



Magnis Resources
L I M I T E D

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Working Solid State Battery Produced and Unveiled at Battery Conference in New York

- Magnis Partner C4V has developed one of the world's first working prototype of a Solid State Battery
- Successful demonstration unveiled at the 2018 NYBEST Conference in New York
- Battery volumetric capacity currently 380Wh/kg and 700Wh/L, with expected further optimisation towards 400Wh/kg and 750Wh/L
- Targeted commercial production with availability by Q2 2019
- New battery will lead towards lower production costs and does not rely on cobalt, reducing supply constraints in mass production

Magnis Resources Limited ["Magnis" or the "Company"] [ASX: MNS], to be renamed Magnis Energy Technologies Ltd [subject to shareholder approval], is excited to announce that its partner Charge CCCV [C4V] has completed production of a working prototype of a Solid State Battery which was demonstrated at the 2018 NYBEST Conference in New York by C4V.

C4V Solid State Battery Production

C4V's new Solid State Battery, replaces more than 80% of the liquid electrolyte with a solid electrolyte. This effectively produces a lower cost battery that is higher capacity, higher density, higher performance, and with significantly reduced charging times than existing battery solutions. Further, C4V's battery does not require cobalt which contributes to the reduction of costs and an increase in scalability of production without metals supply constraints.

The prototype Solid State Battery demonstrated in New York has volumetric capacities of 380Wh/kg and 700 Wh/L which is expected to increase to 400Wh/kg and 750 Wh/L through optimisation over the coming months prior to production for commercial availability by Q2 2019.

As an example of the capabilities of this battery in current implementations, the C4V Solid State Battery will be capable of delivering a 70% increase in range for electric vehicles when compared to other batteries, allowing an electric car with a current 400km range to be able to run 680km on the same single charge.

C4V is working alongside commercial supply chains to further refine and optimise compositions, chemical structure, particle morphologies, and electrode processing techniques to develop solutions for tailored applications including electric vehicles, grid backup solutions, aviation, and portable electronics.

Commentary

C4V President Shailesh Upreti commented: “We are very excited about our developments in moving to a production-ready Solid State Battery design. C4V has taken a commercial approach in its development process for its next-generation product. C4V’s new Solid State Battery is drop-in ready, reducing disruption on the manufacturing floor, whilst reducing production cost and increasing production quality.

“C4V continues to work closely with our strategic partners, including Magnis, as well as our established supply chain partners to bring C4V’s latest innovation to market.”

Magnis Chairman Frank Poullas commented: “This is one of the world’s first Solid State Batteries to be produced. Volkswagen Group recently invested US\$100 Million into US-Based QuantumScape which is yet to publicly produce a prototype and is targeting Solid State Battery production in 2025. The investment by Volkswagen valued QuantumScape at over US\$1 Billion.”

“Our technology continues to gain serious interest and we look forward to announcing further developments in the coming quarters.”



Figure 1: C4V Third Generation Solid State Battery

PLEASE FIND THE C4V PRESS RELEASE BELOW

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C4V's new solid state battery has arrived and is now on the road to mass production in New York

- **Working prototype showcased by C4V at the NYBEST 2018 Fall Conference in New York**
- **Battery's Energy Density of 380Wh/kg achieved without cobalt**
- **System-level testing of the new battery now underway for strategic offtake partner**

Binghamton, NY, September 27, 2018 – Charge CCCV, LLC (C4V) today demonstrated a prototype of its new Solid State Battery (SSB) at the NY BEST 2018 Fall Conference in New York. The Company's SSB solution delivers higher performance, higher density, lower cost batteries that promise to require significantly less charging time than others.

The Technology

C4V has been able to replace more than 80% of the liquid electrolyte with a solid electrolyte producing a semi-solid-state technology with an energy density of approximately 380Wh/kg.

This technology will provide a remarkable 70% range increase for every Electric Car that employs the C4V Solid State Battery. An Electric Vehicle today, currently capable of a 300-mile range, would with C4V's technology be able to extend its range to 510 miles on a single charge.

The C4V Generation 3 Battery utilizes energy densities and volumetric capacities of 380Wh/kg and 700 Wh/L and the Company is already targeting a 400Wh/kg and 750 Wh/lit milestone within the next

six month timeframe before commercial process optimization starts. In the first half of 2019, C4V plans to announce the availability of its commercial cells to the market.

The Company is working alongside commercial supply chains to fine-tune the compositions, chemical structures, particle morphologies and electrode processing techniques for tailored applications such as Electric Vehicles, grid back-ups, aviation needs and portable electronics requirements.

Dr. Shailesh Upreti, founder and President of C4V, emphasized in a statement today that: *“It is our mission at C4V to discover solutions that solve problems lying at the materials level to create value at the Lithium-ion Battery and system level. Our unique materials technology not only reduces the cost of batteries significantly, it promises to provide relief to certain key metal supply constraints.”*

Dr. Upreti went on further to say: *“C4V’s global joint venture companies are achieving price reductions through economies of scale by adopting its innovations. Our first generation high power and energy density batteries do not employ the use of cobalt, instead use higher voltage composite material in combination with other abundant raw materials and thus greatly reduce costs, while relying on a less volatile supply chain.”*

At today’s NYBEST Annual Conference, Dr. Upreti showcased the new technology by lighting an LED with a prototype of C4V’s SSB stating in summary that, *“We are very excited about these new developments in the Solid State Battery segment. C4V has taken a commercial approach to developing material and designs for its next generation product. We are able to demonstrate the drop-in nature of our technology which thus eliminates costly disruptions on the manufacturing floor”.*

C4V continues to work closely with strategic partners as well as their established supply chain partners to bring its s latest innovations to market.”

A video of Solid State Battery Cell can be seen at: [C4V Solid State Battery Video](#)

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