

2nd April 2019

Sector: Mining

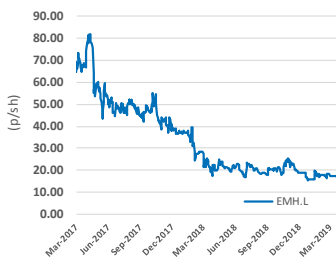
Commodities:

Lithium, tin, tungsten in the Czech Republic

Lithium hydroxide and/or carbonate

Market data

Ticker	EMH
Price (p/sh)	17.0p
12m High (p/sh)	27p
12m Low (p/sh)	15p
Shares (m)	146.6m
Mkt Cap (£m)	24.9m
Markets	AIM & ASX



Source: LSE

Description

European Metals Holdings Limited is a mineral exploration and development company listed on AIM and the ASX. The company's main focus is on advancing the Cinovec lithium-tin project located in the Czech Republic. EMH has completed a PFS and is now progressing the project through to a DFS. Cinovec will produce either lithium carbonate or lithium hydroxide. www.europeanmet.com

Board & key management

Chairman	Dave Reeves
MD	Keith Coughlan
Exec Director	Richard Pavlik
Non-Exec	Kiran Morzaria
COO	Neil Meadows

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European Metals

Hydroxide flowsheet for Cinovec gets the ✓

Recent testwork at EMH's 100%-owned Cinovec lithium project has demonstrated the ability to produce lithium hydroxide from Cinovec's ore. An update to the 2017 PFS will be completed in the next six weeks to incorporate the results of this positive lithium hydroxide testwork. The PFS update will be based on the production of battery-grade lithium hydroxide but still retaining the option to produce battery-grade lithium carbonate depending on prevailing market dynamics.

- ▶ **Hydroxide is Go!** Recent engineering assessment of the Cinovec flowsheet and subsequent testwork at Dorfner Anzaplan has successfully demonstrated the ability to produce lithium hydroxide from Cinovec ore.
- ▶ **Product optionality.** A series of tests were completed looking initially at the direct production of lithium hydroxide from leach liquors and subsequently testing a more traditional route of converting lithium carbonate through to lithium hydroxide. Importantly, EMH reports that both process routes were successful in producing battery grade lithium hydroxide. This offers considerably flexibility, with the option to produce lithium carbonate should the market support both options. We see this as a key competitive advantage given that product optionality at a reasonable cost is inherently challenging to engineer into the majority of market supply represented by spodumene and brine producers. i.e. hydroxide is produced in lithium brine operations only after a relatively costly intermediate step to first produce carbonate and on the spodumene side of life, economics for most concentrate producers are not supportive of vertical integration.
- ▶ **Robust selection.** Nevertheless, the production of battery grade lithium carbonate followed by conversion to battery grade lithium hydroxide has been deemed by EMH to be the more robust flowsheet with lower process risk. We see this as positive for discussions with potential strategic/funding partners and off-takers as it does not preclude either product.
- ▶ **It's a question of chemistry.** Although hydroxide is becoming more favoured by European battery producers, it is difficult to forecast where battery chemistry demand might be in 5-10 years' time. Hydroxide is used predominantly in NCM 523, 622, 811 and NCA batteries, but specifically the build-out of 811 usage is critical for future demand as carbonate can replace hydroxide in 523 and 622 batteries. We see NCM 811 batteries as gaining increasing market share as the improved energy density allows carmakers to utilise fewer batteries (less weight, more range). The IEA estimates that NMC 811 will represent 50% of demand by 2030 which if fulfilled implies that the demand for lithium will be higher than demand for cobalt. However, the 811 build-out rate is uncertain despite adoption by Hyundai, Nissan, Renault, Peugeot and VW in some models. Either way, Cinovec's hydroxide/carbonate flexibility will provide tangible benefits going forward in our view.
- ▶ **Scale.** The testwork suggests that a production rate in excess of 25,000tpa of lithium hydroxide is possible. This represents a small beat on the 24,800tpa (21-year LOM) used in our hydroxide upside scenario (Shard est. \$768m NPV¹⁰). This would position EMH as a major European hydroxide producer - reference European Lithium's (ASX:EUR) Wolfsberg project where hydroxide production is slated at 10,000tpa from 2022 (10yr LOM) and Keliber Oy at 12,100tpa (13yr LOM) from 2021. We see Cinovec's hydroxide ability (and carbonate flexibility), production rate and long mine-life as being extremely attractive to European-based battery manufacturers.
- ▶ **Next Steps.** EMH will now formally update the 2017 PFS, planned for completion in c.6 weeks - we anticipate an improvement to the already favourable project economics.

Another landmark step for EMH with a very successful outcome from process testwork. We expect this to foreshadow an improvement in project economics in the next iteration of the PFS due out shortly. Cinovec is ideally suited to supply the right product at the right time into the growing European battery market. The company's shares continue to trade at a 3-year low. Pitted against our 45p/sh risked base-case and 80p/sh hydroxide scenario, we see a fundamental mismatch between the current market valuation and our estimate of the company's value trajectory. We argue that the current entry point is unlikely to persist once project development is further de-risked.

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