



### LMFP – the future of lithium-ion batteries

Lithium ferro phosphate ('LFP') has long been considered the leading lithium-ion battery ('LIB') type in terms of safety, cost and durability. The one downside, though, is its energy density (capacity), or lack thereof, compared to other LIB types such as NCA (nickel cobalt aluminium) and NCM (nickel cobalt manganese). However, NCA and NCM are subject to supply chain constraints, particularly in relation to cobalt, which often originates from regions of conflict and/or countries in which human rights are violated and child labour rife. Not so LFP, of which the common and low-cost precursors are iron and phosphorous (not a conflict metal in sight!).

So .. if LFP had a higher energy density, it could be the perfect LIB?



Adding another cheap and readily available commodity, manganese, to LFP may be part of the solution. Lithium Australia NL ('the Company') subsidiary VSPC Ltd ('VSPC'), with its patented cathode-powder production technology, has already put the manganese (M) into LFP to create an LMFP-type LIB, with promising results.

[LMFP battery cells, produced at VSPC](#)'s R&D facility in Brisbane, Australia, have shown capacity increases of up to 25% compared to their LFP counterparts, thereby providing a safe, low-cost and long-life alternative to NCA and NCM.

Major LIB producers in China (the mecca of LFP) are also seeking to improve LFP efficiency, in line with what VSPC has already achieved.

In the Antipodes, those looking to store the solar power they produce can purchase an LFP-based battery energy storage system ('BESS') from Company subsidiary Soluna Australia Pty Ltd ('Soluna'). As the 'safe' choice, a Soluna LFP BESS will still be pumping out low-cost, blackout-proof electricity long after the spent batteries of competitors' systems have been relegated to Company subsidiary Envirostream Australia Pty Ltd for recycling.

For further information, go to:

[Soluna Australia](#) [Lithium Australia](#) and [Envirostream Australia](#).

Regards

**Adrian Griffin**

Managing Director

**Lithium**  
Australia<sup>NL</sup>

Level 1, 675 Murray Street  
West Perth WA 6005  
PO Box 1088  
West Perth WA 6872

Phone: +61 (0) 8 6145 0288 Fax: +61 (0) 8 9475 0847  
Email: [info@lithium-au.com](mailto:info@lithium-au.com) Web: [lithium-au.com](http://lithium-au.com)