

INVINITY VS3-022

SIX PACK™ VANADIUM FLOW BATTERY

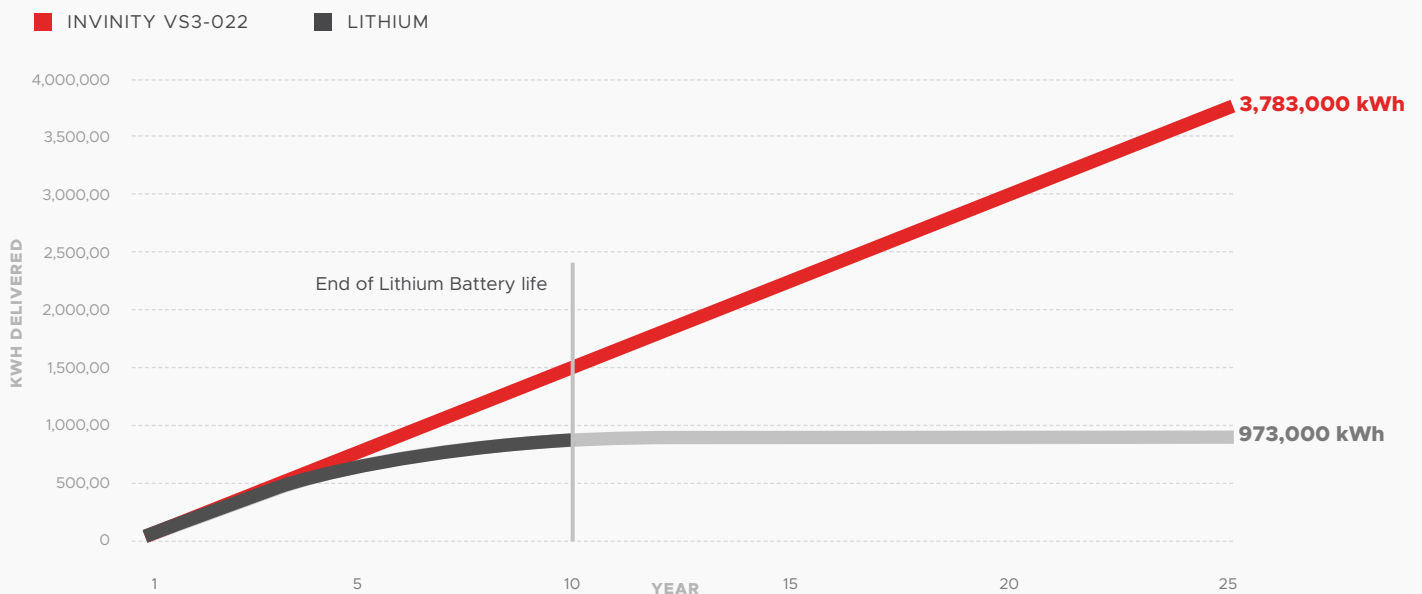


Invinity’s utility-grade energy storage is safe, economical and proven, lasting over 25 years.

The VS3-022 is a stationary energy storage system with industry-leading operational flexibility. It uses Invinity’s field-proven vanadium redox flow technology to store energy in an aqueous solution that never degrades, is non-flammable and requires little maintenance and upkeep. Incorporating redundant safety systems and true power-off, the VS3-022 provides exceptional personnel safety.

- Non-flammable
- 25 year lifespan
- Lowest LCOS
- Safe by design
- Unlimited cycles
- High recyclability

CUMULATIVE ENERGY DELIVERED OVER TIME



Assumptions: 220 kWh DC capacity installed, 2 cycles per day, 100% DoD per cycle, 365 days a year

PERFORMANCE SPECIFICATIONS

Nameplate Rating DC Voltage	1000 VDC
Operating Voltage, Nominal	850 VDC
Operating Voltage Range, Full Power	750 to 950 VDC
Max. Continuous DC Current	±104 A
Max. Continuous DC Power	78 kW
Energy Storage Capacity	220 kWh
Energy Storage Duration	2.5 hours @ 78 kW 4 hours @ 56 kW 8 hours @ 28 kW
Overcurrent Protection Device	Integrated
Max. Recommended Depth of Discharge	100%
Cycle Life	> 20,000 cycles
Lifetime Throughput	3,783 MWh
Annual Capacity Degradation	< 0.5% per year
Measured DC Round Trip Efficiency (RTE)	75%
Annual DC RTE Degradation	< 0.1% per year
Battery Management System, Fault Protection, DC Disconnect	Integrated
Third Party EMS Integration	Optional
Communications Interface	Modbus TCP
Auxiliary Input	External AC Supply
AC Auxiliary Supply	380-415 VAC, 3 Φ, 4 wire 50/60 Hz
Auxiliary Power, Nominal	3.6 kW
Auxiliary Power, Max.	7.8 kW

ENVIRONMENTAL SPECIFICATIONS

Ambient Operating Temperature	25°F to 110°F (-5°C to 45°C)
Cooling	Integrated, Forced Air
Operating Humidity	0 to 95% RH
Environment	Indoor & Outdoor
Enclosure Rating	NEMA 3R and IP 54
Maximum Elevation	11,480 ft (3,500 m)
Wet Location Rating	Yes
Additional Cooling Required	None
Fire Suppression System Required	None
Secondary Containment	Integrated

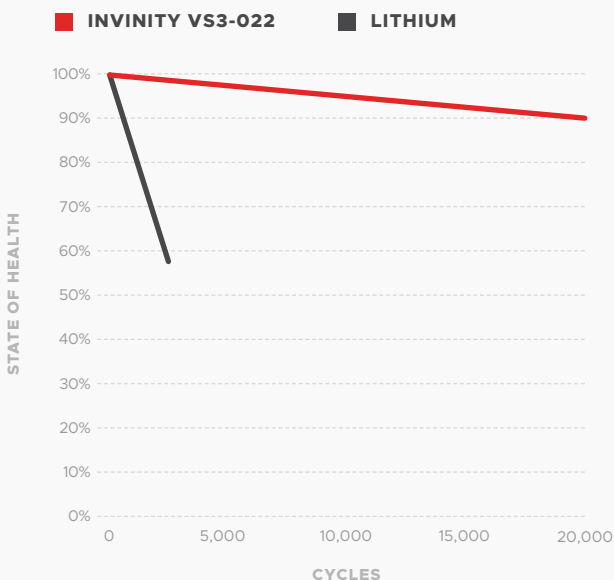
STANDARD COMPLIANCE

Safety	UL 1973, CE, IEC 62932
Energy Storage Systems and Equipment	UL 9540

PHYSICAL SPECIFICATIONS

Dimensions (L x W x H)	19.87 x 8.042 x 7.87 feet (6058 mm x 2438 mm x 2400 mm)
Weight (Flooded)	54,230 lbs (24,600 kg)
Mounting	Concrete pad mount or equivalent
Rec. Service Clearance (Long Sides)	59 inches (1500 mm)

BATTERY CAPACITY AS A PERCENT OF ORIGINAL*



*Assumptions: No capacity augmentation



Siting underway. Double-stacked configuration shown