



High Performance

- 20,000+ cycles
- Charge/Discharge up to 1C
- Yearly degradation <0.6% @ 25°C
- Titanium battery chemistry

ESS Applications

- Peak shifting
- Smart-grid and Micro-grid
- Maximize generation profitability

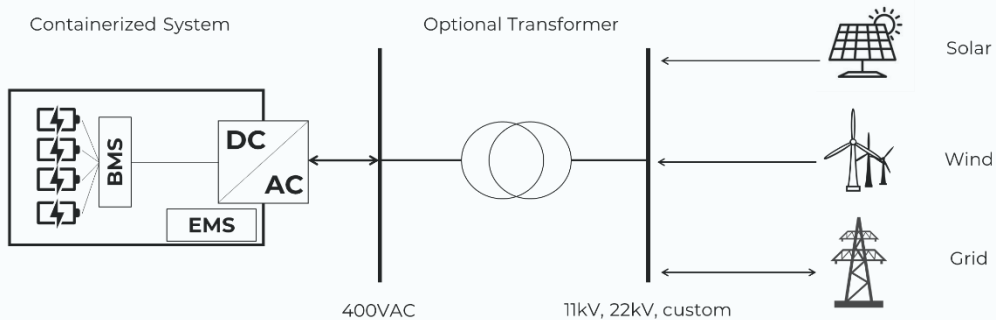
Simple O&M

- World-class BMS monitoring
- Open EMS protocol for integration
- Flexible and fixed warranty options

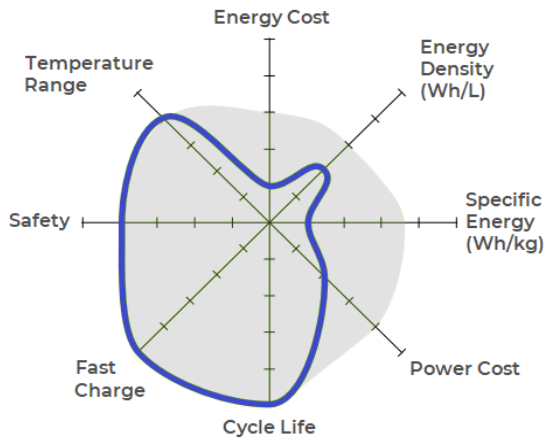
Grid Support

- IEC grid compliance
- Fast charging/discharging
- (Optional) Off-grid capability

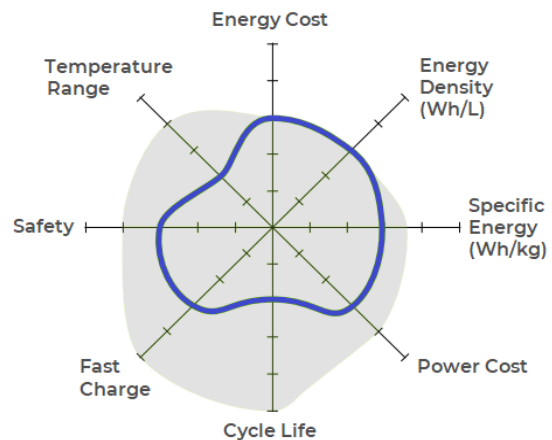
Connection Diagram



ZENON™ ESS



Competitor ESS



DESCRIPTION

The Zenon ESS™ system is a modern energy storage system with a lifetime matching that of solar.

Specifically designed to overcome the current issues of lithium storage, this system can reliably cycle for decades with little capacity fade, sulphation, overheating, memory effect, short lifetime, fire risk, and other common battery issues such as BMS overheating and reliability issues.

	Lead Acid / Gel / AGM	Lithium Phosphate	NMC Lithium	Flow Battery	ZENON SYSTEM
Cyclelife 25°C	1,500	3,000	3,200	10,000	> 20,000
Cyclelife 45°C	500	1,000	1,200	10,000	> 6,000
Typical Yearly Degradation	3%	6%	4.4%	6%	0.6%
Usable lifetime (realistic)	< 4 years	< 8 years	< 8 years	< 20 years	< 25 years
Warrantied kWh cost	Up to 3 year	10 year, 40% loss	8 year, 30% loss	10 year, 0% loss	Up to 20 year, 30% loss
LCOE*	\$0.16/kWh	\$0.13/kWh	\$0.19/kWh	\$0.34/kWh	\$0.082/kWh

*LCOE calculation based on a 10MWh system size and varies from region to region.

TECHNICAL SPECIFICATIONS

		ZESS-1100
BATTERY SPECS	CHEMISTRY	Titanium Superconductor
	DC SPECIFICATION	850V / 1320Ah bank 1100kWh @ 100% DoD / 0.2C discharge
	MAX POWER	1100kW 1C pulse (5s)
	ROUNDTRIP EFFICIENCY	<95% at 0.2C
	CYCLE/FLOAT VOLTAGE	1020V / 980V
	TEMPERATURE DERATING	85% capacity @ -10°C 90% capacity @ 0°C 100% capacity @ 25°C
BMS / EMS SYSTEM	BALANCING TYPE	Active balancing (15A @ 93% eff.)
	MONITORING	Full online monitoring platform with alerts
	FEATURES	OTA Updates
	INTERFACE	WiFi, RS485, USB, Ethernet
	EMS PROTOCOL	Atess Automatic EMS
OPERATING ENVIRONMENT	WORKING TEMPERATURE	- 30 °C to +50 °C (derating above 40°C)
	STORAGE SOC	40-70%
	STORAGE TEMP.	- 5°C to + 30°C
SAFETY	CELL SAFETY TESTS	Overdischarge/ Overcharge/ Short circuit/ 1.5m Droptest/ Heattest 130°C/ Stress test cycling/ Crush tests of 200kN/ Puncture tests/ Salt water immersion/ Low pressure test
	CERTIFICATION	UN38.3, IEC/EN 62133 planned, CEI 0-21; VDE4105-AR-N; VDE0126-1-1; EN50438; G83/2; G100
OTHER	DESIGN LIFETIME	Max. 30 years / 30,000 cycles
	CONTAINER SPECIFICATION	40' CONTAINERIZED / 20 tons



LIVE MONITORING

Live component-level monitoring on all our systems is possible with our proprietary IoT BMS platform.

- System logs, alarms, and alerts
- Data-driven battery warranty up to 20 years
- Historic records from 5 minutes to 5 years
- Direct communication with the system using the leading SunSpec protocol.

STANDARD

LI-ION / LIFEPO4

- 10 years
- 2.2MWh
- 60% capacity



POWERFUL WARRANTY

10-YR

SUPERTITAN

- 10 years
- 5.5MWh
- 90% capacity

15-YR

EXTENSION 1

- 15 years
- 7.3MWh
- 80% capacity

20-YR

EXTENSION 2

- 20 years
- 9.1MWh
- 70% capacity



ZENON NETWORK

Our manufacturing and installer network has over 14 years' experience in containerized storage.

Please contact us for a list of references.

