

# Constantine Karayannopoulos on the State of the Critical Minerals Market

written by InvestorNews | December 7, 2022

At the [Critical Minerals Institute](#)'s recent Critical Minerals Summit "**The Race to Achieve a Critical Minerals Supply Chain ROW**", Tracy Weslosky talked to keynote speaker Constantine Karayannopoulos on the state of the critical minerals market.

Held at the National Club on November 9th in Toronto, Constantine, who is CEO, and Director of Neo Performance Materials Inc. (TSX: NEO), offers compelling commentary on market evolution and why the demand for critical minerals will continue to escalate. Sharing breaking news about receiving a multi-million dollar grant from the Government of Estonia for the construction of Neo Performance Materials' Sintered Rare Earth Magnet Manufacturing Plant in Estonia, Constantine explains how this will offer "a very meaningful addition to the Western world's magnet capacity."

From supply chain challenges to addressing what the market really needs today, Constantine offers relevant examples of where we are in this process today. From billionaire investment dollars to controversial headlines in the sector, the conversation does not shy away from the impact of geopolitical issues facing the market.

Providing an update on Neo Performance Materials' rapidly advancing "Magnets-to-Mine" vertical integration strategy, Constantine discusses how Neo is progressing towards being a fully integrated magnet producer outside of China. With trillions of dollars in investment required for the world to

achieve the decarbonization targets, Constantine says that we “need an extraordinary level of capacity expansion for all the critical minerals.”

To access the full InvestorIntel interview, [click here](#)

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## **About Neo Performance Materials**

Neo manufactures the building blocks of many modern technologies that enhance efficiency and sustainability. Neo's advanced industrial materials – magnetic powders and magnets, specialty chemicals, metals, and alloys – are critical to the performance of many everyday products and emerging technologies. Neo's products help to deliver the technologies of tomorrow to consumers today. The business of Neo is organized along three segments: Magnequench, Chemicals & Oxides and Rare Metals. Neo is headquartered in Toronto, Ontario, Canada; with corporate offices in Greenwood Village, Colorado, US; Singapore; and Beijing, China. Neo operates globally with sales, research and development, and production across 10 countries, being Japan, China, Thailand, Estonia, Singapore, Germany, United Kingdom, Canada, United States, and South Korea.

To learn more about Neo Performance Materials Inc., [click here](#)

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If you have any questions surrounding the content of this interview, please contact us at +1 416 792 8228 and/or email us direct at [info@investorintel.com](mailto:info@investorintel.com).

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# Neo Performance and Hastings – Will Wonders Never Cease?

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The term “Holy Moley” is seldom, if ever, used by us but our powers of speech are severely hampered by trying to digest the implications of the [latest deal](#) in the rare earths space. [Neo Performance Materials Inc.](#) (TSX: NEO) has now succeeded in flooring us twice in two weeks.

First, there was its [announcement](#) that it was acquiring a rare earths elements (REE) mining project in Greenland and making all the right noises as if it was going to move that forward (and if anyone can, it would be them). And then we have the shock announcement that [Hastings Technology Metals Ltd](#) (ASX: HAS), the sometime REE developer in Australia, is to acquire a 22.1% strategic shareholding in Neo Performance Materials. We need not remind investors that Neo is not only a leading global rare earths processing and advanced permanent magnets producer, but it is **THE** leading global rare earths processing and advanced permanent magnets producer outside China, with a string of plants around the world and most particularly its Silmet plant in Estonia, which is a cornerstone of the monazite sands processing strategy of [Energy Fuels Inc.](#) (NYSE: UUUU | TSX: EFR).

The market cap of Neo, on the eve of this announcement, was CAD\$605 million. The acquisition has been agreed at a price of CAD\$15.00 per Neo share, representing a total consideration of CAD\$135 million. Bargain basement, indeed, in our view.

According to the release, the acquisition is intended to be funded by an AUD\$150 million strategic investment in Hastings by Wyloo Metals through the issuance of secured, redeemable,

exchangeable notes.

Interestingly, the stake is not a *de novo* investment by Hastings but rather the purchase of a stake from an affiliate of Oaktree Capital Management. Those with long memories will recall that this stake dates back to the ancient history of when Molycorp went spectacularly bust just under ten years ago and Neo was reconstituted bigger and better out of the ruins. The stake being vended by Oaktree consists of 8,974,127 common shares in Neo, representing a 22.1% shareholding.

The proposed acquisition provides Hastings (and Wyloo) with a strategic stake in Neo and exposure to the global downstream processing of rare earth materials into magnets.

We have written about Hastings' Yangibana deposit so long ago that we must fight through a veil of cobwebs to find what we wrote. The company claims that the project remains the key priority for Hastings, "with good progress being made on funding initiatives and other key milestones." But they would say that, wouldn't they?!

