



Stabilizing AI Power - Instant, Safe, Scalable

Ultra-fast kinetic storage that peak-shaves sub-second GPU power surges, protects power quality, and delivers UPS resilience from brief interruptions to extended outages.

The AI Power Challenge

- AI training clusters show sub-second power ramps; hundreds of MW can change within seconds.
- Converter chains have bandwidth limits; negative transients (load drops) can overcharge DC links without instant absorption.
- Disturbances can trigger simultaneous load transfers, driving frequency overshoot, high voltage and even grid failure.

ZOOZ Solution - Key Capabilities

- Instant response: 1ms (DC ~800V) / 4ms (AC 400/480V).
- Modular: 120kW / 5kWh per flywheel; 24 units (40ft) ⇒ 3MW / 120kWh; 15 containers ⇒ 45 MW.
- Operating modes: Power Buffer and peak shaving (ms-sec), Power Booster (MW bursts), Ride-Through/UPS (sec-min), grid services (synthetic inertia, FFR, voltage support).
- Safety & sustainability: inert, recyclable; unlimited cycles; no thermal runaway.

Business Impact

- Stability & PQ: mitigates frequency spikes, voltage sags, flicker; fewer nuisance trips.
- CapEx optimization: Dual functionality enables smaller feeders and transformers while reducing UPS oversizing by locally absorbing short, intense peaks and bridging power losses of up to several minutes.
- OpEx savings: fewer balancing reserves and generator stress; no capacity fade across unlimited cycling.
- ESG & risk: inert storage; no thermal-runaway modes, low carbon footprint, recyclable materials.

Deployment & Quick Sizing

Integration options:

- Parallel and pass-through connections
- DC-bus stabilization near racks (~800V) for tight voltage control.
- AC coupling at 400/480V at row/room/building level.
- Campus arrays (e.g., 45MW with 15 containers) for synthetic inertia/FFR.



Specs Snapshot	Details
Response	1ms (DC), 4ms (AC)
Basic Unit	120kW / 5kWh
Per 40ft Container	24 units ⇒ 3MW / 120kWh
Array Example	15 containers ⇒ 45MW (≈12 × 12.5m footprint cluster)
Modes	Buffer, Booster, Voltage Stabilizer Ride-Through/UPS Grid services
Safety	Inert, non-chemical, unlimited cycles; recyclable

References

- NERC LLTF (July 2025): Characteristics and Risks of Emerging Large Loads – Fig. 2.2–2.3, 3.1; frequency plots and incident reviews.
- Li & Li (Feb 2025): AI Load Dynamics – A Power Electronics Perspective (arXiv:2502.01647v2).
- ZOOZ Power use cases/ specifications – Internal document.