

# Swedish sodium-ion battery could minimise reliance on China

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Stockholm | Northvolt has made a breakthrough in a new battery technology used for energy storage that the Swedish industrial start-up claims could minimise dependence on China for the green transition.

The Swedish group, backed by Volkswagen, BlackRock and Goldman Sachs, has developed a sodium-ion battery that has no lithium, cobalt or nickel – critical metals that manufacturers have scrambled to obtain, leading to volatility in prices.

Peter Carlsson, Northvolt's chief executive and co-founder, told the Financial Times that the new technology could be worth tens of billions of dollars as it opens up regions such as the Middle East, Africa, and India for battery-powered energy storage.

He estimated that in 10 years the order book for energy storage could be “as big or potentially bigger than the current portfolio” of EV batteries, for which Northvolt has received orders of \$US55 billion (\$83.7 billion).

“We are not that dependent on a number of these strategic supply chains that China has created in a very efficient way,” he added.

Northvolt is Europe's biggest hope to compete against the dominant Chinese, South Korean and Japanese battery players. It has started manufacturing lithium-ion batteries for cars and trucks in a factory in Sweden, and plans three more plants in Canada, Germany, and Sweden.

Sodium-ion batteries are seen as a cheaper and safer alternative to the lithium-based batteries widely used for energy storage as they work better at both very high and low temperatures.

But the amount of energy they can produce relative to their size has long lagged lithium batteries, making sodium cells impractical for most electric vehicles.

Northvolt said yesterday it had now validated a sodium-ion battery at the critical level of 160 watt hours per kilogram, an energy density close to that of the type of lithium batteries typically used in energy storage. Lithium batteries used in electric cars have an energy density of up to about 250-300Wh per kg.

Experts said Northvolt had gone further than many Chinese competitors such as CATL, the world's largest battery maker, which used oxides containing metals such as nickel, cobalt or manganese in sodium-ion batteries. The use of the metals makes them more expensive and less safe.

Northvolt's sodium-ion batteries use Prussian blue, a pigment first used in the 18th century to make blue paint and whose potential for batteries was first spotted by Nobel chemistry prize winner John Goodenough.

It hopes to provide the first samples to customers next year, and would reach full-scale production by the end of the decade. It would need new factories alongside the four it has currently planned to produce lithium-ion batteries for vehicles.

“It is quite key to be the first ex-China player to have a sodium-ion product validated for energy storage,” said Iola Hughes, research manager at battery consultancy Rho Motion.

But she said that the potential success of sodium-ion batteries would depend on the price of lithium batteries, which has lately fallen, and on how quickly manufacturers such as Northvolt could scale the new technology.

“Investors are less enthusiastic than last year and some of the future development of the sodium-ion supply chain may be delayed or even cancelled,” she said of the Chinese groups producing sodium-ion batteries. “The low lithium price has made the cost-benefit for sodium ion less evident,” she added.

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