

Investor.Coffee (10.16.2023): Critical Minerals in the Congo Masterclass, Ferrari NV Embraces the Future by Rolling out Cryptocurrency Transactions

written by Tracy Weslosky | October 16, 2023

Mark Your Calendars for a CMI Masterclass

The Critical Minerals Institute Masterclass is just around the corner, scheduled for Thursday, October 19th at 11 AM EST. Centering around the intriguing topic of Critical Minerals in the Congo, this event promises enlightening discussions. Don't forget to [register](#) using the exclusive CMI member code CMC2 to avail your free entry (limited to 50). Featured speakers include CMI Board Members Melissa 'Mel' Sanderson and Russell Fryer. While Mel boasts a rich 16-year history in Congo relations through [Freeport-McMoRan Inc.](#) (NYSE: FCX), Russell is the dynamic leader of [Critical Metals PLC](#) (LSE: CRTM), a formidable name in Congo's copper industry.

Fresh Off The Press: Dive deep into the CMI October edition of the Critical Minerals Institute Report, bearing the headline [A slowing global economy continues to temper demand](#). Authored by the distinguished Matt Bohlsen, an Australian-based CMI Director, he's a familiar name for many as the Senior Editor for

[InvestorNews.com](https://investornews.com) and a distinguished voice on SeekingAlpha when it comes to critical minerals.

A Glance at InvestorNews.com's Recent Critical Mineral Highlights:

- **WATCH:** [Nano One's Partnership with Sumitomo: Sustainable Cathode Materials for EV](#)
- **READ:** [Ara Partners Acquires Vacuumschmelze: Mission Critical in the Electric Vehicle Landscape](#)
- **WATCH:** [Russell Fryer on Critical Metals PLC's Strategic Moves in the DRC and Global Expansion](#)
- **WATCH:** [Mark Billings on Auxico's critical minerals project advancements in Bolivia and Colombia](#)
- **WATCH:** [Donald Swartz's insights on ARR's Halleck Creek Project unlocking America's rare earth potential](#)
- **WATCH:** [Ian Fraser on Fathom Nickel's Exploration Progress and the Critical Mineral Potential in Saskatchewan](#)

A Quick Scan of Global Markets

Canadian futures are on a notable rise, drawing momentum from burgeoning copper prices. The U.S. market witnesses a cautious optimism, with futures making modest gains ahead of this week's crucial corporate announcements and economic revelations. European shares are rallying, with mining stocks taking the lead, all thanks to growing enthusiasm over Chinese demand, although the looming Middle East tensions remain a concern. Over in Asia, Japan's Nikkei grapples with a setback, predominantly influenced by the slump in chip-related stocks.

Corporate Chronicles

Chevron Corporation (NYSE: CVX) finds itself amidst a brewing storm. Initial peace agreements seem to crumble as unions at their Australian LNG setups gear up for renewed [strikes](#). The pivot for this unrest? Chevron's alleged retreat from prior commitments.

In a groundbreaking move, Ferrari NV embraces the future, rolling out [cryptocurrency transactions](#) for their luxury vehicles in the U.S. Europe is next on their radar. This initiative aligns with their ambitious goal of achieving carbon neutrality by the close of 2030.

Ford Motor Company (NYSE: F) encounters turbulence in its dealings with the United Auto Workers. In an anticipated move towards resolution, the union found itself presented with a *deja vu*, receiving an offer identical to one from two weeks earlier.

General Motors Co. (NYSE: GM) breathes a sigh of relief up north, as Canadian labor union Unifor members give a nod to a new contract. This positive stride contrasts with the simmering unrest led by hourly workers in the U.S.

Investor.Coffee Daily Updates are intended to hit a few business news highlights for the day.

Is there going to be a North

American lithium “rush”?

written by Jack Lifton | October 16, 2023

General Motors has now announced that in partnership with Korea's POSCO Chemicals they would construct a lithium-ion battery cathode active material (CAM) manufacturing facility in Quebec, Canada, with a capacity to produce the cathode active material needed for 1,000,000 battery electric vehicles (BEVs) annually by 2025. This would mean that the factory's output would be enough for cathodes for at least 90 gigawatt hours of lithium-ion battery storage. This capacity would be more than all of the North American capacity planned or built up until now combined. The GM dedicated POSCO Chemical plant is projected to cost \$500 million. The cathode active material will be utilized in the new GM “Ultium” EV battery plants to be constructed by GM in the USA.

Doug Parks, GM executive vice president, Global Product Development, Purchasing and Supply Chain, said, “GM and our supplier partners are creating a new, more secure and more sustainable ecosystem for EVs, built on a foundation of North American resources, technology and manufacturing expertise,”

A 100 kWh lithium ion battery requires 6-8 kg of lithium, measured as but so far not used in its metallic state, so that 1,000,000 BEVs will require 6,000 to 8,000 tpa of lithium, which will be initially delivered as lithium carbonate or lithium hydroxide and then chemically transformed into cathode and electrolyte specific materials for use. Today, 8,000 tons of lithium metal would represent 10% of global production and 15% of all of the lithium used for battery construction.

