

# What are the Implications if Tesla's Next Generation Motors are Rare Earths-Free?

written by Jack Lifton | March 13, 2023

At Tesla's Investor Day on March 1, 2023, Franz Von Holzhausen, Lead Design Executive at [Tesla Motors](#) (Nasdaq:TSLA), announced that its next generation of electric motors would not use rare earth materials. With Tesla's current dominance in the electric vehicle ("EV") market, this shift could have a significant impact on the rare earth market and some rare earth stocks were down on the news. Here is what he said:

*"But at Tesla efficiency means more than just reducing how much energy the cars use it's about how we develop how we manufacture how we refine and how we scale the powertrain. Now the model 3 and Y powertrain is a great example of this broader meaning of efficiency. So since we launched it back in 2017, we've continuously improved that powertrain and the factory that builds it so the Drive Unit the engine of the car is lighter for the same power. **We use 25 percent less heavy Rare Earth** than when we started and the powertrain Factory which is behind me today is 75 percent smaller and 65 percent cheaper than the one that we originally built. And what I really want to emphasize is that we did all of this without compromising our cars are just as powerful. They go just as far, and they cost the same or less and the factories have the same output."*

*"There's one more thing that I want to highlight. So, I talked about how we had reduced the amount of rare earth in our powertrains and, as the world transitions to clean energy, the demand for Rare Earth is really increasing dramatically and not*

*only is it going to be a little hard to meet that demand but mining that rare earth it has environmental and health risks, so we want to do even better than this. **We have designed our next Drive Unit which uses a permanent magnet motor to not use any Rare Earth materials at all.** So how does all this fit into the master plan we can make lower-cost products that are still efficient and compelling, and we can make them at scale. We're going to use less constrained Commodities."*

## **Perspective lost! Tesla is not the driver of the global demand for rare earths**

Tesla is not the driver of the global demand for rare earths; the global OEM Internal Combustion Engine ("ICE") automotive industry is the principal driver of demand for rare earth permanent magnets followed by or paralleled by the direct drive wind turbine electricity generation industry (at the moment), the Global OEM EV industry, and the global military industry.

Tesla is an example, even perhaps a symbol of something. It is not the thing itself. The thing is the expanded use, albeit in very small quantities, of scarcely produced, due to costs, technology metals that enable miniaturization and thus widespread consumer use of information and entertainment technologies.

Rare earth permanent magnets, which have allowed the miniaturization of electric motors, are used today primarily for convenience and style accessories in cars, power windows, power seats, windshield wiper motors (ok, this is a safety necessity), audio loudspeakers, and power steering. Their use in drive motors for vehicle power trains is not necessary and never has been.

Using rare earth permanent magnet motors in drive trains increases the efficiency of the power train (over the use of AC motors) and lowers the weight of the vehicle. Both factors increase range, the real target of using rare earth permanent magnet drive motors.

## **Wind turbines drive rare earths demand**

Direct drive wind turbine generators, today about a third of the production of these gargantuan devices, are the [largest demand drivers for rare earth permanent magnet motors](#) (in this case, generators) after the OEM ICE automotive industry.

The, as yet, small OEM EV industry is catching up due to scale. An average EV using rare earth permanent magnet drive motors such as today's Teslas requires between 5 and 10 times as much rare earth permanent magnet material as an ICE-powered vehicle. So, if and when the EV market segment reaches 10% of the ICE segment and if all EVs use rare earth permanent magnet drive motors then EVs would double the current demand for rare earth permanent magnets by the global OEM automotive industry.

## **China set to double rare earths capacity in 2 years**

I think we can all see why the Chinese rare earth permanent magnet manufacturing industry is on a course to double its capacity by 2025!

Teslas or any car or truck made outside of China will be hard-pressed to get non-Chinese (or perhaps even Chinese) sources of rare earth permanent magnets after 2025. So will wind turbine generator manufacturers and even small accessory motor and loudspeaker makers.

China today controls the production of rare earths, rare earth

permanent magnets, and rare earth permanent magnet motors. Deglobalization of trade without a focused and funded non-Chinese rare earth permanent magnet production industrial policy just cements China's dominance of this industry.

