VOLTERRA

LONG LIFE BATTERY SOLUTIONS FOR BESS AND EV MARKETS

ADVANCED 30AH POUCH CELL

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Volterra’s ultra long life NMC cells provide high energy density, long-lasting performance, superior safety, and cost-effective solutions for various applications. These advanced battery cells offer flexible charging, high power output, and sustainable innovation, ensuring efficiency, reliability, and environmental friendliness.

3. MARKET POSITIONING & OPPORTUNITY

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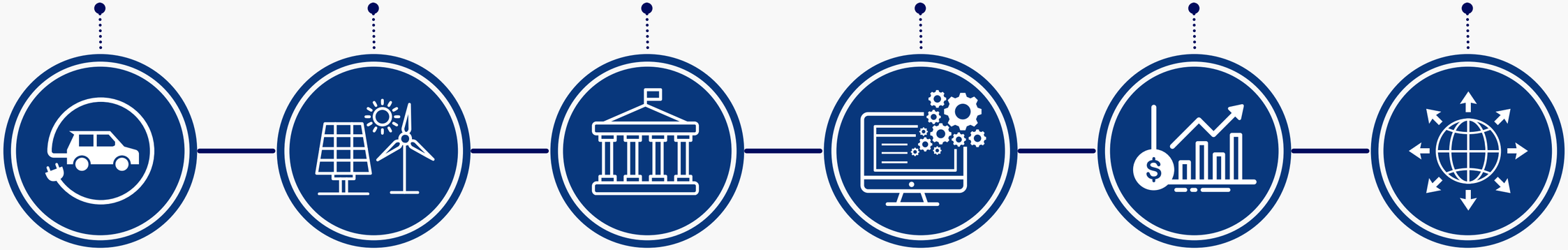
Market Positioning

High Energy Density:
Superior performance for longer range in electric vehicles.

Cost Efficiency:
Reduced cost per cycle over the battery's lifespan.

Sustainability:
Environmentally friendly option with longer service life and recyclability.

Market Trends and Opportunity



Growing EV Market

Exponential growth anticipated globally.

Renewable Energy Integration

High demand for efficient, long-lasting storage for solar and wind.

Government Incentives

Policies and subsidies boost clean energy and electric mobility.

Technological Advancements

Ongoing improvements in battery performance and lifespan.

Increasing R&D Investments

Focus on enhancing NMC battery chemistry.

Market Penetration

Expansion into emerging markets with increasing EV and renewable energy adoption.

4. LONGEVITY & RELIABILITY

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Ultra long-life NMC batteries are renowned for their exceptional longevity, making them highly reliable for various applications. Several factors contribute to their extended lifespan.

High Cycle Life
NMC batteries can achieve 10,000 to 20,000 charge-discharge cycles while retaining significant capacity.

Low Capacity Fade:
They exhibit slow capacity fade, maintaining a high percentage of their initial capacity over time.

Deep Discharge Tolerance:
NMC batteries handle deep discharge cycles without significant damage.

Stable Electrochemical Performance:
Provide consistent voltage and energy output throughout their lifespan.

Advanced Battery Management Systems:
Sophisticated BMS protect against overcharging, over-discharging, and overheating, extending battery life.

Compositon
NMC cathodes provide a balanced mix of high energy density and long lifespan.

Thermal Management:
Efficient thermal management systems and manganese's inherent thermal stability prevent overheating,

Environmental Resistance:
Designed to withstand temperature fluctuations and mechanical stresses without compromising longevity.

5. KEY BENEFITS OF BESS

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1. Enhanced Grid Stability

Battery Energy Storage Systems balance supply and demand while providing frequency regulation for a stable and reliable electricity grid.

2. Increased Renewable Integration

Stabilize intermittent supply from renewable sources like solar and wind, enabling higher renewable energy penetration.

3. Energy Cost Savings

Reduce peak demand charges and allow for energy trading, leading to significant cost savings.

5. Environmental Benefits

By reducing reliance on fossil fuels and lowering greenhouse gas emissions, these systems offer substantial environmental benefits.

4. Backup Power Supply

Ensure reliability during outages and support critical infrastructure.

6. Scalability and Flexibility

Their modular design allows for various capacities, making them adaptable to diverse applications.

6. BESS INTEGRATION

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Benefits of NMC cells:
Utilizing ultra long life NMC cells, battery energy storage system's can achieve enhanced efficiency, reliability, and sustainability, making them a critical component of modern energy management systems.

- **High Energy Density:** More energy stored in a smaller, lighter package.
- **Long Cycle Life:** Extended lifespan reduces replacement frequency and maintenance costs.
- **High Efficiency:** Minimal energy losses during storage and discharge.
- **Thermal Stability:** Enhanced safety and prevention of thermal runaway.
- **Improved Power Delivery:** Capable of high power outputs for rapid energy discharge.
- **Cost-Effectiveness:** Lower total cost of ownership over time due to longevity and performance..

