

Geely develops all-new lithium iron phosphate short blade EV battery

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Geely has gone extra miles to add several layers of safety on its new short blade battery technology

Betting bigger on lithium iron phosphate (LFP) chemistry, Geely Auto, a leading electric vehicle manufacturer in mainland China, has unveiled an all-new and in-house developed, new-generation short blade battery with improved energy density, performance, charging and safety capabilities, the company announced on June 27.



Source: Getty Images/vefimov

The new battery, named Aegis Short Blade Battery, has an improved energy density of 192 Wh/kg and a cycle life of up to 3,500 cycles, which the company claims is equivalent to driving one million kilometers with minimal impact on its driving range. Assuming that an average family EV is driven for about 20,000 km per year, Geely claims that its all-new short blade EV battery technology can deliver a life cycle of up to 50 years, significantly extending the life cycle of the battery and improving the residual value of secondhand EVs.

According to Geely, usage of multi-element doped electrode materials, combined with the battery's smaller size and low internal resistance has given the new short blade EV battery technology a reduced internal chemical reaction rate, significantly extending the life of the battery.

Citing test data on the charging front, Geely claims that the new Short Blade EV battery technology averages a charging time of 17 minutes 4 seconds with an average charging rate of 2.45C for charging the battery from 10% state-of-charge (SOC) to 80% SOC. In comparison, a long blade battery with the same capacity takes about 26 minutes and an average charging rate of 1.61C to charge from 10% to 80% SOC.

The company has achieved the charge-discharge rates by effectively solving the problem of high internal resistance found in long blade batteries available on the market. Geely's newest battery uses long, thin carbon nanotubes to create a "highway" for ion transmission. The brand also uses additives to improve film permeability and make it easier for lithium ions to travel between electrodes, thereby greatly improving fast charging performance, the company said in its press note Thursday.

Additionally, in extreme cold environments, the new short blade battery has demonstrated stronger discharge capacity and longer driving range than long blade batteries. In ambient temperatures of -30°C, the capacity retention rate of long blade batteries on average fell to 78.96% while the new short blade EV battery retained 90.54% of its capacity, Geely said.

What's more interesting is that Geely has gone extra miles to add several layers of safety on its new short blade battery technology.

The new generation short blade battery technology uses a high-strength, high-thermal stability, high-heat-resistant diaphragm, with a very stable separator paired with safe electrodes resulting in higher energy density and safety. The company said that it has applied its self-developed self-fusing technology on the electrode surfaces to block short circuits and thermal runaway in the event of accidents.

"If the battery cell is punctured during extreme shock, an aluminum foil layer will fuse into the battery diaphragm to create an insulating layer, preventing short circuits and thermal runaway events," Geely said.

While in standard automotive test procedures, the safety performance of EV batteries is evaluated by a single needle puncture test, Geely's has been testing its new short blade batteries with eight simultaneous puncture needles. This significantly increases the intensity of damage received in extreme crash situations.

“During testing, it was simultaneously punctured by eight steel needles in unison, each with a diameter of 5 mm and left to stand for 1 hour with zero ill effects,” the company said.

If that was not enough, the company also subjected its new battery to a 5.8 mm (5.8×42 mm) infantry rifle bullet penetration test and found no thermal ignition events.

In addition to these durability tests, Geely also put the new short blade batteries through the industry's first "six extremes" serial test that includes seawater corrosion immersion, extreme cold environment, high-frequency pack bottom scraping, 26 metric-ton overweight rolling, single-pack side collision and fire roasting.

“With the New Short Blade EV Battery Technology's patented grid frame design, energy-absorbing cavity, three-layer sandwich bottom guard plate, CTB [cell-to-body] integration, thermal runaway control system, and multiple other safety features, the battery passed all six tests successfully,” the company added.

With such test results, Geely now claims that its new short blade EV battery technology will become the new benchmark for EV batteries with industry leading safety, compact size, higher energy density, better volume utilization and increased flexibility in accommodating different pack designs.

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