ASX ANNOUNCEMENT

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Lithium Australia subsidiary VSPC granted patent for nickel- and cobalt-free cathode powders

HIGHLIGHTS

- **Lithium Australia subsidiary VSPC is granted Australian patent for the production of nickel- and cobalt-free battery cathode powders.**
- **VSPC's intellectual property portfolio includes patents covering *how* its powders are made, not just *what* they are made of.**
- **VSPC's proprietary nanotechnology processes are simpler, cheaper and more energy-efficient, and deliver products more consistent in quality, than those of its competitors, meaning VSPC is well-positioned to cater for forecast growth in the rapidly expanding global market for phosphate-based battery cathode materials, lithium ferro phosphate in particular.**

Introduction

VSPC Ltd ('VSPC'), a wholly owned subsidiary of Lithium Australia NL (ASX: LIT), has spent 20 years researching and developing its nanotechnology processes and the past 14 years on applying those processes to next-generation cathode materials for lithium-ion batteries ('LIBs').

Grant of Australian patent

The Commissioner of Patents has granted Patent Number 2020203801, with an earliest priority date of 2020-06-09, for the VSPC process entitled 'Method for making lithium metal phosphates'. The patent, which will provide VSPC with 20 years of intellectual property ('IP') protection in Australia, is the first step in VSPC's quest for worldwide patent protection of this IP.

Over the past two years VSPC has simplified and adapted certain elements of its proprietary nanotechnology, to enable its use of a broader range of raw materials. This led VSPC to develop a process that includes novel and inventive steps, and hence to granting of this patent.

Lithium ferro phosphate ('LFP') and lithium manganese iron phosphate ('LMFP') are both phosphate-based cathode active materials that can be manufactured using VSPC's recently patented process, which provides potential for significant reductions in production cost.

Benefits of phosphate-based cathode materials

LFP and LMFP cathode powders outperform nickel-based battery cathode materials in terms of safety, production cost and chemical stability and offer a longer service life.

In terms of resource utilisation too, LFP and LMFP could result in greater supply chain sustainability, in that both use 20% less lithium than nickel-based cathode alternatives per kWh (kilowatt hour) of storage capacity, are produced using widely available iron and

phosphate raw materials, and contain no nickel or cobalt, thereby reducing dependence on critical metals already in short supply and vulnerable to supply disruption, as well as volatile pricing.

LFP and LMFP, then, share the same advantages, with the difference that LMFP also offers greater energy density; in terms of its use in electric vehicle battery packs, this could equate not just to greater safety and longer life, as with LFP, but also greater power output and therefore greater range.

With respect to chemical and physical properties and electrical performance, VSPC's LFP and LMFP are on a par with, or exceed, those of leading suppliers of such products, which has been verified through independent testing.

VSPC recently announced that it was dispatching samples of its LMFP to battery manufacturers/potential customers in South Korea, Japan and China (see ASX announcement dated 8 July 2021).

VSPC's development of other battery materials using its proprietary technology, in parallel with commercial scale-up work on the newly patented process, is being progressed.

Using lithium phosphate as a precursor – game-changing technology

By harnessing lithium phosphate as a cathode powder precursor, VSPC's newly patented process has the potential to reduce the number of steps from the mining of ore to the production of battery cathode materials and, ultimately, new LIBs.

This process, relative to the production of LIB cathode materials in general, offers the following competitive advantages.

- Flexibility with the lithium raw material used – this can be lithium phosphate, lithium carbonate or lithium hydroxide.
- Precise upfront control of the chemistry to reliably deliver products consistent in their chemical and physical properties.
- The flexibility to control particle characteristics, including size, at both a nano- and micro-scale.
- Simplified final-stage processing/product finishing.
- Lower energy consumption overall.
- Higher yields from raw materials.
- Optimised product morphology for energy-storage applications and, potentially, for defence and space applications.

Further, the process has been shown to reduce input chemical costs by 15% when benchmarked with traditional production costs. Given that chemicals typically account for more than two-thirds of the production costs of cathode materials, this is significant. The process integrates well with work undertaken by VSPC on a project co-funded by the Australian Manufacturing Growth Centre (AMGC) on low-cost iron reagent production (see ASX announcement dated 23 January 2019), which work reduced chemical costs by a further 10%.

Future growth

Given the benefits of its proprietary technology, VSPC is well-positioned to take advantage of what is forecast to be remarkable growth in the already rapidly expanding market for LFP-type powders. Indeed, global markets for LFP are forecast to grow fivefold over the next 10 years (see ASX announcement dated 14 April 2021).

Comment from Lithium Australia MD Adrian Griffin

"The grant of a patent for this most recent process enhances VSPC's application of previously granted intellectual property to specific types of cathode powders.

"Initial patents, which covered VSPC's ability to create very small particles, have since been applied to the fastest growing sector of the battery industry – LFP-type LIBs.

"Lithium Australia is a world leader in this technology and is seeking partners to establish commercial production facilities."

Authorised for release by the Board.

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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.

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.

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