7. APPLICATIONS IN 2 WHEELER AND 3 WHEELER MARKET

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Ultra Long Life NMC cells revolutionize the 2-wheeler and 3-wheeler market by providing electric scooters and motorcycles with extended range, fast charging, lightweight design, enhanced safety, and cost efficiency. These cells offer extended operational hours, high power output, durability, environmental friendliness, and reduced maintenance, making them ideal for commercial and daily use.

- Enhanced Energy Storage
- Extended Lifespan
- Superior Safety
- Cost Efficiency
- High Power Output
- Flexible Charging
- Sustainable Innovation
- Improved Reliability
- Expandable Solutions

8. EV CHARGING

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EV Charging Pedestal	Jule 150
Dispenser Output Max	150 kW
Max Current (CHAdeMO)	125 A
Max Current (CCS)	200 A
Max DC Voltage (CHAdeMO)	500 VDC
Max DC Voltage (CCS)	1000 VDC
Network	OCPP 1.6 JSON
Charge Pedestal Dimensions	44” x 11” x 90”
Charge Pedestal Weight	450 lbs

9. EV CHARGING SYSTEM PRODUCT SPECIFICATIONS

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Charge Hub	220 kWh BESS	440 kWh BESS	660 kWH BESS
Energy Storage(rated)	220 kWh	440 kWh	660 kWh
Energy Storage Chemistry	NMC	NMC	NMC
Power Rating	600 kW	1,000 kW	1,500 kW
Input Power (3 Phase)	20 kW min.	50 kW min.	75 kW min.
Maximum of 200kW Charging Pedestals	3	6	8
Dimensions	8x12x7'h	8x17x7'h	8x22'x7'h
Weight	7,000 lbs	12,000 lbs	16,000 lbs

10. 30AH POUCH CELL PRODUCT OVERVIEW

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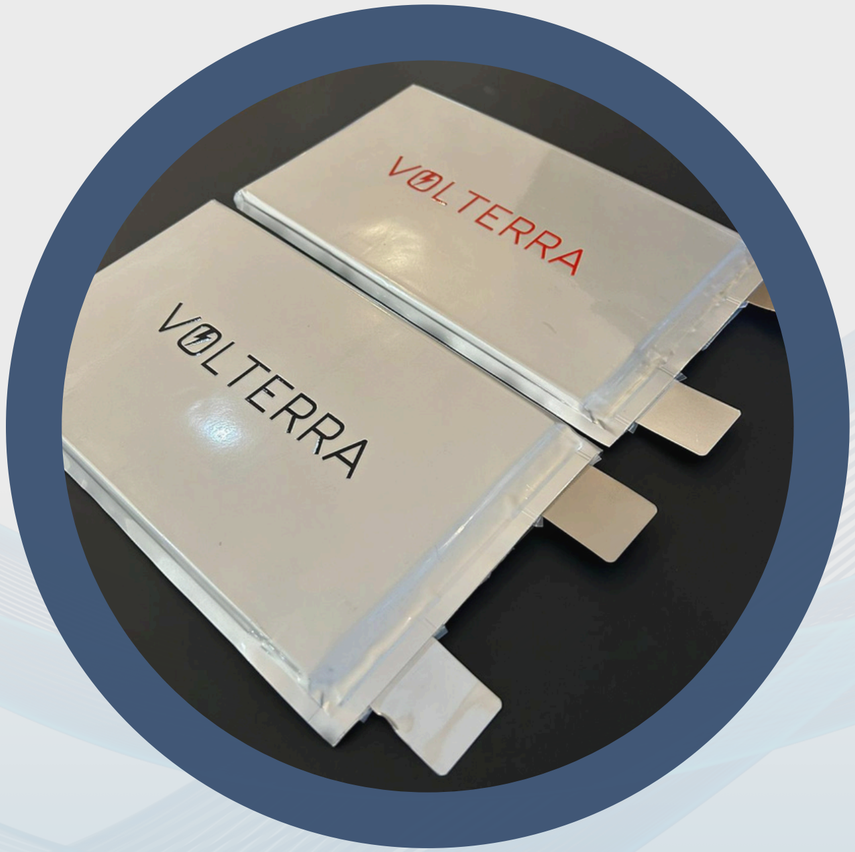

Specifications:

- Advanced battery cells offer a minimal capacity of 30.5 Ah at a 0.2C discharge rate, ensuring reliable and consistent performance making them ideal for long-term applications. Whether used for powering renewable energy systems, electric vehicles, or backup power solutions, Volterra cells deliver sustained energy with guaranteed capacity.
- Volterra cell technology is boasting 10,000-20,000 cycles and 80% depth of discharge after 10,000 which is close to 10X comparison against Best of Market competitors
- Showcasing an impressive 250 Wh/kg, allowing for lighter, more compact designs without compromising on power. Ideal for applications where space and weight are critical, these cells enable longer device runtimes and enhanced operational efficiency.
- Consistent Quality and Build. Precise dimensional specifications ensuring consistent performance and easy integration into various applications.
- Designed with comprehensive safety features, including protection against over-voltage, under-voltage, shock, vibration, impact, over-discharge, short-circuit, heating, and crushing.

