

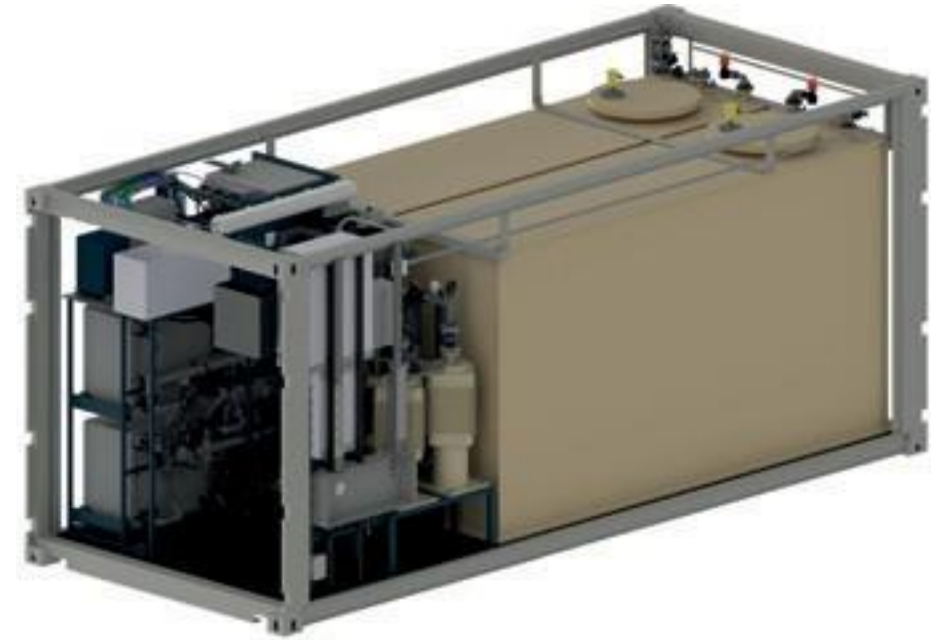
*Our products are designed to deliver the lowest total cost of energy (LtfOE) along with industry leading reliability.*

## 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.



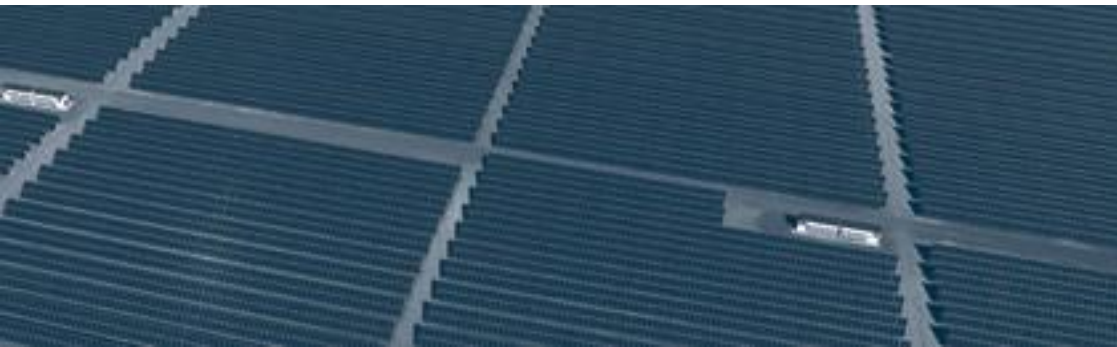
## 50kW 200kWh

### *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). The system is built in a 6meter (20-foot) container with 4 hours of energy storage.

### Distinguishing features are:

- A turnkey package in secured weatherproof enclosure.
- 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.
- Islanding mode ideal for microgrid applications.
- Operational life greater than 20 years for most components.
- 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:

- Integrated operation in with Renewable energy generation
- Demand chargemanagement
- Diesel offset
- Peak shaving
- Energy shifting
- Microgrid and back-up power

PARAMETER		RATING	NOTES
Power rating output (nominal)	kWac:400/480V 50/60Hz	50kW	
Response time AC	-100% to +100% output	<70ms	Excludes latency effects
Cycles		Unlimited	Partial or 100% DOD, multiple times a day
DC DC efficiency		78%	Mesured at 100% duty cycle
Storage Duration		4 hours	
DC bus voltage		<60V	
Communications interface		Modbus	
Self-discharge	%/day	0.05%	
Noise leveldBa @1 meter		<75dBa	
Warranty	Standard Option	5years 10years	No cycles limitations No cycles limitations
Standard		IEEE519, IEEE1547, UL1741, EN 62103	
Dimensions	LxWxH	6x2.4x2.6m	6m (20foot) shipping container
Weight		24000kg	Including electrolyte 4h
Fire, Health and Safety		Does not burn, nofire suppression requirements	NFPA 704 Category "0"
Altitude		<2000m	Derating after this level based on cooling
Ambient operating Temperature		-20C to 50C (14F to 131F)	Outside this range special conditioning required