

# China's solid-state batteries are slow to improve

Will China build a solid-state battery supply chain by 2030?

China's battery and carmakers have united as part of a government-led drive to build a supply chain for solid-state batteries by 2030, writes Nikkei's Shunsuke Tabeta.

Are Chinese companies ready for a solid-state battery?

Solid-state batteries are sensitive to moisture, so their manufacturers need special equipment to keep humidity away from production lines. While government initiatives should accelerate solid-state battery development, Chinese companies aren't waiting. Battery makers have already started formulating plans for the next-gen technology.

Could solid-state batteries be a boon for Japanese automakers?

Nissan Motor and Honda Motor are also competing to develop solid-state batteries, and commercialising the technology would be a boon for Japanese automakers, which are trailing China's BYD and Tesla of the US in global EV sales. But Japan's auto giants are not the only ones working on this "game-changing" innovation.

Are solid-state batteries a problem?

Despite recent advancements, solid-state batteries are still a work in progress and pose several challenges. Durability is the biggest issue with solid-state batteries, however, repeated charging and discharging causes cracks between the battery's cathodes and anodes and its solid electrolytes also impact its performance.

What is China's all-solid-state battery collaborative innovation platform (casip)?

In January, Beijing set up the China All-Solid-State Battery Collaborative Innovation Platform (Casip), a consortium that brings together government, academia and industry, including EV battery rivals CATL and BYD. Casip aims to develop and manufacture solid-state batteries that can compete globally, with Chinese companies as the centre.

Are solid-state batteries durable?

Durability is the biggest issue with solid-state batteries, however, repeated charging and discharging causes cracks between the battery's cathodes and anodes and its solid electrolytes also impact its performance. Another hurdle in widescale adoption of solid-state batteries is that mass-producing them is a challenge.

"China must develop all-solid-state batteries, but the reason for such efforts should not be to subvert others, but to prevent other countries from subverting us," said Ouyang Minggao, a scholar with the Chinese Academy of Sciences, at a conference last month.

Solid-state batteries hold the promise of improved safety, a longer lifespan and faster charging compared with conventional lithium-ion batteries that use flammable liquid electrolytes. But mass adoption remains some

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way off due to constraints in raw material availability, intricate manufacturing processes and the resultant high costs.

Compared with liquid electrolyte-based Li-S batteries, solid-state Li-S batteries may offer several advantages: (1) the improved cycling ability and increased energy efficiency due to the elimination of LiPS formation and shuttling; (2) the enhanced stability of Li stripping/plating; and (3) greatly improved safety by using the nonflammable solid-state electrolytes that do not ...

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On February 25, NIO's solid-state battery supplier, Beijing WeLion New Energy Technology, broke ground on a 100 GWh solid-state lithium battery project in Zibo, eastern China's Shandong province. WeLion's total investment in the project is RMB 40 billion (\$6.3 billion), of which RMB 10.2 billion was invested in the first phase, covering 550 acres (366,666 ...

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Accelerated efforts of both the Chinese government and the private sector are expected to lead to installation of all-solid-state batteries in electric vehicles by 2027 nationwide and mass production of such batteries by 2030 at the latest, said automotive industry insiders.

BYD subsidiary FinDreams Battery, CATL, CALB, EVE Energy, Gotion High-Tech, and SVOLT have formed a consortium called China All-Solid-State Battery Collaborative Innovation Platform (CASIP) to develop and manufacture solid ...

Electric vehicle makers around the world are speeding up work on solid-state batteries, which are believed to be a game-changing technology that offer shorter charging times and better performance than traditional ...

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China plans to invest more than US\$830 million in a government-led project to develop solid-state batteries with six firms eligible for state funding to work on the next-generation technology, a person with direct ...

China will make breakthroughs in key technologies such as ultra-long life and high-safety battery systems, large-scale and large-capacity efficient energy storage technologies, and mobile storage for transportation applications, and accelerate the research of new-type batteries such as solid-state batteries, sodium-ion batteries, and hydrogen ...

## China s solid-state batteries are slow to improve

Solid-state lithium batteries are expected to address the three main challenges facing liquid lithium-ion batteries: energy density close to the theoretical upper limit, limited battery lifespan, and safety issues, according to the team.

Tailan New Energy has developed the first automotive-grade solid-state lithium metal battery, using high-performance oxide composite solid-state electrolytes to effectively solve the interface impedance problem.

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In China, all-solid-state batteries, especially sulfide-based ones, with an energy density of 400 Watt-hour per kilogram are finding favor now. Wh/kg is a reference unit that indicates the density ...

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