The acquisition of the Neo stake, and in particular the Wyloo investment, are subject to shareholder approval (50% voting threshold). All this begs the question as to whether Canada (or indirectly the US) will allow the crown-jewel (indeed the Queen on the REE chessboard) to pass into the hands of Wyloo Metals.

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## Byron King, Mark Chalmers and

# Jack Lifton on Energy Fuels becoming 'a domestic Gigafactory for critical minerals' in the USA

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In this episode of **Critical Minerals Corner**, Byron King and InvestorIntel Editor-in-Chief and Member of Advisory Board at [Energy Fuels Inc.](#) (NYSE: UUUU | TSX: EFR) Jack Lifton are joined by Mark Chalmers, President and CEO of Energy Fuels Inc. to discuss how Energy Fuels “could be a domestic gigafactory for critical minerals in the United States of America.”

Mark Chalmers started by saying that Energy Fuels is the only company in North America that provides exposure to the critical materials uranium, vanadium, and the rare earths. Providing an update on Energy Fuels' agreements with Neo Performance Materials Inc.'s (TSX: NEO) and [Nanoscale Powders](#), Mark went on to explain why Energy Fuels is “more advanced than any other company in North America” and provides an alternative to China for producing rare earths from monazites in the U.S., while operating at world-class standards. Jack Lifton added, “Energy Fuels is the only commercial producer of downstream rare earth products today in North America.”

To access the complete episode of this Critical Minerals Corner discussion, [click here](#).

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# Energy Fuels is now producing uranium, vanadium, and mixed rare earths, a first in the world accomplishment

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Earlier this week I discussed a [rare earths and uranium 'junior'](#); but today I take a look at a uranium/vanadium and rare earths 'producer' that continues to do well over the years by navigating successfully the market's highs and lows and more recently expanding into rare earths processing/production.

The Company is [Energy Fuels Inc.](#) (NYSE American: UUUU | TSX: EFR). Energy Fuels is [the number one uranium producer in the U.S.](#) and has the potential to become one of the lowest-cost, non-Chinese rare earth producers in the world. In its latest move the Company is looking at commercially developing a newly applied (to rare earths) technology to produce rare earth metals and alloys, a step down the supply chain and higher up the value-add chain.

Below is their stock price chart which is quite impressive given the uranium bear market from 2014 to 2021, when many uranium miners went out of business.

## Energy Fuels 5 year stock price chart



Source: [Yahoo Finance](#)

**Rare earths processing business**

In the past year, Energy Fuels has expanded to also become a processor/producer of commercial mixed rare earths. Energy Fuels is buying U.S sourced rare earths' ore and then processing it to produce a mixed rare earth carbonate using its existing, operational, White Mesa Mill. The Company [states](#): "Because our product is ready for separation into individual rare earth oxides without further processing, we are currently producing an intermediate rare earth product in a more advanced form than any other U.S. company. We will be receiving additional shipments of natural monazite sand in... 2022, and we are in advanced discussions with several monazite suppliers around the world to secure a diverse supply of feed for this exciting initiative."

### **MOU for the development of a novel technology for the production of rare earth element metals**

As [announced](#) on December 15, 2021 Energy Fuels has executed an MOU with Nanoscale Powders LLC (NSP) for the development of a newly applied technology for the production of rare earth element metals. The release [stated](#): "We believe this Technology, which was initially developed by NSP, and will be advanced by the Company and NSP working together, **has the potential to revolutionize the rare earth metal making industry by reducing costs of production, reducing energy consumption, and significantly reducing greenhouse gas (GHG) emissions.** Producing REE metals and alloys (REE Metals) is a key step in a fully integrated REE supply chain, after production of separated REE oxides and before the manufacture of neodymium iron boron (NdFeB) magnets used in electric vehicles (EVs), wind generation and other clean energy and advanced technologies..... Energy Fuels' initial investment in the Project is intended to advance the Technology to allow for: (i) the continuous, pilot-scale production of 10 kilograms per hour of neodymium-praseodymium (**NdPr**) metal that meets typical specifications for NdFeB magnets at TLR Level 7; (ii) the separate build of a batch reactor able



to produce key minor magnet metals (e.g., dysprosium, terbium); and (iii) the demonstration of samarium-cobalt alloy production....The MOU contemplates a phased development of the Project to scale-up to the production of 1,000 metric tonnes of one or more REE Metals per year. Energy Fuels will have the right to earn up to a 100% interest in the entity and Technology.”

*Note: Bold emphasis by the author.*

### **Existing uranium and vanadium business**

Energy Fuels has the largest uranium resource portfolio in the U.S. among producers, with an ability to rapidly scale up low-cost U.S. uranium and vanadium production if needed.

With the recent tight supply situation for uranium, Energy Fuels is now looking at entering again into long term uranium supply contracts. The Company [states](#): “We believe this new dynamic could create opportunities for Energy Fuels to enter into long-term supply contracts for a portion of our production with nuclear utilities at prices, quantities and other terms that generate sufficient project cashflow, all while keeping the majority of our production leveraged to further potential increases in uranium prices.”

