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## Lithium Australia subsidiary VSPC makes cathode material from recycled batteries

### HIGHLIGHTS

- **VSPC has produced high-quality cathode material using refined lithium phosphate derived from spent lithium-ion batteries.**
- **The cathode material produced exceeded VSPC standards for electrochemical performance.**
- **This confirms that lithium phosphate produced by Lithium Australia's processing of recycled battery material is an ideal feed for VSPC technology.**
- **Using material from spent batteries to create new batteries 'closes the loop' on lithium production and recovery.**

### Overview

VSPC Ltd ('VSPC') is a wholly owned subsidiary of Lithium Australia NL ('the Company'). In early September, VSPC used lithium phosphate ('LP') from spent lithium-ion batteries ('LIBs') to create high-quality cathode material, which was then used to create and test lithium-ferro-phosphate ('LFP') batteries. (An LFP battery is a type of LIB.)

### Steps

Using Company technology, the Australian Nuclear Science and Technology Organisation ('ANSTO') recovered LP with a purity of more than 99.9% from mixed metal dust ('MMD') from recycled LIBs.

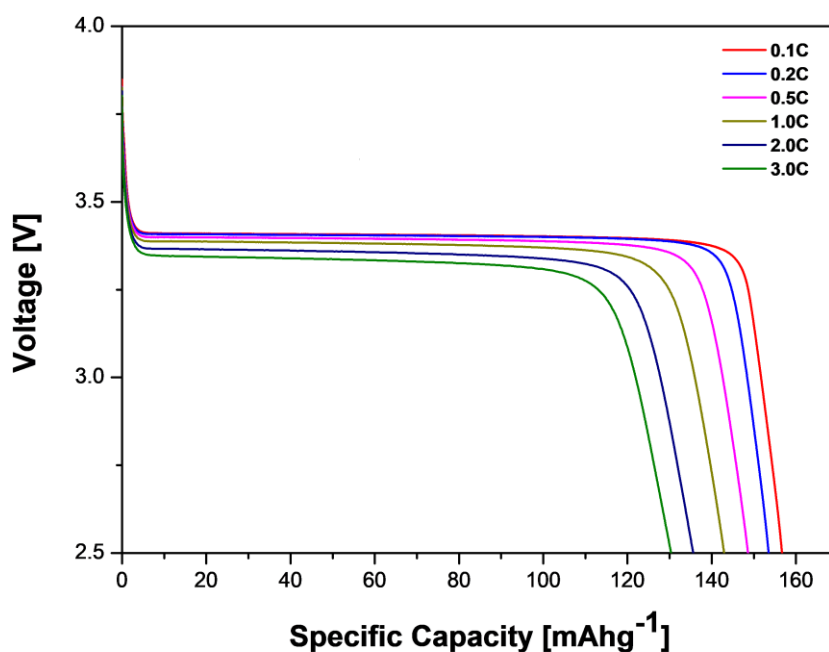
The MMD was commercially recovered by Envirostream Australia Pty Ltd ('Envirostream'), in which the Company holds 18% equity. Based in Melbourne, Envirostream is the only company in Australia capable of sorting, shredding and separating all energy metals, including lithium, from spent LIBs.

Once ANSTO had recovered the LP, it was shipped to VSPC's pilot plant in Brisbane, Australia. There, VSPC proprietary nanotechnology was used to synthesise LFP cathode material from the LP, with 100% recovery to final product achieved with precise control of composition and phase purity.

Using that LFP cathode material, VSPC created new, 2032 coin-cell LIBs and electrochemically tested them. The performance of those LIBs exceeded VSPC's internal standards; viz:

- specific capacity      0.1C discharge >155 mAh/g
- specific capacity      1C discharge >135mAh/g.

The graph below shows the typical discharge curves for the coin-cell LIBs.



### Creating a circular battery economy

This achievement demonstrates the technological fit between Lithium Australia's recycling process and the VSPC process for producing cathode material for LFP batteries.

The entire production cycle (lithium from recycled batteries → LP → LFP cathode material → new LIBs) demonstrates the potential for improved efficiency and reduced manufacturing cost.

VSPC will now use a blend of newly created LFP material and LFP material synthesised from recycled lithium to make and test cathodes for larger, commercial-format (18650) battery cells.

The Company is currently in discussions with industry players in China and elsewhere to establish a supply chain for LFP cathode material produced from the recycling of spent LIBs. Indeed, growth projections for such material are strong, given its suitability for applications such as the replacement of automotive lead-acid batteries and for large-scale energy storage, including the provision of back-up power supplies for 5G communications stations.

### Comment from Lithium Australia MD Adrian Griffin

"The production of LIBs from recycled battery material represents a genuinely renewable pathway for the battery industry. Recycling of this type meets the ethical, social and governance standards that the community expects. It also strengthens our capacity to deal with climate change by improving resource sustainability and reducing the environmental footprint of portable power.

## ASX ANNOUNCEMENT



"With demand for LIBs remaining strong, Lithium Australia is providing a supply chain solution that is independent of mainstream mineral producers, as well as producers of conventional battery chemicals."

**Barry Woodhouse**

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[Adrian.Griffin@lithium-au.com](mailto:Adrian.Griffin@lithium-au.com)**About Lithium Australia NL**

Lithium Australia aspires to 'close the loop' on the energy-metal cycle in an ethical and sustainable manner. To that end, it has amassed a portfolio of projects and alliances and developed innovative extraction processes to convert *all* lithium silicates (including mine waste) to lithium chemicals. From these chemicals, the Company plans to produce advanced components for the lithium-ion battery industry. The final step for Lithium Australia involves the recycling of spent batteries and e-waste. By uniting resources and the best available technology, the Company aims to establish a vertically integrated lithium processing business.

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