11. PROPRIETARY INNOVATION STATISTICS

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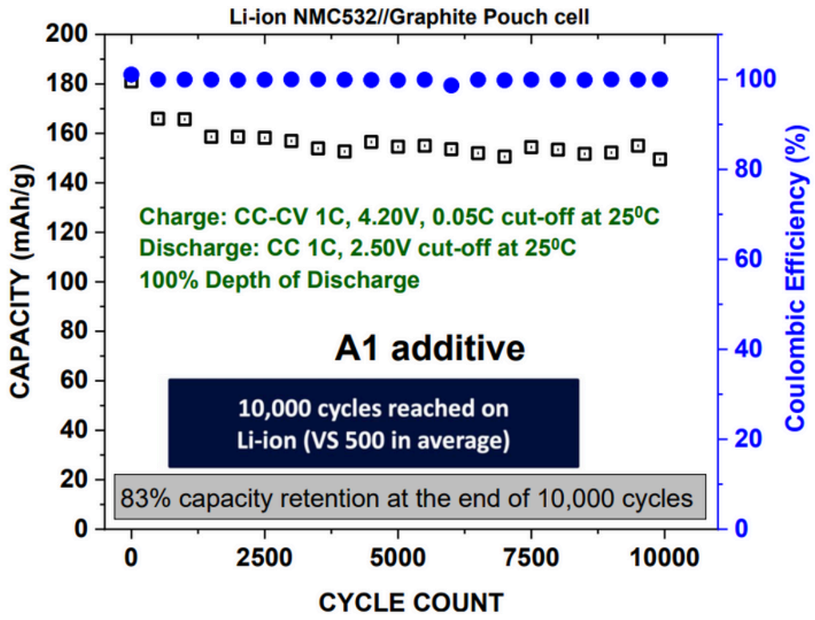

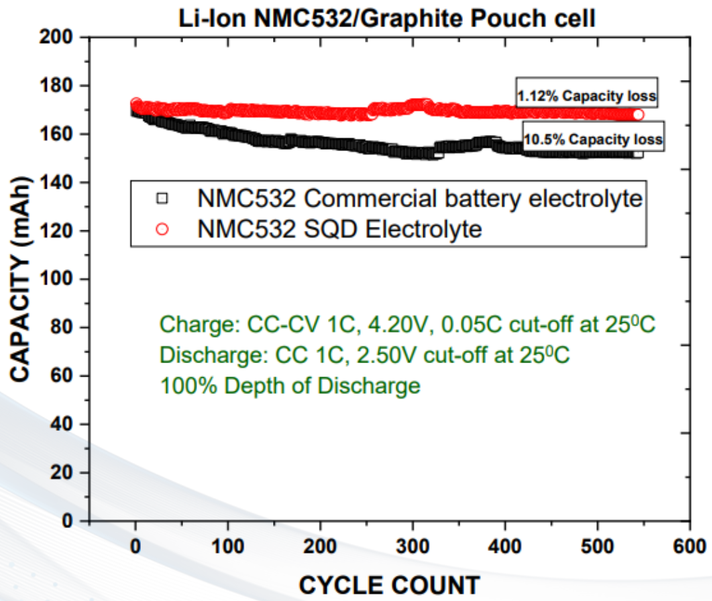

Specification Sheet of the battery under test

1) Cell Type : 402035 laminated aluminium pouch cell
2) Cell Material configuration : NMC532//Graphite*
3) Rated capacity of pouch : 180 TO 200 mAh
4) Upper voltage cut-off : 4.2 (± 0.1) V
5) Lower voltage cut-off : 3.0V
6) C-rate for operation : 0.05C to 2C
7) C-rate tested for long cycling : > 1C
8) Charge time under CCCV protocol: 1 hour 15 minutes to full charge [Panasonic NCR18650B takes 3 hours to charge]
9) Capacity retention for 500 cycles (Industry standard) : > 99 %
10) Cycle life i.e. 80% capacity : 10,000 cycles
11) Operating temperature : -10C to 55C (yet to be tested) *Note: other chemistries under test are NMC622 and NMC811
12) High energy density: 250 Wh/Kg

**** Detailed specification sheet available upon request***

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POWER YOUR FUTURE WITH NMC CELLS—WHERE EFFICIENCY, RELIABILITY, AND SUSTAINABILITY MEET.