



CATL Unveils Six Major Innovations: Multi-Chemistry Systems to Redefine New Energy Mobility Experience

Descrizione

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BEIJING, April 21, 2026 /PRNewswire/ â?? CATL today hosted its Super Technology Day in Beijing, unveiling third-generation Shenxing Superfast Charging Battery, third-generation Qilin Battery, Qilin Condensed Battery, second-generation Freevoy Super Hybrid Battery, Naxtra Sodium-ion Battery and a fully integrated supercharging and battery-swapping solution. These innovations are designed to address diverse mobility needs across different usage scenarios.

At the event, Dr. Wu Kai, Chief Scientist of CATL, systematically elaborated on the respective strengths, limitations, and development pathways of different chemistries. He noted that LFP is nearing its theoretical energy density limit, making it better suited for a technology roadmap centered on extreme fast charging to achieve optimal balance. NCMâ??s high energy density keeps it at the forefront of global competition â?? underscoring that energy density remains the core metric for leadership. Sodium-ion batteries offer broad potential for extreme temperatures and energy storage applications. Whether from the perspective of differentiated consumer needs, or from the viewpoints of energy security and social development, the lithium-ion battery industry must pursue coordinated development across multiple chemical systems.

Robin Zeng, Chairman and CEO of CATL, emphasized at the conference that industrial innovation must be driven by a rigorous scientific spirit. For Chinese technology to go global, it relies not just on speed and scale, but on the quality of innovation, the ability to validate, and the credibility of the brand.

Third-Generation Shenxing Superfast Charging Battery: Making Superfast Charging and Ultra-Long Lifespan No Longer a Trade-Off

From an electrochemical standpoint, boosting charge rates while protecting battery lifespan hinges on one primary factor: temperature rise, not trickle current. As the Arrhenius equation shows, a 10Â°C increase in battery temperature can roughly double the rate of internal side reactionsâ??an effect that can significantly shorten cycle life.

The third-generation Shenxing Superfast Charging Battery addresses heat generation and dissipation through three major measures: reduced heat production during operation, stronger thermal propagation, and higher precision control. As a result, after 1,000 complete cycles, the battery's capacity retention remains above 90%, achieving an optimal balance between extreme superfast charging and ultra-long service life.

The latest third-generation Shenxing Superfast Charging Battery has reached what is claimed to be the industry's strongest capability: an equivalent 10C and a peak 15C charging rate. Charging from 10% to 35% SOC (State of Charge) takes just 1 minute; from 10% to 80% SOC takes 3 minutes and 44 seconds; and from 10% to 98% SOC takes 6 minutes and 27 seconds. Even at -30°C in extreme cold conditions, charging from 20% to 98% SOC takes about 9 minutes.

In addition, by combining battery self-heating technology with a fully integrated supercharging and battery-swapping network, the system is designed to enable low-temperature superfast charging that is not limited by charging piles, offering both fast charging and battery swapping.

Third-generation Qilin Battery: Lighter, Stronger, More Premium, Redefining EV Excellence

Historically, achieving long range in premium EVs with LFP batteries has relied on simply adding more capacity – an approach that inevitably compromises vehicle lightweighting.

The third-generation Qilin Battery is designed for premium long-range EVs, achieving a cell energy density of 280 Wh/kg and enabling 1,000 km range while supporting 10C superfast charging.

The battery delivers 3 MW peak power, doubling the output of the second-generation Qilin track battery which competed on the Nürburgring (1,330 kW).

The entire battery pack weighs only 625 kg. Compared with equivalent LFP systems, this represents a weight reduction of 255 kg and space savings of 112 litres. The lightweighting metrics deliver exceptionally significant benefits:

Building on the national standard for NP (No Thermal Propagation), safety is strengthened through thermal-electrical separation, with each cell incorporating an independent sealed exhaust channel to isolate thermal events and prevent propagation, ensuring heat takes the heat path, electricity takes the electrical path.

Qilin Condensed Battery: Aviation-Grade Technology Applied to Passenger Vehicles for the First Time

The Qilin Condensed Battery applies aviation-grade technology to passenger vehicles for the first time, achieving 350 Wh/kg cell energy density and 760 Wh/L volumetric energy density – setting a new record for mass-produced batteries. This enables 1,500 km range for sedans and over 1,000 km for large SUVs, with pack weight controlled within 650 kg.

The condensed battery features a high-nickel cathode and low-expansion silicon-carbon anode, boosting energy density by 50 Wh/kg. Its first-ever aviation-grade titanium alloy case reduced thickness by 60% and weight by 30%, while tripling unit strength and delivering an additional 20 Wh/kg in energy density.

The technology builds on CATL's electric aviation programme, where 500 Wh/kg systems have completed maiden flight validation on 4-tonne aircraft, with further validation underway on aircraft exceeding 8 tonnes.