Elon Musk is just reading the tea leaves better than his cohorts in Detroit and Stuttgart.

---

# Mark Chalmers and Constantine Karayannopoulos on working together to supply rare earths magnets

written by InvestorNews | March 13, 2023

In this InvestorIntel PDAC 2022 Panel on “Rare Earths, Sustainability & Meeting the EV Market Demand”, host Tracy Weslosky is joined by [Energy Fuels Inc.](#) (NYSE American: UUUU | TSX: EFR) President and CEO Mark Chalmers and [Neo Performance Materials Inc.](#) (TSX: NEO) President, CEO and Director Constantine Karayannopoulos, to talk about their unique business relationship and the challenges and opportunities of getting rare earths magnets to market.

In the interview, which can also be viewed in full on the InvestorIntel YouTube channel ([click here](#)), Mark talks about the unique relationship between Energy Fuels and Neo Performance Materials to integrate the rare earths process and meet the increasing world demand for providers of EV materials from

outside of China. Constantine describes the moment when he and Mark “realized that between the two of us we had all the pieces of the puzzle and that we could put together a very full supply chain.”

Constantine goes on to discuss how Neo Performance Materials works with Energy Fuels in Utah, which “takes out the uranium for the uranium business for his customers and recovers the rare earths in a way that works for us,” separating the rare earth elements, turning them into metals alloys and finally the magnets needed by the EV industry.

Mark says that the relationship between the two companies work not only because they each have something that the other needs, but because “we are doers, not promoters. We’re trying to accomplish big things by actually doing it on the ground.” With increasing demand from European EV automakers, Mark goes on to say “we’re looking at being a world significant integrated supplier of rare earth products from the beginning to the end.”

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

Don’t miss other InvestorIntel interviews. Subscribe to the InvestorIntel YouTube channel by [clicking here](#).

### **About Energy Fuels Inc.:**

Energy Fuels is a leading U.S.-based uranium mining company, supplying  $U_3O_8$  to major nuclear utilities. Energy Fuels also produces vanadium from certain of its projects, as market conditions warrant, and is ramping up commercial-scale production of rare earth element (“**REE**”) carbonate. Its corporate offices are in Lakewood, Colorado, near Denver, and all its assets and employees are in the United States. Energy Fuels holds three of America’s key uranium production centers: the White Mesa Mill in Utah, the Nichols Ranch in-situ recovery

(“**ISR**”) Project in Wyoming, and the Alta Mesa ISR Project in Texas. The White Mesa Mill is the only conventional uranium mill operating in the U.S. today, has a licensed capacity of over 8 million pounds of  $U_3O_8$  per year, and has the ability to recycle alternate feed materials from third parties, to produce vanadium when market conditions warrant, and to produce REE carbonate from various uranium-bearing ores. Energy Fuels is also evaluating the potential to recover medical isotopes for use in targeted alpha therapy cancer treatments. The Nichols Ranch ISR Project is on standby and has a licensed capacity of 2 million pounds of  $U_3O_8$  per year. The Alta Mesa ISR Project is also on standby and has a licensed capacity of 1.5 million pounds of  $U_3O_8$  per year. In addition to the above production facilities, Energy Fuels also has one of the largest SK-1300/NI 43-101 compliant uranium resource portfolios in the U.S. and several uranium and uranium/vanadium mining projects on standby and in various stages of permitting and development.

To learn more about Energy Fuels Inc., [click here](#)

### **About Neo Performance Materials Inc.**

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 facilities and offices across 10 countries: Japan, China, Thailand, Estonia, Singapore, Germany,

United Kingdom, Canada, United States, and South Korea.

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

***Disclaimer:*** *Energy Fuels Inc. and Neo Performance Materials Inc. are advertorial members of InvestorIntel Corp.*

This interview, which was produced by InvestorIntel Corp., (IIC), does not contain, nor does it purport to contain, a summary of all the material information concerning the “Company” being interviewed. IIC offers no representations or warranties that any of the information contained in this interview is accurate or complete.

This presentation may contain “forward-looking statements” within the meaning of applicable Canadian securities legislation. Forward-looking statements are based on the opinions and assumptions of the management of the Company as of the date made. They are inherently susceptible to uncertainty and other factors that could cause actual events/results to differ materially from these forward-looking statements. Additional risks and uncertainties, including those that the Company does not know about now or that it currently deems immaterial, may also adversely affect the Company’s business or any investment therein.

