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Popularity of cobalt-free batteries continues to grow as lithium market hits new high

HIGHLIGHTS

- **Lithium Australia subsidiary VSPC is progressing its plans to establish a strategic position in the market for cobalt- and nickel-free lithium-ion batteries ('LIBs').**
- **Cobalt- and nickel-free LIBs are safer, longer-lasting and, importantly, require less raw materials – including lithium – than cobalt- and nickel-based alternatives.**
- **The price of battery-grade lithium concentrate has increased by 144% this year.**
- **Demand for cobalt- and nickel-free LIBs (for use in electric vehicles and stationary energy storage in particular) is surging.**

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Overview

The proportion of cobalt-free batteries in the LIB market space continues to grow following the release by BYD and Tesla of all-electric vehicles powered by lithium iron phosphate ('LFP') type LIBs in 2020.

BYD also began commercial production of its 'Blade' LFP-based batteries for electric vehicles ('EVs') in October 2020, having achieved with them an energy-density increase of more than 30%, along with a 30% reduction in material costs.

LFP-type LIBs contain no cobalt or nickel and use 20% less lithium per unit of stored energy when compared with their more common cobalt- and nickel-based competitors. Importantly, too, LFP batteries are much safer, which is why many automotive manufacturers now offer entry-level EVs powered by LFP batteries.

With less raw material requirements, LFP-type LIBs are gaining a critical cost advantage as well, given that the price of spodumene (the principal hard-rock lithium source) has more than doubled since late July.

As reported by *The West Australian* on 16 September 2021, the price of lithium concentrate has climbed 144% this year alone. With supply short, the consequent white-hot price of lithium is nowhere better evidenced than at the Battery Material Exchange digital auction of 14 September 2021, where the lithium concentrate (spodumene) of Pilbara Minerals Ltd achieved the equivalent of US\$2500/tonne (on a 6% lithia basis).

On 13 September 2021, *Argus Media* reported that in the first eight months of 2021, LFP batteries accounted for 52% of total LIB production, tipping the scales to LFP dominance. Currently, China is the world's largest producer of LFP and LFP-type LIBs by far, accounting for 98% of such battery production globally.

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Also this year, in August, some 309,000 'new-energy vehicles' were produced – a figure up 180% from 12 months ago. Thus, even with COVID-19 creating chaos worldwide, the energy markets are changing at pace.

VSPC-produced LFP

VSPC Ltd ('VSPC', a wholly-owned subsidiary of Lithium Australia NL (ASX: LIT, 'the Company') has patented several processes for the production of high-performance LFP cathode powder, as well as high-energy-density variants that include lithium manganese ferro phosphate ('LMFP'). These advanced battery materials are now being tested by cell manufacturers in South Korea, France, Canada, Israel, China and Japan.

While VSPC continues to evaluate opportunities to expand its LFP and LMFP production to a commercial scale offshore, it has also applied for a Modern Manufacturing Initiative – Collaboration Stream grant from the federal government. If successful, this could help VSPC develop a supply chain for the battery industry right here in Australia.

Security of supply of critical materials for battery production – from mining all the way through to LIB manufacture – is (or should be) a matter of national significance. In Australia, there is the potential to create a new LIB industry and retain much of the downstream value of lithium mining for the benefit of everyone in the country.

As mentioned previously, China produces 98% of LFP for global markets and, with those markets growing so rapidly and LFP now the dominant LIB chemistry, there could soon be little LFP available outside of China to satisfy current demand.

With LFP set to take off, there is therefore significant growth potential for non-Chinese production of this commodity, regardless of scale, meaning that new LFP market entrants like VSPC are on the brink of an immense commercial opportunity.

Comment from Lithium Australia managing director Adrian Griffin

“To develop renewable energy security, Australia requires a domestic battery supply chain. Pragmatic political policies and government support are a step in the right direction and the Modern Manufacturing Initiative – Collaboration Stream grants will hopefully provide some of that support. The shortage of nickel- and cobalt-free cathode materials outside China is of great concern; however, the possibility of producing such material here in Australia has garnered enthusiastic support – from local miners right through to international battery producers. This country needs to act now, building on its resource base and developing the value-add that can position Australia as a leader in the new energy revolution.”

Authorised for release by the Board.

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Forward-looking statements

This announcement contains forward-looking statements. Forward-looking statements are subject to a variety of risks and uncertainties that it is beyond the Company's ability to control or predict and which could cause actual events or results to differ materially from those anticipated in such forward-looking statements.

About Lithium Australia

Lithium Australia aims to ensure an ethical supply of energy metals to the battery industry by creating a circular battery economy that enhances both sustainability and resource security. Reprocessing spent lithium-ion batteries to create new ones is intrinsic to this plan, with the Company operating Australia's only fully integrated mixed-battery recycling business.

Having rationalised its portfolio of lithium projects/alliances, Lithium Australia continues its research into, and the development of, proprietary extraction processes for the conversion of *all* lithium silicates (including mine waste), and of fines generally discarded during conventional spodumene conversion, to lithium chemicals, from which it will produce advanced cathode materials for the battery industry globally.

The Australian federal government has recognised the Company's progress through the awarding of substantial research grants designed to progress the nation's advanced battery capabilities.

By uniting resources and innovation, Lithium Australia seeks to vertically integrate lithium extraction, processing and recycling.

About VSPC

VSPC is a wholly owned subsidiary of Lithium Australia. It operates a battery material R&D facility and pilot plant in Brisbane, Queensland, Australia, where it has developed advanced processes for the manufacture of cathode powders applicable to all lithium-ion battery chemistries, as well as anode materials like lithium titanate (LTO).

VSPC's processes are simple and scalable for nano-structured battery cathodes, provide for precise control of chemical composition, particle size and surface characteristics, are flexible and cost-competitive (given their ability to use low-cost raw materials and recycled lithium as feed) and are adaptable to a range of nanostructured materials.

Currently, VSPC is advancing plans to commercialise its process technology for the manufacture of cathode material for LFP and LMFP batteries.

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