SOLUTION BRIEF

Flex Capacitive Energy Storage System (CESS)

Solve power challenges in AI data centers

KEY BENEFITS

- Outperform traditional UPS systems at scale with real-time power stabilization
- Reduce the risk of performance throttling and system crashes
- Provide consistent performance throughout the lifespan of GPU deployments
- Store excess energy at lower power thresholds
- Optimize power usage to reduce overall energy costs and deliver it when peak performance demands it

Manage GPU power spikes in AI-era data centers

Data centers are increasingly relying on GPU deployment to fuel workload requirements, with GPU sales expected to grow to >$190 billion by 2033.[1] GPUs deliver incredible compute performance, but also unleash a challenge to data center power management in the form of voltage drops (Vdroop), creating an increased risk of system crashes and performance throttling. The Flex Capacitive Energy Storage System (CESS) modulates power fluctuations associated with AI training/inferencing and high-performance computing (HPC) workloads through a combination of dynamic energy storage and power management technologies. This proprietary system can be deployed within GPU racks to drive increased data center uptime and performance and protect the grid from line disturbances.

Balance short-duration energy pulses

A Flex CESS balances spikes during large electrical transients by absorbing and supplying energy as power fluctuates. This addresses the real-time management required of AI and HPC workloads when the response time of traditional uninterrupted power supply (UPS) systems is too slow. The Flex CESS, designed with Musashi Hybrid SuperCapacitors (HSCs), offers:

- Efficient energy management by alternately supplying and absorbing energy in its internal HSCs
- A significantly longer lifespan than current battery energy storage systems, with ability to provide multimillion charge/discharge cycles
- A wide operating temperature range and inherent safety with cells able to operate in temperatures from -30°C to >70°C
- UL 810A certification and completion of UL 9540A testing for thermal runaway at the cell level

The Flex CESS incorporates Musashi Hybrid SuperCapacitors known for excellent power density, longevity, and reliability.

ABOUT FLEX

Flex provides advanced manufacturing capabilities, innovative power and cooling products, and end-to-end lifecycle services that solve for data center power, heat, and scale challenges in the AI era. Accelerate data center deployment worldwide with Flex.

Lower energy costs

Peak shaving reduces reliance on the grid during periods of elevated demand when utilities may charge higher prices. Using a Flex CESS, data center operators can significantly lower costs by storing energy during off-peak hours then releasing it as needed to power AI and HPC workloads.

The Flex advantage

With an innovative approach to GPU Vdroop management, the Flex CESS is particularly suited to the demands of AI and HPC workloads. A Flex CESS offers an effective alternative to traditional power management solutions, supporting infrastructure resilience through a unique combination of energy storage and management technologies. Parallelable up to eight units per rack power zone, the Flex CESS is part of a broad critical and embedded power portfolio that addresses data center power requirements from grid to chip.

Mitigate power fluctuations in data centers deploying AI and HPC workloads.

Learn more

Flex Capacitive Energy Storage System | Data Center Solutions

1. Grand View Research, Data Center GPU Market Size, Share & Trends Analysis 2025-2033

For more information, visit **flex.com/connect**

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