

Media Coverage

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PROFILE

Power-packed to lead the charge

A Queensland company has found the perfect ingredient for its car battery technology, writes **Mark Fenton-Jones**.

A Brisbane-based company hopes to hitch a ride on the rush to mass-produce electric powered cars. It has won a government grant to help it produce high volumes of complex metal oxides for battery makers wanting to manufacture lighter, longer-lasting batteries for electric vehicles.

VSPC, short for Very Small Particle Company, will use the \$2.09 million from the federal government's green car innovation fund to build a plant that can produce 2000 tonnes a year of lithium iron phosphate (LFP) for use in the latest generation of rechargeable batteries.

What makes VSPC's patented manufacturing process unique is that the LFP is produced on a nano-scale, the company's chief executive David MacInnes says.

He says batteries using this technology have many advantages over existing battery products, including safety, cost, weight and performance, because of the nano-

size particles. They are the reason for enhanced performance, especially power performance, which is the ability to charge and discharge rapidly without exploding.

"Think of it [power performance] in terms of providing acceleration in a car. Many electric cars can accelerate from zero to 100km/h in three seconds or less.

"Our chemistry allows this very rapid discharge [that provides the acceleration] to be carried out safely.

"We can discharge the full battery in one minute with no safety issues," MacInnes says.

The company's LFP technology allows batteries to be recycled many thousands of times, giving them a life of at least 15 years.

Although one cycle equals refilling a tank with regular fuel, the initial price of an LFP battery is higher than other technology such as lead-based batteries.

"However, they last for 7000 cycles, or 15-plus years, resulting in lower lifetime costs. If charged 200 times a year, this equates to 35 years of life," MacInnes says.



Drivers will no longer have to recharge overnight or swap batteries.

David MacInnes, VSPC

"Drivers will no longer have to recharge overnight or swap batteries to keep on the road."

The global drive behind the electrification of transport has put rechargeable batteries, particularly lithium ion batteries, at the fore.

Almost every major car manufacturer has an electric vehicle either in production or due for release in the next five years. These can be battery electric vehicles or hybrid electric vehicles.

MacInnes says a number of automotive industry and battery makers are testing his company's product as they push for market leadership in the development of electric vehicles that are cheaper to run, safer and more reliable.

"Nine separate companies are testing the material and several are very interested," he says.

Last year engineering work began to establish a full-scale, 2000 tonnes a year manufacturing facility based on the work undertaken at the 20 tonnes a year Brisbane pilot plant.

MacInnes would prefer to keep the plant in Australia.

"The details, including location and commercial details, are still being negotiated," he said.

At \$600,000 a container for the

LFP, and \$3000 to \$4000 to ship overseas, the profit margin for local manufacture is still attractive.

Sales at the plant are predicted to reach \$60 million a year.

MacInnes explains that, rather than grinding the raw materials such as iron oxide and phosphate into particles, his method uses a more effective chemical process.

While the competition has to use separate production lines to produce its LFP, VSPC can do it on one line.

"We've spent a total of \$20 million," MacInnes says, "which includes \$14 million of real money from sophisticated investors and \$6 million in R&D offsets and government grants".

A major competitor will be Phostech Lithium, a Canadian subsidiary of Süd-Chemie AG, which is spending €60 million (\$81.5 million) on a 2500-tonne plant in Quebec which will begin production next year, although using a hydrothermal process different from that of VSPC.

MacInnes is not discouraged by that investment.

"What is holding back the market is a shortage of LFP. By 2020, the market is estimated [by Boston Consulting Group] to be 200,000 tonnes a year," he says.