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Recycled batteries the next step in green revolution, says Neometals' Chris Reed

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From Hay Street in Perth Chris Reed can see himself as one of the most important manufacturers in the heart of Europe. The business is battery recycling and Reed says it is the start of a tsunami.

Australians are luddites on renewable transport so it's hard to get a handle on the changes in Europe which Reed's Neometals – with patented technology for recycling – sees as the new gold rush.

In fact the hard rock miner reckons he is now the lowest-cost nickel producer in the world with a very scalable business. Shares have more than doubled this year and Neometals has a \$390m market capitalisation.

The starting premise is that batteries are not quite as clean and green as promised. "You've got lithium, copper, nickel as an oxide in the battery, in this little bad boy," Reed says, holding up a lithium AA.

"They can leach into the groundwater. Now the lithium is probably going to stop people getting depressed but the other heavy base metals are not going to do much for your health. There is a landfill issue."

The perfect storm for Reed is in Europe. Electric-vehicle batteries are taking off as tough new European directives demand they are recycled at end of life.

"All the carmakers have followed Elon (Musk) in wanting to build their own battery plants," says Reed. In July Mercedes Benz maker Daimler announced a \$47bn investment by 2030 in EVs, including eight battery plants. "Volkswagen, Daimler, Stellantis – they are all going to do 240 gigawatts or 200 gigawatts. So all of a sudden they will need two million tonnes of battery recycling capacity at the end of life for one of those."

Spent batteries are a menace. Even storing lithium batteries is a fire risk. But the other urgency for recycling in Europe is that the continent is short of the metals that go into batteries.

"Australia is a battery in the ground," says Reed. "We do nickel, copper, aluminium, lithium, manganese and cobalt – you can get it all from one country. Some places like Europe aren't blessed so they want to create a fortress and recycle and that is reflected in these new EU battery regulations."

EU directives also target carbon emissions. Electric vehicles have twice the CO2 footprint of petrol cars when they roll off the production line, becoming net beneficial in about year six or seven. That is because it takes about eight tonnes of CO2 to produce a tonne of new batteries. From 2027 in Europe there will be a CO2 footprint threshold and recycled content declarations, and by 2030 a minimum recycled content.

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Neometals started life as gold play Reed Resources, founded by Reed's father David who back in the day was one half of Perth broker Eyres Reed.

In 2009 Reed took a stake in Mount Marion in WA, the second-largest source of hard rock lithium in the world and rode the commodities cycle, with a few racy moments.

"We had been through a high, a low, a high and we had plenty of time to contemplate our navel," says Chris Reed.

In 2015 the battery rush started and the Reeds saw the value in cobalt.

"We couldn't find any decent cobalt deposits that weren't in the DRC (Democratic Republic of Congo). Then our chief operating officer said: 'See these iPhone batteries? They are 20 per cent by weight cobalt.' Then we worked out that Elon was putting these things in the cars and the cars were going to become 90 per cent of the volume."

Neometals developed a process first to shred batteries to black mass, a powder stage, and then to extract nickel, cobalt, manganese, lithium and copper out of EV batteries using solvents in a patented sequence.

"Australia pioneered solvent extraction in base metals. I would say it's the best thing to come out of Mount Isa – with apologies to Pat Rafter," Reed says.

The entire process which creates sulfates of the metals is emissions-free and by using a slightly more expensive input of ammonia rather than sodium, the tailings become fertiliser. "If we put 20,000 tonnes of batteries in, we get 20,000 tonnes of ammonium sulfate out the back, so it is truly a green process."

Starting work in the mines at 17, Reed read commerce and mineral economics and is now doing a masters in science at the School of Mines.

The Neometals board, chaired by David Reed, has some hefty multinational experience.

"Jenny Purdie runs Olympic Dam for BHP, Les Guthrie used to run BHP's potash business, Doug Ritchie was the head of strategy at Rio, Natalia Streltsova is an expert in base metal metallurgy," Reed says.

After a successful pilot run in Canada, Neometals needed a partner to help build the plants that service the big car companies. Reed agreed to a 50/50 joint venture with German company SMS.

"They did due diligence when the world was still all right in 2019. Not only can SMS build whatever size we need and put them wherever we want, there are 14,500 employees in 95 sites around the world, so they can put them wherever we need."

SMS has built a demonstration plant in Hilchenbach, and last month the front-end shredding section to the black-mass stage was successfully commissioned with feedstock from a local carmaker. The back end refining section is being commissioned later this month, with trials running through to November.

The joint venture is now building operational capacity for a 10 tonne recycling service to make black mass in the first quarter of 2022 to generate early revenue.

Memorandums of understanding are also in place with Itochi for a plant in Japan and with Stelco in Canada to take batteries from cars it recycles for steel.

The company is studying plans for both 20,000 and 200,000 tonne capacity plants. Reed says a 35GWh battery itself produces about 10 per cent scrap, enough feed for 20,000 tonnes.

"But you are at the dawn of a tsunami. We know because we can see the battery plants that have been built, we know the adoption rates of the cars. The only thing we are more confident about than the volumes being produced is that they bloody wear out quicker than you think."

Reed hadn't budgeted for recalls of EVs. Car companies are making EVs for the first time and in bulk. This year Hyundai recalled 77,000 SUV Konas due to faulty anodes.

"So we got phone calls. Can you handle 20,000 to 30,000 packs in Europe? I'm thinking that's going to half fill my plant, when do you need it? July. What year? Now. Shit, I'm not ready!"

A thumbs-up on the trial in November is the big milestone. If proven like the Canadian pilot, Neometals will be recovering 85 per cent of the starting mass of the batteries, which Reed says future-proofs it from European rules that rise to 70 per cent by 2030.

Neometals' share price has slipped over 15 per cent from its highs last month. Reed puts it down to the demerger of nickel producer Widgie Nickel from Neometals and his father selling shares to fund his entitlements. Nickel is also the biggest individual product that Neometals will be recycling from batteries. "If I take the cobalt revenue off and nothing else for any other product, divide that by the production, I'm the new lowest-cost nickel producer in the world. It's scalable and we are very bullish on where nickel heads at the end of the decade," says Reed.

Two competitors for Neometals are Redwoods, a battery recycling start-up which in July raised \$US700m, and Li-Cycle, listed this month on the New York stock exchange from a \$US52m SPAC.

Reed says Redwoods is 12 months ahead of Neometals but both are US-based and he is confident that there is plenty of battery supply to share around.

Neometals is also debt-free after the sale of its stake in Mount Marion.

Reed drives a Tesla bought for the company by Mount Marion's original prospector. "He gets a bloody lot of money out of those royalties. I'd like to have a 2.5 per cent royalty the world's second largest source of hard rock lithium."

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