



NON-FLAMMABLE, NON-LITHIUM BATTERIES FOR STATIONARY STORAGE

Support for short, medium, and long-duration energy storage technology needs

Electricity generation is shifting to renewables, but on their own, renewables can only be relied on for supplemental or backup power. It is only when wind and solar are coupled with energy storage that service level agreements (SLAs) supporting 24x7 delivery become possible and renewables can be considered as a primary power source.

Lithium-ion systems are mostly unsuitable for urbanized areas due to fire risks and production of highly toxic gases. Safer options exist, but most have low energy densities and low power with large footprints. This reduces viability in cities where land is expensive—assuming it's even available. But siting large battery installations in rural areas means building new transmission capability, which is also expensive.

Alsym enables wide-duration storage

Alsym Green, our first product for the stationary and grid storage market, can be used for any discharge duration from 4 to 110 hours, and can recharge in as few as 4 hours. This means Alsym batteries can easily be used for short, medium, and long-duration storage without the need for additional technologies (we call this wide-duration storage).

Alsym Green combines high energy and high round-trip efficiency with a minimal footprint to offer low, industry-leading levelized cost of storage (LCOS). And unlike some dedicated long-duration storage technologies which lose 40% of charge per month, Alsym batteries have high long-term energy retention similar to lithium-ion.

Applications and use cases



Utility Grids



Microgrids



Port Operations



Datacenters



Steel Mills



Chemical Plants



Mining



Home Storage

Alsym Green system-level specifications (target)*

20' Container (DC, 600-1000 V)	Up to 1.7 MWh
40' Container (DC, 600-1000 V)	Up to 3.4 MWh
Response time	75 milliseconds
Discharge rate (continuous)	C/4 - C/110
Discharge rate (pulse)	Up to 5C
Round-trip efficiency (AC)	81%+
Self-discharge	Less than 10% per month
Service life	Up to 15 years
Operating temperature range	-5 °C to 45 °C

* All specifications are subject to change. Actual system-level energy densities may vary based on system design and/or requirements mandated by local regulatory bodies. Service life may vary based on cycling frequency and depth of discharge.

System-level safety

Thermal runaway	None; all cell materials are inherently non-flammable; testing per UL 9540a
High-voltage safety	Integrated isolation monitoring and high-voltage disconnect
Short circuit protection	Fuses included at rack level
Ground fault detection	Integrated IMD
Approvals / standards	NFPA 855, UL 9540, UL1973 (planned)
Alsym BMS	Monitors and conditions cells for optimum life and performance
Thermal management	Liquid or air-cooling compatible (as necessitated by environment/application)
Emergency stop circuit	Hard-wired
Disconnect switchgear rating	Full load
Ventilation	Integrated air handling in pack enclosure to optimize service life

Cell-level safety

Crush test	HL ≤ 2 (Per USABC Battery Test Manual Rev. 3.1)
Thermal stability	HL ≤ 2 (Per USABC Battery Test Manual Rev. 3.1)
Nail penetration	HL ≤ 2 (Per USABC Battery Test Manual Rev. 3.1)
Blunt-rod nail penetration	HL ≤ 2 (Per USABC Battery Test Manual Rev. 3.1)
Overcharge	HL ≤ 2 (Per USABC Battery Test Manual Rev. 3.1)
Approvals / standards	UL 9540a (planned)

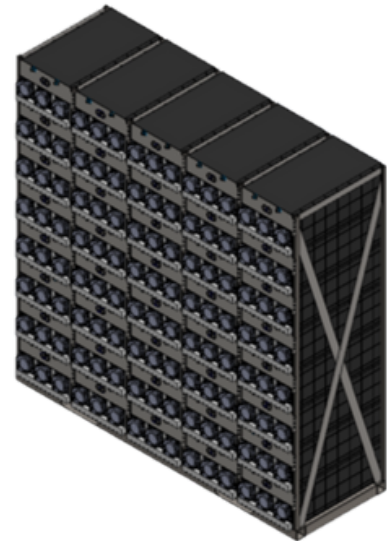
Alsym Green grid storage rack (target)*

Capacity	44 kWh
Voltage (nominal)	560 V
Voltage (min / max)	492 V / 896 V
Dimensions	20" L x 32" D x 93" H 20cm L x 80cm D x 236cm H



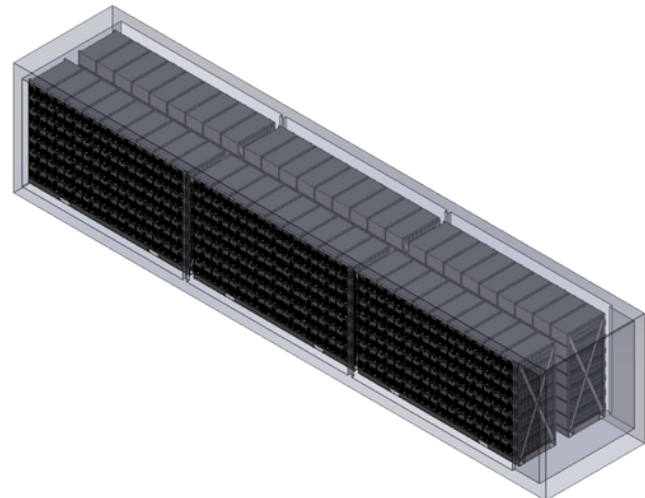
Alsym Green storage block (target)*

Capacity	218 kWh
Voltage (nominal)	560 V
Voltage (min / max)	492 V / 896 V
Dimensions	93" L x 32" D x 93" H 236cm L x 80cm D x 236cm H



System example: 40' high-cube container (DC)*

Capacity	Up to 3.4 MWh
Voltage (nominal)	560 V
Voltage (min / max)	492 V / 896 V
Dimensions	480" L x 96" W x 114" H 1219cm L x 244cm W x 290cm H



* All specifications are subject to change. Actual system-level energy densities may differ based on system design and/or requirements mandated by local regulatory bodies.