

Press Release
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Pioneering Circularity Across the Industry Value Chain: BMW Extends High-Voltage Battery Lifecycles with Innovative Second-Life Solutions

- **All-dealership Coverage:** As of 2025, BMW has established a comprehensive high-voltage battery recycling network covering all dealerships across China.
- **Closed-loop Recycling:** A coordinated management system supported by six regional warehouses ensures the 100% closed-loop recycling of retired batteries.

(Beijing) As new energy vehicles go mainstream, the industry is entering a period of rapidly increasing battery retirements. By 2030, China's annual volume of retired batteries is expected to exceed 1 million metric tons – equivalent to the capacity of ten large cargo vessels. The proper management of end-of-life batteries is therefore not only critical to the ecological environment, but also essential to the sustainable development of the industry. As a frontrunner in this field, BMW is already taking concrete action in China, continuously advancing its high-voltage battery lifecycle management to ensure that no retired battery is left idle.

As of 2025, BMW has achieved full coverage of high-voltage battery recycling across all its 4S dealerships nationwide. Furthermore, a coordinated management system supported by six regional warehouses has been established to ensure that 100% of retired high-voltage batteries are included in a closed-loop recycling process. At the same time, BMW continues to drive business model innovation, offering diverse solutions to address the industry-wide challenge of battery recovery. Every retired BMW battery is given a "second life".

A "Tracibility ID": Guiding Retired Batteries Home

Battery traceability represents a core challenge in recycling management. BMW launched its battery traceability system in 2018, with a comprehensive upgrade completed in September 2023 to establish a lifecycle monitoring platform for high-

voltage batteries. The platform assigns a "Traceability ID" to each high-voltage battery, enabling tracking through unique identification codes at the battery pack, module, and cell levels.

The platform closes the "data loop," enabling seamless data synchronization across value-chain stakeholders, including battery manufacturers, BMW R&D and production, dealerships, logistics providers, and recyclers. BMW and Tsinghua University have co-developed a State of Health (SoH) evaluation algorithm to collect battery data every 30 seconds, enabling real-time monitoring of chemical performance, charge/discharge capacity, driving conditions, and other key parameters. It also enables predictive assessment of future battery health status, providing decision-making support for after-sales services and battery recycling operations.

In addition, the system has been connected to National NEV Traction Battery Traceability Information Platform and relevant local platforms. It has passed the **Multi-Level Protection Scheme (MLPS)** certification, ensuring that all data remains authentic and tamper-proof. Based on battery status and usage history, the system intelligently determines the optimal end-of-life pathway including secondary use or dismantling and recycling. At present, all retired batteries from customer vehicles and test vehicles at BMW's Shenyang production base are assigned exclusive "Traceability IDs", enabling lifecycle traceability of their health status, usage history, and residual capacity.

Two Paths to Maximise the Value of Every Retired Battery

Path One: Secondary Use – Unlocking a New Mission for Retired Batteries

In 2020, in collaboration with partners, BMW became the first automotive manufacturer in China to adopt battery second-life applications. Today, retired batteries have been deployed in two key application scenarios:

- "Powerhouses" at the factory: At BMW's Shenyang production base, retired high-voltage batteries are used to power forklifts, replacing traditional lead-acid batteries. By the end of 2025, 59 forklifts had been equipped with retired HVBs, delivering improved performance and reduced maintenance requirements.

- Commercial "Super Power Banks": In May 2023, BMW launched a green energy storage project at the Lydia site of Plant Tiexi, utilizing battery modules from the BMW iX3 in energy storage cabinets. Combined with photovoltaic (PV) systems, this forms a "green solar power storage station". This model was later expanded to BMW's dealership network. By the end of 2025, seven BMW dealerships in Shanghai, Chongqing and Shenzhen had deployed energy storage systems, effectively reducing electricity costs and improving energy efficiency.

Path Two: Closed-Loop Recycling – A True Rebirth of Retired Batteries

For batteries that are no longer suitable for secondary use, BMW has established a closed-loop recycling system with Chinese partner. Critical raw materials, including nickel, lithium and cobalt, are extracted at high recovery rates from retired batteries and fed back to battery suppliers for the production of new battery cells. In 2025, the share of secondary nickel used in high-voltage batteries in China reached 50%, significantly reducing carbon emissions compared with primary raw material extraction.

What does this mean? The "retirement" of one battery enables the "rebirth" of another. Whether it is an end-of-life customer battery, an aged inventory battery from a dealership, or a test battery from the Shenyang plant, all are efficiently directed into either "re-employment" (secondary use) or "rebirth" (recycling).

The Long-term Commitment Pays Off

The battery recycling sector has entered "uncharted waters". For companies, this is not only an urgent issue to address today, but also a strategic choice that will shape the future. At BMW, we have been committed to this mission for nearly a decade.

Years of dedication have resulted in a solution that is both practical and replicable: a trifecta of **Digital Technology** (integrated information systems), **Recycling Infrastructure** (nationwide dealership network plus six regional warehouses), and **Business Model Innovation** (forklift applications, energy storage at plants and dealerships). In doing so, BMW is charting a viable pathway for the entire industry.



The "second life" of a battery reflects a profound transformation in the automotive industry - from "consuming Earth's resources" to "embracing circularity and respecting nature." By responsibly managing every battery, the future of electric mobility can continue to advance steadily and sustainably.

The next time you see a BMW electric vehicle, you may find yourself wondering: what new role will its battery take after retirement?