Replacing liquid electrolyte with a condensed system eliminates risks associated with leakage and combustion, achieving "no liquid to leak, no liquid to ignite". At the same time, CATL has adopted a new composite current collector that acts as a fast self-fusing fuse in extreme cases of internal short circuits.

Second-generation Freevoy Super Hybrid Battery: Bringing Hybrids into the 600 km Pure Electric Era

The second-generation Freevoy Super Hybrid Battery extends all-electric range to up to 600 km and standardises 10C superfast charging. It pioneers a "super hybrid technology" that integrates LFP and NCM materials through gradient-uniform mixing, with the olivine crystal structure of LFP serving as the core backbone, enabling a uniform hybrid of LFP and NCM materials at the powder particle level.

This achieves an energy density of 230 Wh/kg and increases range by over 15% without increasing pack weight compared with single LFP systems. This enables full coverage from mainstream family use to high-end, all-round hybrid scenarios, delivering optimal solutions across diverse applications.

The LFP version delivers up to 500 km pure electric range, enabling a "once-a-week charging" experience for daily commuting. The NCM version further extends pure electric range beyond 600 km, with total vehicle range exceeding 2,000 km, enabling a seamless dual-use experience for both daily electric driving and long-distance travel.

The system delivers 1.5 MW of instantaneous power at full charge and maintains 1.2 MW at 20% SOC, addressing power degradation in low-charge conditions. In off-road scenarios requiring over 350 kW output, the system provides more than three times the required power, ensuring consistent performance even at low charge levels.

Safety features include a reinforced bottom coating capable of withstanding 1,500 joules of impact energy (ten times the national standard) and waterproof sealing that allows continuous immersion in 2 metres of water for over 200 hours without performance degradation.

Naxtra Sodium-ion Battery: Achieving GWh-scale Sodium-ion Industrialisation

The Naxtra Sodium-ion Battery marks CATL's transition from laboratory breakthrough to large-scale manufacturing. By systematically overcoming hundreds of engineering challenges, CATL has achieved GWh-level industrialisation.

In 2026, CATL successfully addressed four key industry bottlenecks for sodium-ion mass production—extreme water control, gas generation in hard carbon, aluminium foil adhesion, and self-forming anode systems—paving the way for reliable, large-scale deployment. The Naxtra Sodium-ion Battery is set to enter full-scale mass production by the end of 2026.

Integrated Supercharging and Battery-swapping Network: A Unified Replenishment Architecture

CATL also introduced an integrated supercharging and battery-swapping network, designed as a unified system rather than separate solutions, built on three complementary pillars—home charging,

public charging, and battery swapping to define the optimal energy replenishment ecosystem. All passenger vehicle Choco-Swap and heavy truck Qilin swapping stations will be equipped with Shenxing supercharging systems, enabling true charge-swap synergy, where each station serves both as a battery-swapping node and a high-power charging hub.

The integrated charge-swap stations feature shared compact substations and charging modules, reducing energy conversion steps and lowering overall power loss by more than 13 percentage points compared with conventional storage-equipped charging stations. In emergency scenarios, station batteries can discharge directly to charging piles, driving equipment utilization rate above 85%. This enables a service capacity of 3 per parking space compared with conventional storage-equipped charging stations, while the fixed investment cost of the supercharging segment is reduced to only one-fifth of comparable systems.

CATL launched the Choco-Swap #26 battery, featuring an 800V high-voltage architecture. The first release includes a 75 kWh version, with higher-capacity variants to follow, fully compatible with B- to C-segment 800V vehicles. With this launch, the Choco-Swap system will extend its coverage to a complete vehicle matrix from A0 to C-segment models.

In terms of network deployment, CATL plans to build 4,000 integrated charge-swap stations by the end of 2026, covering nearly 190 cities and a nationwide highway network spanning 12 vertical and 11 horizontal corridors. To date, the Choco-Swap network has already built 1,470 stations across 99 cities, with scaling continuing to accelerate.

Together with automakers and energy partners, CATL will co-develop a charge-swap sharing network based on technology sharing, seamless connectivity, and joint investment. Initial partners include Changan, Chery, GAC, Seres, SAIC-GM-Wuling, and BAIC, with a target of building over 100,000 shared energy replenishment facilities by the end of 2028.

Advancing full-scenario energy solutions

From five battery products covering the full material spectrum to an integrated supercharging and battery-swapping network, CATL has established a complete value chain from battery products to infrastructure.

CATL will continue to invest in advanced research, large-scale manufacturing and ecosystem collaboration to accelerate the transition from single-point innovation to full-scenario energy solutions, ensuring the benefits of technological progress are accessible across all mobility use cases.

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