New Loaded Energy

Electrostatic energy storage: Safe, economical, predictable.

Supply security that pays off.

Executive Takeaway

When storage must work every day, **usable capacity**, **safety** and **life cycle** matter more than just the upfront price.

100 %	~ 0 %	up to 4×/day	–30 … +60 °C	none	up to 10 yrs
usable capacity*	capacity fade*	cycles possible	cell temperature range	thermal runaway	manufacturer warranty

How does it work?

Difference between lithium-ion batteries and capacitor storage

Instead of binding energy chemically, electrostatic storage separates electrical charges in an ultra-thin layer – **faster, more frequent, without battery wear**. Intelligent power electronics make the storage suitable for long-term use.

Lithium-ion

Chemical battery

Energy stored in electrolyte & anode. Ages with every charge, reacts sensitively to heat, ~10,000 cycles.

Enercap EESS

Physical storage

Energy as separated charges. Minimal aging, no chemical electrolyte, ~500,000 cycles.

Li-ion-batteries

Advantages over lithium-ion batteries

- No or very **low capacity fade**.
- Usable down to **100 % depth of discharge** – no hidden reserves needed
- **Very high cell cycle life**
  (~500,000 cycles vs. ~10,000 Li-ion per Clean Horizon benchmark)
- **High safety:** no chemical electrolyte, no thermal runaway
- **Wide temperature range** (-30 … +60 °C cell), little to no active cooling
- Fast charge and discharge at **high C-rates**
- **LCOS edge under heavy cycling:**
  2 h / 3 cycles per day ≈ €36/MWh ENPACK vs. €41/MWh Li-ion

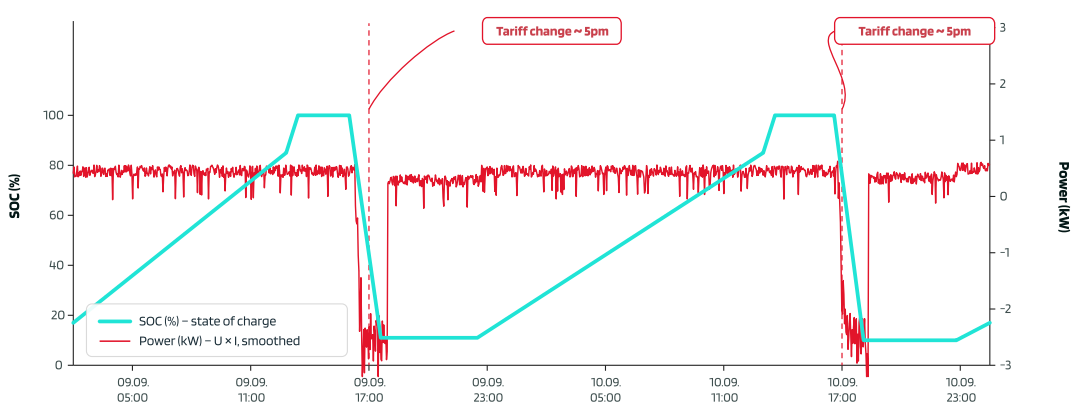
Classic Supercaps

Difference from classical supercapacitors

- **Classical supercap:** steeply linear discharge and high self-discharge – suitable only as a short-term power buffer
- **Enercap / encapsulated-capacitor EESS:** cell and system balancing, DC/DC and power electronics, plus leakage / charge-retention control
  Result: a flat usable discharge curve and low self-discharge (~2 % per month per manufacturer) – **suitable for long-duration energy storage,** not just power buffering

Practical example: · Karachi UPS

Daily use from approximately 100% to approximately 10% SOC.
Observed depth of discharge ~89.7%.



Monitoring: 09.–10.09.2025

German partner & integrator

New Loaded Energy GmbH

- Project development and technical sizing for industry, commercial sites, grid applications and critical infrastructure
- Procurement, logistics and customs; installation and commissioning; service, maintenance and spare parts
- Commercial and technical assessment: economics, operations and regulatory framing
- Positioning: "Energized today. Ready for tomorrow." – making renewable energy available, electrostatic and efficient

New Loaded Energy GmbH · Energized today. Ready for tomorrow.
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* Values according to Enercap whitepaper (Jan 2024) and Clean-Horizon benchmark (2025-05-26).