

Alchemy PowerEdge: Smarter Storage. Stronger Grid.



The Alchemy PowerEdge is a fully integrated, containerized battery energy storage system designed to transform commercial & industrial energy management. Built on high-cycle life LFP (lithium iron phosphate) chemistry and powered by advanced grid-forming inverters, Alchemy PowerEdge delivers unmatched safety, reliability, and performance. This plug-and-play solution enables rapid deployment, optimized energy arbitrage, peak shaving, and renewable firming – empowering businesses and utilities to achieve grid resilience and maximize ROI. With Alchemy PowerEdge, you're not just storing energy – you're investing in intelligent power.

CORE SYSTEM SPECIFICATIONS

Parameter	Specification	Customer Benefit
System Model	PowerEdge 500.1000	Standardized, scalable platform.
Configuration	High Cube Enclosure	Fast deployment, minimal site prep.
Total Energy Capacity (DC)	1,112 kWh	Significant energy reservoir for long-duration applications.
Usable Energy Capacity (AC)	1,056 kWh (95% of DC, incl. system losses)	Honest, real-world performance metric.
Peak AC Power (Continuous)	500 kVA at 480VAC, 300 kVA at 208VAC, 200 kVA at 240VAC	High power for demanding grid services and peak shaving.
Grid Connection	3-Phase, 480VAC / 208VAC, Split Phase 240VAC/120VAC	Flexible integration with existing infrastructure.
Power Conversion System (PCS)	500 kVA, Bi-directional, Grid-Forming, VSG, Droop Control	Can create a stable grid (black start) and supports parallel operation across multi-MWh sites.
Round-Trip Efficiency (AC-AC)	≥ 92%	Maximizes revenue and savings by minimizing energy loss.
Response Time	< 200 ms (from idle to full power)	Meets stringent grid frequency response requirements.
Operating Temperature	-25°C to +50°C (-13°F to 122°F) with integrated HVAC	Proven performance in extreme climates.
Design Life	10 Years	Long-term asset stability and investment certainty.
Dimensions	2991mm x 2438mm x 2350mm	High Cube Arrangement for easy transport and stacking.
Weight	11,500kg max	Crane-rated lifting eyes and forklift pockets included.

BATTERY PERFORMANCE DETAILS

Component	Specification
Cell Chemistry	<i>Lithium Iron Phosphate (LFP)</i>
Key Advantages	<i>Inherently non-flammable chemistry, 3x longer cycle life than NMC / Lead Acid.</i>
System Voltage (DC)	<i>704V – 924V</i>
Cycle Life (25°C)	<i>> 7,000 cycles to 80% of original capacity (at 0.5C/0.5C, 100% DoD)</i>
Calendar Life	<i>10 years to 80% capacity retention</i>
Degradation Warranty	<i>70% capacity retention after 10 years or 7,000 cycles</i>
Recommended Depth of Discharge (DoD)	<i>80% daily (LFP advantage)</i>
Charge/Discharge Rate (C-rate)	<i>Continuous: 0.5C</i>

KEY FEATURES & INTELLIGENCE

- **Advanced Thermal Management:** Integrated 5 kW x 6 HVAC and fan control system ensures optimal cell temperature, maximizing life and performance.
- **Grid-Forming Inverter (GFM) Capability:** Can operate without external grid reference, essential for microgrids, weak grids, and parallel BESS deployments.
- **Multi-Mode Operation:**
 - **Peak Shaving:** Automatic demand charge reduction.
 - **Frequency Regulation (FCAS):** Sub-second response for grid stability.
 - **Solar Smoothing & Firming:** Ramp rate control, time-shifting.
 - **Multi Voltage Operation:** Operating the system at multiple voltage levels of 480V, 208V and Split Phase 240V without a need for an auto transformer.
 - **Backup Power / Microgrid:** Seamless transition to island mode with black-start capability.
- **Genset Controller Compatibility:** Compatible with AGC, DSE, ComAp, and DEIF platforms for hybrid and genset-replacement deployments.
- **Cybersecurity:** NERC CIP, IEC 62443 compliant. Secure remote monitoring & updates.
- **System Analytics:** Cloud-based platform with AI-driven health monitoring, performance forecasting, and preventative maintenance alerts.

SAFETY COMPLIANCE

Category	Certifications & Standards
Electrical Safety	UL 1741-SB (Inverter/Grid Support), pathway to UL 9540 (System), UL 9540A (Battery), UL 1973 (Battery)
Fire Safety	NFPA 855 compliant. Multi-level protection: cell fuses, module disconnect, section DC breakers, aerosol fire suppression system.
Environmental	IP55 / NEMA 3 enclosure, Seismic Certification and UL Mark.
Environmental Compliance	RoHS compliant. Full battery recycling program provided.

SERVICE & WARRANTY

- **Full System Warranty:** 10 years, covering parts and labor.
- **Performance Guarantee:** 70% residual energy capacity after 10 years.
- **Service Plans:** 24/7 remote monitoring, optional on-site service agreements, and guaranteed uptime SLAs (99%+).
- **Software Updates:** Included for life, ensuring continuous feature improvements and security.

SCOPE OF SUPPLY

The PowerEdge 500.1000 is delivered as a fully integrated solution:

- Battery racks with LFP cells & BMS
- Power Conversion System (PCS) — 500 kVA bi-directional, grid-forming with VSG and droop control
- Energy Management System (EMS) & SCADA interface (DNP3, IEC 61850, Modbus TCP, OPC UA)
- HVAC, Fire Suppression, & Safety Systems
- All DC/AC cabling within container
- Optional MC4 PV input for solar coupling
- Commissioning and operator training

*SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL PERFORMANCE DATA IS UNDER STANDARD TEST CONDITIONS (25°C). FINAL SYSTEM DESIGN AND PERFORMANCE ARE SITE-SPECIFIC.

All in one solution for intelligent power.

500 kVA Output per BESS, Parallelable

Anchor multi-MWh sites by paralleling units in droop mode.

Out of the Box Solution with No Integration Fees

One partner. One point of contact. One predictable outcome.

UL Listed BESS with 10-Year Warranty

Partnered with SGS to achieve UL9540 / UL9540A certification by Q2 2026.

Robust Cybersecurity

US-developed energy management system with advanced security protocols.

Native Low- & High-Voltage AC Output

480V, 208Y/120V, 240V/120V — Connect directly without costly transformers.

Advanced Cloud-Based Monitoring & AI-Enabled Predictive Maintenance

Ongoing edge AI monitoring (subscription-based) with predictive alerts and automatic optimization.

Fast Deployment

Plug and play installation with frictionless permitting support.

Genset Replacement & Hybrid Ready

AGC / DSE / ComAp / DEIF compatibility — drop into existing power-system architectures.

American Made

Designed, engineered, and manufactured in Houston with local support available 24/7.