Any projections given are principally intended for use as objectives and are not intended, and should not be taken, as assurances that the projected results will be obtained by the Company. The assumptions used may not prove to be accurate and a potential decline in the Company’s financial condition or results of operations may negatively impact the value of its securities. Prospective investors are urged to review the Company’s profile on [Sedar.com](#) and to carry out independent investigations in order to determine their interest in investing in the Company.

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).

---

# Greg Andrews on Search Minerals 'sprint' towards rare earth production

written by InvestorNews | March 13, 2023

In a recent InvestorIntel interview, Tracy Weslosky spoke with Greg Andrews, President, CEO, and Director of [Search Minerals Inc.](#) (TSXV: SMY | OTCQB: SHCMF) about Search Minerals' 'sprint' towards production as they work towards strengthening the North American rare earths supply chain.

In this InvestorIntel interview, which may also be viewed on YouTube ([click here to subscribe to the InvestorIntel Channel](#)), Greg Andrews said that Search Minerals recently signed an MoU for an [offtake agreement](#) with USA Rare Earth, thus ensuring that it has sales and revenues when production begins. He went on to say that Search Minerals is progressing towards announcing an updated PEA and explained why the updated PEA is expected to be robust and economic at the current pricing of rare earths. With a loyal shareholder base and strong federal, provincial, local government and indigenous support, Greg told InvestorIntel that Search Minerals is progressing well towards its goal of going further down the rare earths supply chain to produce magnet metals and alloys.



To watch the full interview, [click here](#).

### **About Search Minerals Inc.**

Led by a proven management team and board of directors, Search Minerals is focused on finding and developing deposits of the Critical Rare Earths Elements (CREE), and of Zirconium (Zr) and Hafnium (Hf) resources, within the emerging Port Hope Simpson – St. Lewis CREE District of South East Labrador. The Company controls a belt 63 km long and 2 km wide that is road accessible, on tidewater, and has access to 3 local communities. Search has completed a preliminary economic assessment report for its **FOXTROT site**, and a resource estimate for its **DEEP FOX site**. Search is also working on three exploration prospects along its part of the St. Lewis District, which are named, and include: **FOX MEADOW, SILVER FOX** and **AWESOME FOX**.

Greg Andrews went on to emphasize that Search has continued to optimize its patented Direct Extraction Process technology with generous support from the Department of Tourism, Culture, Industry and Innovation, Government of Newfoundland and Labrador (“**InnovateNL**”), and from the Atlantic Canada Opportunity Agency (“**ACOA**”). He said that Search has completed two pilot plant operations and produced a highly purified mixed rare earth carbonate concentrate and a mixed REO concentrate for use in testing individual rare earth separation and refining.

To know more about Search Minerals Inc., [click here](#)

**Disclaimer:** Search Minerals Inc. is an advertorial member of InvestorIntel Corp.

This interview, which was produced by InvestorIntel Corp. (IIC) does not contain, nor does it purport to contain, a summary of all the material information concerning the “Company” being interviewed. IIC offers no representations or warranties

that any of the information contained in this interview is accurate or complete.

This presentation may contain “forward-looking statements” within the meaning of applicable Canadian securities legislation. Forward-looking statements are based on the opinions and assumptions of management of the Company as of the date made. They are inherently susceptible to uncertainty and other factors that could cause actual events/results to differ materially from these forward-looking statements. Additional risks and uncertainties, including those that the Company does not know about now or that it currently deems immaterial, may also adversely affect the Company’s business or any investment therein.

Any projections given are principally intended for use as objectives and are not intended, and should not be taken, as assurances that the projected results will be obtained by the Company. The assumptions used may not prove to be accurate and a potential decline in the Company’s financial condition or results of operations may negatively impact the value of its securities. Prospective investors are urged to review the Company’s profile on [Sedar.com](https://www.sedar.com) and to carry out independent investigations in order to determine their interest in investing in the Company.

If you have any questions surrounding the content of this interview, please email [info@investorintel.com](mailto:info@investorintel.com).