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Geomega sees Quebec as right REE destination

Advanced engineering work continues on Quebec-based Geomega Resources' rare earth demonstration plant with first production still slated for the end of this year or early 2021 despite COVID-19 related delays.



Energy Minerals > Leader-interviews The company has appointed Hatch Engineering to advance development of its first rare earth recycling plant outside of Asia. Half the engineering work on the plant in St Bruno, Quebec, is being funded by grants from the National Research Council of Canada's Industrial Research Assistance Programme.

Comments

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Geomega has developed a proprietary in-situ recovery (ISR) rare earth separation technology that recycles rare earth elements. It is aiming to produce neodymium, praseodymium, terbium and dysprosium for the permanent magnet industry.



"Our process is not patented and although we believe it could be patented in the future, we prefer not to follow that path now," CEO Kiril Mugerma told *Mining Journal*.

"The most important aspect of our process is the recirculation of our reagents which lowers the environmental footprint of our project and prevents dumping large amounts of organic waste in the environment."

Mugerman said the company planned to initially process 1.5 tonnes of magnet waste per day. At a starting capex of US\$2.6 million and with expected operating costs of \$3/kg of REEs, Geomega hopes to annually generate \$10 million at a 20% profit margin.

"If we drive it up to full 24-hour operation, then we can process 4.5t/d. If you do the math, you can see that we can achieve \$30 million of sales with \$6-\$8 million of profits," he said.

Mugerman believes the closed-loop process can attract ESG investment, including from downstream manufacturers of magnets.

He also believes the COVID-19 pandemic has served to accelerate the establishment of a North America-centric REE value chain, given federal USA and Canada-led initiatives to cooperate more closely in key REE areas.

"Downstream manufacturers could not obtain REE oxides for several months at the height of the pandemic. "Four months was a big wake up call for companies to say, we need to be more independent from China," Mugerman said.

Advantage Quebec

He believes Geomega's process can play a critical role in establishing Quebec as "the clean and cost-efficient recycler of choice" outside of China for neodymium magnets, the most widely used type of rare-earth magnet. According to Mugerman, Quebec's hydropower makes it a globally competitive power provider.

"That significantly lowers our operating costs and gives us a cleaner environmental footprint," said Mugerman.

"We will then target to expand to recycling other secondary feeds of rare earths and specialty metals followed by establishing a REE refining plant based on the ISR technology for mining concentrates. Ultimately, we are targeting expanding to other alternative REE-bearing feeds including red muds, coal, tailings and other mining feeds.

"You know, it's unfortunate that a lot of motor vehicle manufacturing is still done in North America, but most of the motors are made outside the country. So, as this motor production comes back to North America, it's going to be an absolute no brainer that somebody has to start making the components that go into it here. So, I think Canada definitely has a part to play."

Mugerman said the immediate focus was on completing engineering work before management proceeded to final equipment selection, ordering, construction, assembly and commissioning.

"In parallel, we are discussing with many strategic groups and end users regarding potential offtakes, supply agreements and partnerships to develop an independent fully integrated supply chain from oxide to magnet outside of China," he said.

In the longer term, Geomega foresees operating "a few" recycling plants strategically placed around the world close to major points of magnet production or recycling.

Geomega also owns the Montviel mine project in Quebec.

"In addition, we want to be operating a rare earth refining facility in Quebec for mining concentrates. This will then lead the way to future mine development in Quebec," Mugerman said.

Shares in the company (TSXV: GMA) had seen a volatile 12 months of trade, dropping from a February high of C21c to 9c a month later. It closed at 15.5c on Monday, capitalising the company at \$16 million (US\$12 million).



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