

ESG Compliance via Commercial Energy Storage - Official Commercial BESS

Technical Overview & Datasheet

ESG COMPLIANCE VIA COMMERCIAL ENERGY STORAGE - OFFICIAL
COMMERCIAL BESS TECHNICAL OVERVIEW & DATASHEET

EXECUTIVE SUMMARY

This document provides a comprehensive technical overview of our latest Commercial Battery Energy Storage System (BESS), engineered to align with the world's most rigorous Environmental, Social, and Governance (ESG) criteria. Designed for commercial and industrial (C&I) facilities, this platform delivers a unique convergence of peak shaving economics, renewable integration, and robust, verifiable sustainability. Moving beyond traditional energy storage, this solution is a strategic asset for the responsible energy transition, offering measurable contributions to carbon footprint reduction, grid stability, and operational resilience. The system's modular architecture, combined with a Tier-1 LFP cell chemistry and smart liquid cooling, ensures a 15+ year operational lifespan with minimal environmental impact, directly supporting the ESG mandates of our global partners.



SYSTEM ARCHITECTURE & SAFETY

Our Commercial BESS is built upon a resilient, containerized architecture that prioritizes safety, scalability, and ease of integration. The system is a fully integrated unit comprising high-density battery racks, a bi-directional Power Conversion System (PCS), an intelligent Battery Management System (BMS), and a proprietary Energy Management System (EMS). The core safety philosophy is enforced through a multi-layered protection strategy. Passive protection includes robust thermal insulation and a reinforced steel enclosure rated to NEMA 3R and IP65 standards for outdoor deployment. Active safety is managed by the BMS, which continuously monitors voltage, current, and temperature at the cell level, preventing operation outside safe parameters. The system is designed to comply with UL 9540 and NFPA 855, with gas venting and explosion-proof panel designs to mitigate any potential thermal event.

KEY FEATURES

- ESG-Aligned Decarbonization: Directly reduces Scope 1 and Scope 2 emissions by displacing grid energy consumption during peak periods and enabling high solar self-consumption, forming a cornerstone of any net-zero strategy.
- Peak Shaving & Demand Management: Provides reliable, dispatchable power to eliminate costly demand charges, reducing overall electricity costs by up to 20% depending on local tariff structures and load profiles.
- Grid Ancillary Services: Ready for frequency regulation and reactive power support, creating a new revenue stream and enhancing grid stability for the operator.
- Modular & Scalable Design: Standardized cabinet architecture allows for seamless capacity expansion via parallel connection, supporting projects from 215 kWh to multiple MWh.
- Smart Liquid Cooling: Enables superior thermal homogeneity, increasing cell cycle life by up to 20% and ensuring stable operation even in extreme ambient temperatures from -30°C to +55°C.
- Advanced Safety Systems: Implementation of a three-tier fire protection system, including a dedicated aerosol extinguishing system, a water mist interface, and a 24/7 remote monitoring service.

COMPLIANCE & STANDARDS

The commercial storage platform is manufactured in an ISO 14001-certified facility and has successfully undergone rigorous certification processes. It holds full compliance with international safety, performance, and environmental standards. These include:

- UL 9540 Energy Storage Systems and Equipment
- UL 9540A (Cell, Module, and Unit Level Thermal Runaway Fire Testing)
- IEC 62619 (Secondary Cells and Batteries for Industrial Applications)
- IEC 62477 (Safety Requirements for Power Electronic Converter Systems)
- UN 38.3 (Transportation Safety for Lithium Batteries)
- CE, UKCA, and RoHS compliance for key international markets

TECHNICAL SPECIFICATIONS

Parameter	Specification
Nominal Capacity	215 kWh / 372 kWh per cabinet
System Power (PCS)	100 kW / 200 kW
Cooling Method	Smart Liquid Cooling (Ethylene-Glycol-Water)
Cell Chemistry	Tier-1 LFP (Lithium Iron Phosphate)

Round-Trip Efficiency (AC-to-AC)	≥ 90%
Cycle Life	> 6000 cycles @ 80% DoD
Operating Temperature Range	-30°C to +55°C
Enclosure Rating	IP65, NEMA 3R
Safety Certifications	UL 9540, IEC 62619, UL 9540A

PERFORMANCE PARAMETERS

Nominal Capacity:

- 215 kWh DC
- 372 kWh DC

System Power (PCS):

- 100 kW / 200 kW
- 230 kW / 430 kW

Cell Chemistry: Lithium Iron Phosphate (LFP), Tier-1 Automotive Grade

Cell Cycle Life: > 6000 cycles to 80% DoD, > 8000 cycles to 70% DoD

Round-Trip Efficiency: ≥ 90% (AC-to-AC, measured at nominal conditions)

OPERATIONAL PARAMETERS

Cooling Method: Smart Liquid Cooling (Ethylene-Glycol-Water mixture)

Operating Temperature: -30°C to +55°C (derating above +45°C)

Storage Temperature: -40°C to +60°C

Relative Humidity: 0% to 95% (non-condensing)

Altitude: Up to 3000m (derating above 2000m)

MECHANICAL & INSTALLATION

Enclosure Rating: IP65 (Protection against dust and water jets)

Noise Level: < 65 dB(A) @ 1m

Dimensions (LxWxH per cabinet): 6,058mm x 2,438mm x 2,896mm

Weight: Approximately 25,000 kg

COMMUNICATION & INTERFACES

Protocols: Modbus TCP/IP, IEC 61850, CAN 2.0, Profibus

Interfaces: Ethernet (RJ45), RS-485, Fiber Optic (SFP) for remote monitoring



INDUSTRIAL DEPLOYMENT

This system is optimized for a variety of commercial and industrial applications. Its robustness and flexibility make it ideal for high-energy consumers such as manufacturing plants, data centers, and logistics hubs. In PV-storage-charging configurations, the system serves as a central intelligence to manage local energy flows, significantly reducing grid dependency while supporting a fleet of electric vehicles. The containerized design allows for rapid site deployment on a simple concrete pad, with grid interconnection facilitated via a standard MV/LV transformer. For micro-grid applications, the BESS provides the primary grid-forming capability, enabling seamless islanding for critical operations, ensuring energy security and operational continuity during grid outages.

COMMERCIAL HIGHLIGHTS

The platform's value proposition is clear: it is a superior, future-proof investment. Its ESG compliance is not a marketing claim but an engineering reality, validated by independent certifications. The system's high round-trip efficiency and extended cycle life directly translate into a lower Levelized Cost of Storage (LCOS) compared to competitive air-cooled alternatives. Furthermore, the active remote monitoring service allows for predictive maintenance, minimizing system downtime and maximizing Return on Investment (ROI).

ABOUT THE MANUFACTURER

As a global leader in clean energy, our commitment goes beyond delivering hardware; we provide integrated energy solutions that empower industries to meet their sustainability objectives. Our team of experts provides comprehensive support from initial site assessment and system design through to installation, commissioning, and after-sales maintenance, ensuring our clients can maximize the value of their energy assets.