

# American Manganese Inc.

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## American Manganese looking to create circular lithium-ion battery supply chain through ground-breaking technology

- Plan is to extract high-purity cathode materials from lithium-ion batteries
- Then to sell the key metals back to electric vehicle manufacturers
- Patent-protected process
- Clear route to commercialization

### What American Manganese does:

American Manganese Inc (CVE:AMY) (OTCMKTS: AMYZF) is blazing a trail in recovering key metals from scrap cathode material rejected by battery manufacturers.

The critical metals tech group is focused on recycling lithium-ion batteries from electric vehicles (EVs) and then selling the materials back to said the firms.

Due to the rapid upswing in electric vehicles, demand for lithium-ion batteries is growing exponentially and the raw material supply is struggling to keep up.

Lithium, cobalt, manganese, nickel, and aluminum are all used in battery production and the recoverable value for these metals is estimated to be as high as US\$75.8 million per gigawatt of lithium cobalt batteries.

Meanwhile, there is an increase in spent lithium-ion battery waste and no efficient method to recover the valuable cathode materials trapped inside. Existing methods are capital intensive and uses high heat (1,500?), which comes along with harmful emissions, and low recovery and purity of cathode materials that are not repurposed into new batteries.

The EV manufacturing industry's titan Tesla Inc (NASDAQ:TSLA) has announced that it is looking to "close the loop" on battery production by using recycled materials at its Gigafactory in Nevada, and Swedish competitor Northvolt is planning to build environmentally-friendly batteries by incorporating a recycling facility.

American Manganese, based in Surrey, British Columbia, announced early in 2019 a significant milestone after being awarded a patent for its lithium-ion battery cathode material recycling technology called RecycLiCo.

The technology is a breakthrough in recycling of lithium-ion batteries by providing a high extraction of cathode materials such as lithium, cobalt, nickel and manganese at battery-grade purity. The process involves minimal steps, ensuring a high-grade, low-cost output.

American Manganese estimates that it will see an annual profit of US\$8.4 million and a 47% margin once the process is commercialized.

The technology is currently being tested on a pilot plant scale. Then the firm plans to commercialize the operation with a

**Price:** 0.195

**Market Cap:** \$36.75 m

### 1 Year Share Price Graph



### Share Information

**Code:** AMY

**Listing:** TSX-V

**52 week High Low**  
0.275 0.095

**Sector:** Renewable Energy

**Website:**  
[www.americanmanganeseinc.com](http://www.americanmanganeseinc.com)

### Company Synopsis:

*American Manganese Inc. is a critical metals company focused on the recycling of lithium-ion batteries with the RecycLiCo™ Patented Process. The process provides high extraction of cathode metals, such as lithium, cobalt, nickel, manganese, and aluminum at battery grade purity, with minimal processing steps. American Manganese Inc.*

action@proactiveinvestors.com

joint venture partner or through licensing agreements, which it estimates could yield over US\$8 million in annual profit at a 47% margin.

## How is it doing:

American Manganese has been steadily advancing the technology over months and years and it has now achieved a major milestone.

In November last year, the company announced that it had started talks with contractor Kemetco Research, which it hired in 2016 to begin lab-scale research over the preliminary engineering design and economic analysis for a commercial demonstration plant using American Manganese's technology with the capacity to process 3 tonnes of cathode scrap per day.

On May 1 this year, it revealed Kemetco has produced a conceptual layout for a plant with that processing capacity, estimating the capital costs at US\$12 million.

American Manganese reiterated that it wants to commercialize its technology via licensing or joint venture agreements and said it plans to locate the recycling plant in a strategic location within North America. There, it will prepare recycled products suitable for battery manufacturing.

The milestone news on a commercial plant came after American Manganese revealed in April that Kemetco had produced a nickel-cobalt sulfate product at 99.99% purity using the recycling process on cathode scrap it had received from a tier-one company, to which it then shipped back the recycled material.

American Manganese noted that it had first reported a 99.98% pure nickel-cobalt hydroxide product from the recycling tests, but that production of this nickel-cobalt sulfate was 'a first' for the company as it continues to expand its portfolio of recycling capabilities.

Sulfates have been requested by more than one tier-one company that American Manganese has been in talks with, so the group said it was pleased with the latest capability,

The firm also unveiled a deal in April with e-mobility firm Voltabox of Texas Inc, which will provide American Manganese with spent lithium-ion batteries for commercial-scale recycling

Amid the current unprecedented times due to the coronavirus pandemic, American Manganese has also reiterated that foreign dependency of rare earths and critical metals has turned resource security into a national security issue for governments, which turns the spotlight on its recycling plans.

## Inflection points:

- Complete the build of a commercial demonstration plant
- More deals, partnerships

## What the boss says:

In the May 1 statement about the concept for the commercial plant, American Manganese's president and CEO Larry Reaugh said: "We have always been confident in Kemetco given their experience and recent achievements withioneer's lithium-boron project."

"Our conceptual plant layout brings together the last 3-1/2 years of planning, theory, lab research, pilot plant tests and optimization. Our methodological approach was not an overnight success like some competitors may allude and our first recycling plant will be a demonstration of the RecyLiCo patented process on a commercial scale as we continue to expand our global reach," he added.

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