Note also that GM produces, annually, in the USA today some 2.5 million cars and trucks, so that 1,000,000 represents 40% of GM North American production.

The key takeaway from Mr. Parks' statement is the term, "North American resources."

North America today does not produce anywhere near enough lithium for the new GM/POSCO facility's planned capacity.

North American car and truck sales are today 7 times those of just GM's domestic production. If GM is looking to differentiate itself and gain a competitive advantage from domestic sourcing of battery materials, lithium, in particular, then it will have to compete with its peers for the critical raw materials.

The biggest problem will be sourcing and processing lithium domestically.

The Biden administration's announced policy is to have 50% of car and truck production be EVs by 2030. This means that at least eight times as much lithium will be required per annum by 2030 as GM will need in 2025, or 50,000 to 75,000 tons of lithium, measured as metal, per annum! This would be essentially equal to the total global production of new lithium in 2021, and this is just for North America!

North American lithium exploration, mining, processing and fine chemical production of battery grade chemicals need to expand dramatically right now for there to be any hope of meeting the EV production goals even at the lower end.

There needs to be a North American "Lithium Rush."

Perhaps, lithium should be considered as white gold after all.

GM bets big on MP Materials being the Holy Grail for an American rare earth magnet supply chain

written by Tracy Weslosky | October 16, 2023

What a difference a year makes as we review the reincarnation of the rare earths mining project in California, just across the Nevada border at the Mountain Pass mine – [MP Materials Corp.](#) (NYSE: MP), which began trading on the NYSE on November 18, 2020...announces a new rare earths magnet facility and binding long-term agreement with General Motors (GM).

Looking in the rear-view mirror for a moment, “Best Quarter Ever” would be their headline for their Q3-2021 just announced last month. By the numbers from Q3 alone, they should be proud – 98% uptime, steady and sustainable processing cost improvements, 46% margin – all things that point to a great quarter, especially with the increases in rare earths prices in the past 12 months. MP Materials saw a 127% increase in their realized rare earths oxide price compared to Q3-2020.

My phones are ringing, the experts are whispering a wide range of feedback to me as the ‘new and improved’ MP Materials still has many bridges to cross before the trust of those that rode the dusty trails on Mountain Pass previously will be rebuilt. Surely this is a good sign?

The GM deal with MP Materials is to “supply U.S.-sourced and manufactured rare earth materials, alloy and finished magnets for the electric motors in more than a dozen models using GM’s Ultium Platform, with a gradual production ramp that begins in

2023.”

The selection of Fort Worth, Texas as the location for the MP facility will be worthy of many debates but stands a distant second to the issues around securing the talent that can make this dream come true. These obvious challenges aside for a moment, management has delivered in clearly articulating where they are taking this REE program next. They told the market that the announcement of a Stage III facility would be made before the end of 2022 and here it is.

Kudos .

Mountain Pass is the only rare earths mining and processing site of commercial scale in the Western Hemisphere and currently produces approximately 15% of global rare earth content, according to them. The mine has been in production off and on since 1952 but was restarted in 2017. On going public, the MP Materials team highlighted their plan for Stage I (restore production and get the bugs out), Stage II (facilities to produce separated rare earths oxides) and Stage III (rare earths-based magnet production 2025-ish).

Sometimes you have to have a little luck to be good, toss in some deep pockets and MP Materials are reaching for quite a star, but I must confess their timeline is virtually inconceivable to everyone I know. Their original target for magnet production was 2025-ish and zealous. Now management is now saying 2023. In less than 24 months, MP Materials expects to permit and build a 200,000 square foot greenfield facility and commence commercial production of sintered permanent magnets. They also need equipment to do this – hopefully, it has already been ordered, because this is not a run-of-the-mill facility. Creating a sintered Neodymium-Iron-Boron (NdFeB) permanent magnet is not like building a washing machine, which GM must

certainly be aware of. The development of permanent magnets originated in the US, but other than the equipment formerly-owned by Hitachi Metals now acquired by another nascent US rare earth producer, the US has virtually no capacity to produce sintered NdFeB permanent magnets today.

Again, on paper, this looks like an absolutely incredible strategy to re-establish a domestic source of rare earths permanent magnets in NA. Music to many our ears, if they prove they can make this happen. Having been in these trenches for too long, my experience is that the few that have the experience may be counted on one hand, and while MP Materials pockets are deep – it's going take every bit of their cash to build the magnet facility and get it operational, especially with the Stage II plans for Mountain Pass still to be executed.

With the valuation on this stock being priced as if Stage III has been accomplished and at full production, MP Materials needs this to work, as does General Motors. It's a big bet.