### **Energy Fuels White Mesa Mill and a list of their businesses**



Source: [Company presentation](#)

### **Closing remarks**

The smartest mining companies these days are able to quickly adapt to price swings in the commodity markets as well as bring on new products. Even better to be able to sell value-added

products and form an integrated supply chain in the USA.

In the case of Energy Fuels, they now offer investors so much more than a year ago, including:

- Uranium/vanadium production that can rapidly scale when needed from their existing mines and Mill.
- Mixed rare earths carbonate production using the White Mesa Mill.
- Potentially, in the near future, rare earth metals production using a novel production technology with their agreement to buy 100% of Nanoscale Powders LLC. If successful, Energy Fuels [believes](#) “Nanoscale’s metal-making technology could be orders of magnitude safer and less expensive than the current established technology.”

Finally, if we do happen to get a Russian invasion of Ukraine there is also the possibility we may get interrupted supply of Russian sourced uranium if sanctions are applied. That could potentially send uranium prices higher.

2022 looks set to be another good year for Energy Fuels. Their market cap is [US\\$1.03 billion](#) after a recent dip, so worth a look for investors wanting to gain U.S exposure to uranium, vanadium, and rare earths.

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**Vital Metals stock is up 308%  
the past year as they commence**

# rare earths production in NWT Canada

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It is always interesting to look back and see if what was written comes true. About 9 months ago I wrote an article here describing how [Vital Metals was on track to become a rare earths carbonate producer in 2021](#). Fast forward to today and Vital Metals has delivered on their plan.

On July 6 [Vital Metals Limited](#) (ASX: VML) (“Vital”) [announced](#) that the Company has commenced rare earth production at Nechalacho. This is a tremendous achievement and means Vital joins an elite group of only 2 or 3 North American rare earths producers (includes MP Materials and for rare earths processing Energy Fuels). It also means Vital has become the first Canadian rare earths producer. Congratulations to Vital Metals from the team at InvestorIntel!

Mining at Vital’s Nechalacho’s North T Zone in Canada’s Northwest Territories (NWT) is underway as part of Stage 1 production strategy. Vital is now crushing and sorting ore before sending it to a Saskatoon cracking and leaching facility later in 2021. Vital has also commenced drilling to define a mine plan for Stage 2 at Nechalacho as it works to develop a larger scale, longer life rare earths project.

**Vital Metal’s Nechalacho Rare Earths Mine in NWT Canada location and key zones**



[Source](#): Vital Metals

Nechalacho hosts a world-class resource of **94.7Mt at 1.46% REO**

(measured, indicated and inferred). Nechalacho's North T Zone hosts **a high-grade resource of 101,000 tonnes at 9.01% LREO (2.2% NdPr)**, making it one of the highest grade rare earths deposits in the world. The resource has the potential to grow further as shown in recent drilling results that [reported](#) "broad high grade REO in near surface drilling at Tardiff Zone...thickness in excess of 60m in width and with grades up to 13.8% intersected". Vital stated in the release that high value Nd/Pr content was an impressive 24.2% of TREO and that Zone 1 was open in all directions. These results will form part of a new resource upgrade to be part of the Stage 2 expansion plans at Nechalacho.

The metallurgy is a simple process involving a 35%+ initial beneficiation via ore sorting and 97% recovery into solution via hydrochloric acid using an industry standard process.

In more good news, in May 2021 it was [announced](#) that Vital's offtake partner REEtec has formally accepted Vital's rare earth carbonate sample. Vital will provide REEtec with 1,000 tonnes REO (ex-cerium) per year for five years with the option to increase volume by up to 5,000 tonnes REO per year over 10 years.

### **Mid-term strategy and goals**

Vital aims to become the lowest cost producer of mixed rare earth oxide outside of China by developing one of the highest grade rare earth deposits in the world and the only rare earth project capable of beneficiation solely by ore sorting. Vital also aims to be the largest independent supplier of clean mixed rare earth feedstock outside China.

More than \$120 million has been spent by previous owners on drilling, permitting and project development at Nechalacho, which includes a 40-person camp and airstrip.

Vital aims to produce a minimum of 5,000 tonnes of contained REO at Nechalacho by 2025, or earlier.

### **Closing remarks**

Achieving rare earths production in the West is no easy task. The process towards production, including permitting, can take over a decade. Vital has now achieved a low scale small CapEx rare earths production start-up operation, with big plans to expand in the years ahead. Given management's exceptional track record to date, it is looking good for Vital to achieve their expansion plans in the years ahead.

The production of rare earths on North American soil is not only a great step forward for Vital Metals, but it is also a significant step forward for the West to secure a safe rare earths supply.

Vital Metals now trades on a market cap of A\$208 million after a great past 1 year return of [308%](#).