on with silicon

The Battery Show, Stuttgart, 23 May 2023



E-MAGY AT A GLANCE

Supplier of nano-porous silicon for high-energy lithium-ion batteries

Team of 25+ engineers and PhD's in materials science, electrochemistry and engineering

Located near Amsterdam, The Netherlands

Founded in 2019; silicon crystallization experience since 2000

State-of-the art production line and battery test facilities in-house

Investors: Hydro, Invest-NL, Rubio, SHIFT Invest, PDENH

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Turning low-cost, abundantly available silicon into high-performance battery anode material



SWITCHING FROM GRAPHITE TO SILICON



THE CHALLENGE OF SILICON IS SWELLING



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OUR SOLUTION IS A NANO-POROUS STRUCTURE

Nano-porous Si particle

Controlled swelling during cycling at limited capacity







Mechanically stable crystalline silicon backbone

NANO-POROUS STRUCTURE CONTROLS SWELLING DEMONSTRATED IN POUCH CELL



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DEMONSTRATED CONTINUOUS IMPROVEMENT IN FULL COIN CELL CYCLE LIFE TESTS



Full (coin) cell

Anode: **Si** (+ conductive additive + binder) Cathode: NMC622 (+ conductive additive + binder) Test Protocol: 0.5C/0.5C (RT)

METALLURGICAL SILICON ENABLES LOW-COST BATTERY GRADE ANODE MATERIAL PRODUCTION



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BENEFITS

PERFORMANCE

Making silicon-dominant anodes a reality: higher energy density (+40%) and faster charging

COMPATIBILITY

Micrometer-scaled silicon powder drops-in to existing battery cell production lines

LOW COST

On-par with graphite (€/kWh) by using abundantly available silicon and efficient crystallization process

FAST SCALING

Highly efficient, patented and scalable process with first production line already in place, being scaled to capacity of 25 ton/year



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OUR GOAL: SUPPLY SILICON ANODE MATERIAL FOR 1 MILLION ELECTRIC VEHICLES (60GWh) PER YEAR BY 2030

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GET IN TOUCH



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