

“Our products are designed to deliver the lowest total cost of energy (LCOE) along with industry leading reliability.”

About E22

E22 Energy Storage Solutions is a part of the Group Gransolar group of companies with an extensive global presence.

As a part of our vision we provide total energy solutions, integrating Photovoltaic (PV) power generation with energy storage, project engineering and energy management.

To guarantee our reliability and quality and underpin “bankability”, **E22** products have been verified by third-party certification entities together with a flexible supply chain, and our inhouse fabrication facility.



250kW 1,000kWh

Vanadium Redox Flow Battery

The product is an electro-chemical, all vanadium, electrical energy, storage system which includes remote diagnostics and continuous monitoring of all parameters, including the state of charge (SOC). Solutions are built around a modular building block consisting of a 250kWac power module with various number of hours of energy storage ranging from 2 to 8 hours. Connecting multiple modules in parallel allows systems of up to 10MW to be configured.

E22 works to optimize the solutions based on customer requirements and site conditions including integrating with PV and onsite loads in Behind the meter, utility and microgrid solutions.

E22 Energy Storage Solutions

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Distinguishing features are:

- Product life exceeds 10,000 cycles at full power and 100% depth of discharge (DOD)
- Operation at partial states of charge (SOC) has no impact on life, allowing effective upward and downward ramp control.
- Fast dynamic Response: <70ms from maximum charge to maximum discharge.
- Operational life greater than 20 years for most components.
- Independent power and energy scaling allow systems to exactly fit customer needs.
- Low component count and robust design yield very high availability.
- Low maintenance costs and unmanned operation.
- Ease of permitting – non-flammable, low temperature and low pressure.
- No electrode management is required, so system is available continuously.

Applications:

- Bulk energy storage and dispatch on demand
- Relief of grid capacity constraints
- Avoidance of curtailment of new intermittent renewable energy sources
- Voltage support in the local distributed network
- Balancing services to the Grid network (ancillary services)
- Island grid operation -frequency and voltage control
- Integrated operation in with Renewable energy generation

In Grid Connected mode, the supervisory control provided by the owner will send instructions and set points to the product. The E22 product provides controllable power and voltage control.

In the microgrid configuration, the E22 product will provide an energy management (EMS) function control to operate the microgrid, controlling frequency and voltage and coordinating with loads and other generation sources. This EMS function will be adaptive and configurable.

PARAMETER		RATING	NOTES
Power rating output (nominal)	kWac:400-690V 50/60Hz	250kW	
Overload capability	Discharge Charge	30% 1 hour 25% 45 minutes	When SOC is >60% When SOC is <25%
Response time AC	-100% to +100% output	<70ms	Excludes latency effects
Transition between grid & island mode		<400ms	
Containerized electrolyte tanks		Fully reusable	
Cycles		Unlimited	Partial or 100% DOD, multiple times a day
DC-DC Round Trip efficiency (RTE)		76%	Mesured at constant current 100% duty cycle
Storage Duration		2 to 8 hours	Customer selected
DC bus voltage		300 to 800V	Depends on configuration
Self-discharge	%/day	0.05%	
Noise leveldBa @1 meter		<75dBa	
Warranty	Standard Option	5years 10years	No cycles limitations No cycles limitations
Certifications/Standards		IEEE519, IEEE1547, UL1741, EN 62103	
Dimensions 1MW 4MWh	LxWxH	24x15x4m	
Weight	Kg Kg	10,900kg 132,345kg	Excluding electrolyte Including electrolyte 4 hours
Fire, Health and Safety		Does not burn, no fire suppression requirements	NFPA 704 Category "0"
Altitude		<2000m	Derating after this level based on cooling
Ambient operating Temperature		-20°C to 50°C (14°F to 131°F)	Outside this range special conditioning required