General Motors engages with MP and Germany's Vakuumschmelze for Rare Earth Permanent Magnets

written by Jack Lifton | October 16, 2023

General Motors (NYSE: GM), has announced supplier agreements with both U.S. Based, [MP Materials Corp.](#) (NYSE: MP), and with Germany's Vakuumschmelze (VAC). This is very significant news, I

think, because it means that GM will engage to support (financially, most likely,) Germany's Vacuumschmelze to enter the U.S. market and to expand its existing sintered rare earth permanent magnet (REPM) production by adding (unspecified) capacity in the USA. It's unlikely that VAC will drop any German (EU) customers, so to supply GM, it will add U.S. capacity. VAC says that it will add that capacity and begin U.S. production of REPMs for GM by 2024. America's MP Materials is also to be engaged by GM as a REPM supplier, and I suspect, as a future supplier to VAC of NdPr metal as raw material for VAC domestic American REPM production for GM. The UK's Less Common Metals (LCM) is the only non-Chinese (perhaps also non-Japanese) supplier to VAC of rare earth metals now, but LCM can only produce 120 tpa of Nd metal at this time, and thus can support only 400 tpa of domestically produced (in the UK or EU) REPMs of the sintered Neodymium-iron-boron (NdFeB) type. LCM's customer is VAC, whose customer for REPMs is most likely Daimler, for its (Daimler's) in house electric motor production (in Germany now but to be expanded to the UK).

I think it very likely that Daimler is supporting VAC to also expand its capacity, in Europe, for its needs for sintered REPMs of the NdFeB type. Daimler and VAC also need to find additional Nd metal supplies for VAC in Europe. I won't be surprised if LCM is bought by Daimler or financed by Daimler to expand its rare earth metals production capacity.

No OEM car maker wants to single-source a critical production part, so that this announcement doesn't mean that GM is going to rely on just VAC or MP Materials for REPMs. It's not unusual that GM will support MP Materials also at the same time as VAC to ensure that it has a principal supplier and at least one second source. This has long been the automotive industry's standard sourcing procedure. In this case, the experienced and existing VAC is to be the principal supplier, and MP Materials

will be a second source.

I suspect additional future suppliers of REPMs chosen by GM are undergoing due diligence right now.

VAC is really the Western World's (outside of Japan) largest, perhaps only, OEM of REPMs for automotive production use. It is thus the only choice currently for a non-Chinese Western OEM automaker who wants "domestic" REPMs. But its capacity, currently only in Europe, is probably sold out to EU-based OEMs. This is the reason that to expand into the domestic American market it needs to add capacity, and this is the reason that GM is "supporting" VAC in building an REPM plant in the USA dedicated to the supply of GM. Magnet makers can only make magnets if they have secure supplies of raw materials, at competitive prices, and dedicated customers who will pay for finished goods by an indexed (to raw material costs) price. This is NOT the traditional pricing agenda in the OEM automotive industry. Fixed prices over the life of the contract are standard, and, in fact, the wild ride of neodymium prices in the last year has made REPM manufacturing for the OEM automotive parts industry a nightmare for those with the traditional fixed-price-for-the-life-of-the-contracts with OEM automotive. It's very unlikely that VAC would commit to building a (just-in-time[?]) U.S. plant for a customer without financial assistance and guarantees and an indexed price. I hope that both GM and VAC will let us know if GM has "broken" protocol. This will have a lot to do with achieving any government subsidies for domestic REPM manufacturing.

Now for the bad news. A typical GM EV using the Ultium(TM) platform power train (a lithium-ion battery and an electric motor), if it uses a REPM based motor (REPM) will need between 2.5 and 5 kg of NdFeB magnets. A 1000 tpa REPM facility can thus supply the needs for REPMs of between 200,000 and 400,000 new

cars. GM has consistently been making about 3,000,000 cars and trucks per year in the USA (forget 2020. It's an outlier). So, to convert its domestic production to EVs entirely GM would need a maximum of 10,000 tpa of sintered NdFeB, REPMs. There is today no domestic REPM production capacity in North America. It will take a long time, if it even ever can be done, to achieve such a REPM capacity in the USA. But even if it is possible, it would only be possible with guaranteed pricing for the feedstock raw materials (separated rare earths, rare earth metals, and magnet alloys), and a guaranteed competitive REPM price for a break-even capacity.) This is not just a monumental supply chain cost management problem; it is a complete break with legacy OEM Automotive sourcing cost structure management, because it makes REPM and REPM costs unpredictable!

In my opinion, GM is not solving the domestic REPM supply chain problem; it is addressing it, rather than just talking about it as politicians are wont to do. GM is putting its money where its mouth is.

But, GM is not the only OEM car maker that produces or sells products into North America's nearly 20 million unit per year market. Total conversion of that market to EVs that use REPMs would need 60,000+ tpa of REPMs annually. Europe's car market is larger than North America's, and China's domestic market is larger than Europe's. Today, China alone has the existing capacity in REPMs, REPMs, and Lithium to transform its domestic car market production entirely to EVs, and it has announced that it will reach 20% of that goal by 2025 and 40% by 2030.

Projections of near-term EV production proportions for the American and European markets are wildly unrealistic, just based on the necessary critical raw materials and components capacity needed to achieve those goals. The build-out of the non-Chinese EV industry is just beginning in the West, and I think a long

steep, very expensive, learning curve is ahead of us. I'm going to begin to address the critical raw material dilemma for EVs next week.