

# Blade Battery Technology Demonstration

What is a blade battery?

The structure of the Blade Battery from cell to pack. At the center of the design of the Blade Battery is the cell geometry, which has a much lower aspect ratio compared with conventional cylindrical or prismatic cells. According to BYD's patents, the cell depth (Z axis) is 13.5 mm while the cell length (X axis) can range from 600 mm to 2500 mm.

Why is BYD's blade battery revolutionary?

BYD's blade battery is revolutionary in several ways. We are happy to explain why this is the case, as well as the importance of the so-called Nail Penetration Test. One of the most important parts of an electric vehicle is the battery system. After years of study, research and development, BYD has come up with the Blade Battery.

How does a blade battery work?

Arranged in an array in one pack, each cell serves as a structural beam to help withstand the force. The aluminum honeycomb-like structure, with high-strength panels on upper and lower side of the pack, greatly enhances the rigidity in vertical direction. It is this revolutionary design that gives optimised strength to the Blade Battery.

What are the benefits of a blade battery?

Efficiency and extended range are other benefits of the Blade Battery, offering greater power density for optimal performance and efficiency, including faster charging. BYD CTP (Cell to Pack) technology makes the difference, with the Blade Battery increasing space utilization by 50%.

What is the difference between a module and a blade battery?

The height of the Blade Battery is reduced by ~50 mm, compared with regular LFP battery back with modules, providing more space to the passengers and decreasing the coefficient of drag (0.233 cd for BYD Han). In the Z direction, the structure of the Blade Battery is completely different from conventional module-based battery packs (Figure 3).

How safe is a blade battery?

The Blade Battery has undergone the most rigorous safety testing and exceeds the requirements of the Nail Penetration Test, the most rigorous way to test battery thermal runaway. This test simulates the consequences of a serious traffic accident and is considered 'The Mount Everest' among battery tests.

According to BYD, the Blade battery exceeds 1.2 million km after 3,000 charge/discharge cycles. The new Tang SUV delivers a range of 505 km (NEDC; 313 mi.) on a single charge, BYD claims, with 0-100 km/h acceleration of 4.6-seconds. Tang's battery has demonstrated a recharge capability from 30% to 80% of full SOC in 30 minutes, on 110-kW DC.

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The driving force of each of our electric cars is the innovative BYD Blade Battery. Recognised as one of the world's safest EV batteries, our battery has passed rigorous safety tests and is designed to maximise strength, range and life cycle.

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By making EVs cheaper, the Blade Battery 2.0 could accelerate the shift away from fossil fuels to electric power, reducing carbon emissions from transportation. This technology also focuses on longevity and efficiency, which could mean fewer batteries end up in landfills over time, enhancing the sustainability of electric mobility.

What is Blade Battery Technology? At its core, Blade Battery Technology is a novel approach to lithium iron phosphate (LiFePO<sub>4</sub>) battery design for electric vehicles. Traditional lithium-ion batteries consist of cylindrical or prismatic cells, whereas Blade Battery Technology takes a completely different approach.

This review paper provides a comprehensive overview of blade battery technology, covering its design, structure, working principles, advantages, challenges, and potential implications for the...

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