven by the decentralisation of renewable energy generation, increasing electrification, including electric mobility, and growing grid constraints.

Alongside this growth, the role of C&I storage is also evolving beyond simple energy shifting. Increasingly, systems are expected to deliver multiple value streams, combining on-site optimisation with participation in wider energy markets. This includes services such as demand response, frequency support and capacity provision, depending on local regulatory frameworks.

As a result, system flexibility, responsiveness and integration capabilities are becoming as important as core performance metrics such as capacity and efficiency.

At the same time, project developers and end users are placing greater emphasis on lifecycle considerations, including system durability, maintenance requirements and total cost of ownership.



Stéphane Lajust-Debat

This is driving interest in modular designs that can be adapted or expanded over time, as well as solutions that simplify installation and commissioning. In parallel, digitalisation is playing a growing role, with monitoring, control and predictive maintenance tools helping to optimise performance and reduce operational risk.

These trends are shaping the development of new storage platforms, as manufacturers seek to balance technical performance with flexibility and long-term reliability in an increasingly complex energy landscape.

100 MW/400 MWh energy storage project in Shenzhou, Hebei Province

A recent large-scale project in Shenzhou, Hebei Province, developed for the Longteng factory, has a capacity of 100 MW/400 MWh.

Located on the North China Plain, the facility illustrates the scale of modern grid-connected storage. It deploys 80 prefabricated 5000 L energy storage units, providing high-capacity storage to support grid stability and the integration of renewable energy.

Each 5000 L unit provides up to 5000 kWh of storage capacity. The system uses a string-type architecture, enabling independent monitoring and management of each battery bank. This approach supports system efficiency and allows for more precise control compared to centralised storage designs.

Through market-oriented operating models, the facility participates in grid services such as spot market trading, frequency regulation and capacity leasing. These services contribute to balancing supply and demand while supporting renewable integration.

The system features a modular design with integrated liquid cooling, multi-level fire protection and layered electrical protection. An energy management system continuously monitors performance and provides early diagnostics. The enclosure is designed for long-term outdoor operation, with protection against environmental factors such as wind and dust.

The architecture also improves operational efficiency and safety. By eliminating parallel DC-side connections between clusters, circulating currents are reduced and electrical losses minimised. Combined with temperature control and efficient cooling, this supports charge and discharge performance while reducing auxiliary energy consumption.



100 MW APStorage project Longteng Factory in Shenzhou, Hebei Province, China



Integrated safety systems

The platform uses lithium iron phosphate batteries, a chemistry widely adopted for its thermal stability and durability. This reduces susceptibility to overheating and thermal runaway compared to some other lithium-based technologies.

A battery management system monitors performance at cell level, while an energy management system optimises energy flows. The power conversion system manages the interface between direct current and alternating current. Fire protection and safety systems are integrated into the design.

Software updates

Hardware and software are developed as part of an integrated system, from cell level through to full system management. Remote firmware updates and local upgrades support long-term performance and adaptability.

Systems can be monitored via the EMS platform designed by APsystems called EMA or integrated into external environments via standard communication protocols, ensuring compatibility with broader energy management systems.

Wide range of applications

The battery platform is designed for a variety of applications. Grid-connected optimisation

allows energy to be stored during periods of low prices and discharged during peak demand. Off-grid configurations provide independence from the electricity network.

Additional use cases include participation in flexibility markets, backup power provision and peak demand management, which can help reduce grid connection costs.

Energy storage is playing an increasingly important role in the transition towards more flexible and resilient electricity systems. The company continues to develop solar and storage technologies to support cleaner energy generation and improve system reliability and efficiency.

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Nanjing International Expo Center 25 MW installation

Location: China

System capacity: 25 MW

Microinverters: 6,442 QT2D units

The PV system at Nanjing International Expo Center is one of the largest microinverter-based installations in China, covering more than 150,000 square metres of rooftop space. It uses more than 40,000 high-efficiency modules and operates on a self-consumption model, with surplus electricity exported to the grid.

Annual generation is estimated at around 24.8 million kWh, helping to meet the energy demand of the exhibition halls

while also generating revenue through electricity sales.

The large-scale application of microinverter technology supports safety, efficiency and monitoring at module level. The project is expected to reduce carbon dioxide emissions by approximately 25,000 tonnes per year, equivalent to planting around 900,000 trees.

A smaller C&I installation using the same microinverter technology has also been completed at a ceramic factory in Sichuan Province, where more than 255 QT2D units were installed, delivering a total capacity of 1.2 MW.

Refers to lead image