Battery Breakthroughs Are Making EVs More Dependable Than Ever

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Electric vehicles are surging ahead driven by breakthroughs in battery technology-an evolution that companies like VinFast are leveraging to push the industry forward.

VinFast’s upcoming electric SUV VF 7

It’s easy to think of electric vehicles as a modern innovation, but over a century ago, they dominated the streets. In 1900, lead-acid batteries provided a range of up to 100 miles, which was quite remarkable at the time. As roads improved and vehicles became faster though, these heavy, low-

energy-density batteries struggled to keep up. Internal combustion engines took over, and EVs faded into history.

Fast forward to 1996. An American manufacturer launched an all-electric car that relied on the same lead-acid technology from a hundred years before. Its second generation, also equipped with nickel-metal hydride (NiMH) batteries, failed to compete with gasoline-powered vehicles. The problem Energy density. These batteries simply couldn’t store enough power to make EVs practical for daily use.

Then, in 1998, A Japanese manufacturer introduced an EV with a lithium-ion battery. It didn’t make headlines, but in hindsight, it marked a turning point. Lithium-ion technology could store up to three times more energy than lead-acid batteries and about twice as much as NiMH. A decade later, the world finally took notice.

However, “lithium-ion” is not a single technology but an umbrella term for several distinct chemistries. Most rely on a graphite anode, but the real advancements come from the cathode.

Early lithium-ion batteries combined lithium with nickel, cobalt, or manganese. Over time, manufacturers fine-tuned these blends to balance energy density, safety, and cost. One thing has remained consistent: the industry has been reducing cobalt content, which is both expensive and ethically controversial, in favor of high-nickel formulations.

Another chemistry, lithium iron phosphate (LFP), has taken off for its affordability and safety. The trade-off Slightly less energy storage. Yet, by 2024, LFP and nickel-manganese-cobalt (NMC) batteries are expected to power 94% of light electric vehicles worldwide, according to S&P Global Mobility.

The improvements aren’t just on paper. A recent study by Geotab found that EV batteries now degrade at just 1.8% per year, down from 2.3% in 2019. At this rate, batteries could

last over 20 years-far exceeding concerns about longevity.

Companies like VinFast are capitalizing on these advancements. Their vehicles integrate cutting-edge battery management systems designed to extend battery life and improve safety.

But they're not stopping there. VinFast is actively investing in battery research and collaborating with leading partners to develop the next wave of EV technology. Their confidence shows in their industry-leading warranties-spanning seven to ten years, depending on the model. For EV buyers, that means less worry and more miles on the road.

What's Next for EV Batteries

Looking ahead, two emerging technologies could change everything.

Solid-state batteries replace flammable liquid electrolytes with stable, solid materials. This shift could boost energy storage by 50-80% while reducing fire risk.

Sodium-ion batteries offer another breakthrough. Instead of relying on lithium, they use abundant sodium, making them cheaper and more sustainable. Their energy density is lower than LFP, but they excel in safety and cold-weather performance.

Both technologies still have challenges to overcome, but advancements are picking up speed. As costs fall and performance improves, EVs could soon surpass gas-powered cars in both longevity and reliability.

The road to better EV batteries has been decades in the making, but the next big breakthrough might be right around the corner.

About VinFast

VinFast (NASDAQ: VFS), a subsidiary of Vingroup JSC, one of

Vietnam’s largest conglomerates, is a pure-play electric vehicle (“EV”) manufacturer with the mission of making EVs accessible to everyone. VinFast’s product lineup today includes a wide range of electric SUVs, e-scooters, and e-buses. VinFast is currently embarking on its next growth phase through rapid expansion of its distribution and dealership network globally and increasing its manufacturing capacities with a focus on key markets across North America, Europe and Asia.

Learn more at: vinfastauto.in.