POWER AHEAD GROUP

Long-Life Energy Storage Infrastructure for AI Data Center Microgrids

THE MICROGRID IMPERATIVE

AI data center loads are scaling from 10MW toward 100MW, 500MW, and 1GW. Grid interconnection queues commonly run 3–7 years, while GPU infrastructure cannot tolerate even millisecond-level power interruption. As a result, operators are increasingly deploying on-site microgrids — combining grid, generation, storage, and an energy management system (EMS) — to gain both speed-to-power and a level of reliability the grid alone cannot deliver.

ONE GOAL, THREE MEANS

The microgrid's only true objective is 24/7 uninterrupted power for the facility (Reliability). Backup power is not a separate goal — it is one of three means, alongside peak shaving and renewable integration, that deliver that single outcome.

THE THREE MEANS TO RELIABILITY

Peak Shaving

Charge at off-peak rates, discharge at peak — lowers cost and smooths demand on the main grid.

Islanding / Backup

Storage takes over load within milliseconds of a grid fault while generators start; black-start-capable systems can re-establish power from a complete outage with no external source.

Renewable Integration

Smooths solar/wind output and reserves headroom for future load growth.

PAG'S ROLE: THE CORE STORAGE ASSET

PAG's MegaSIB™ sodium-ion (NFPP) system is purpose-built to serve as the core storage asset inside an AI data center microgrid — not a standalone battery, but the component that makes the “one goal, three means” model work in practice:

Reliability	Backup / Black-Start	Lower OPEX	Scalability
Core asset underpinning 24/7 uninterrupted operation.	Millisecond-level takeover; black-start capable.	Peak shaving plus 11,000+ cycle life cuts lifetime replacement cost.	Architecture scales to 100MW–1GW-class campuses.

No oxygen. No thermal runaway. — PAG's large-cylindrical, air-cooled NFPP architecture is the technical foundation behind every value above. *See page 2 for full technical specifications and lithium comparison.*

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MegaSIB Sodium-Ion BESS | Purpose-Built for AI Data Center Infrastructure

THE LITHIUM PROBLEM IN YOUR FACILITY

Fire Risk

Lithium thermal runaway is a code-level liability. NFPA 855 spacing requirements reduce usable floor area by 15–25%.

Short Lifespan

Lithium systems require replacement every 10–15 years. Over a 30-year DC lifecycle, that is 1–2 complete replacements — each with downtime and CAPEX risk.

Hidden TCO

Liquid cooling, fire suppression, and insurance premiums add 20–35% to the true lifetime cost of lithium BESS deployments.

THE PAG MEGASIB SOLUTION

No Thermal Runaway

NFPP zero-oxygen-release chemistry eliminates thermal runaway at the cell level. No fire suppression overhead. Full NFPA 855 compliance without footprint penalties.

30-Year Design Life

Install once. Matches your DC's 30-year lifecycle — no mid-contract replacement cycles, no unplanned CAPEX, no downtime.

PAG Proprietary HVAC Thermal Management

No liquid cooling loops, no leak risk, no separate cooling CAPEX — dramatically lower O&M cost over the full facility lifecycle.

MEGASIB TECHNICAL SPECIFICATIONS

Cell Format	Design Life	Cycle Life	Cooling System
120 mm × 420 mm Ultra-Large Cylindrical	30 Years	11,000+ Cycles	PAG Proprietary HVAC Thermal Management (Air-Cooled, No Liquid)

HEAD-TO-HEAD: PAG MegaSIB vs. Lithium BESS

Parameter	PAG MegaSIB (Na-Ion)	Typical Lithium BESS
Design Life	30 Years	10–15 Years
Thermal Runaway / Fire Risk	None — NFPP chemistry	Yes — requires suppression systems
Cooling Requirement	Air-cooled (HVAC only)	Liquid cooling required
NFPA 855 Compliance Cost	Standard — no spacing penalty	High — 15–25% floor area penalty
Replacements per DC Lifecycle	Zero	1–2 replacements over a 30-Year Facility Lifecycle
UL Certifications	UL 1973 + UL 9540A — Cell Level Certified	Varies — often incomplete
ESG / Carbon Profile	Non-toxic, no cobalt/nickel	Cobalt mining, toxic disposal
Insurance Premium Impact	Low — no fire hazard	High — thermal runaway liability

CERTIFICATIONS & COMPLIANCE ROADMAP

UL 1973	UL 9540A	UL 9540	NFPA 855 / 70
UL 1973 Certified — Cell Level	UL 9540A Certified — Cell Level	System-Level ESS — Target: September 2026	System Compliance — Target: October 2026

REQUEST A TECHNICAL BRIEFING

What We Offer:

- Cell certification package (UL 1973 + UL 9540A)
- TCO comparison model for your facility size
- Site-specific deployment feasibility review

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