

Engineered Mineral Hydrogen Emerges as Next Major Energy Disruption Opportunity Amid Explosive Global Demand

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New breakthroughs in low-cost hydrogen extraction and growing clean energy demand position the sector for significant long-term market expansion

Market News Updates News Commentary - The Engineered Mineral Hydrogen sector is gaining momentum as the demand for cleaner and more cost-effective energy sources grows globally. Unlike traditional hydrogen production methods that heavily depend on natural gas or expensive electrolysis systems, Engineered Mineral Hydrogen harnesses natural chemical reactions between water and iron-rich rocks deep below the surface to generate hydrogen in a more sustainable way. Many companies are now exploring ultramafic rock formations and serpentinization processes as scalable energy solutions, especially in regions rich in nickel and iron reserves. Recent industry advancements, like new partnerships and trial projects in Newfoundland and North America, signify a shift from research to commercial deployment. Active Companies mentioned in the article includes: [First Atlantic Nickel Corp.](#) (OTCQB: FANCF) (TSX-V: FAN), [Total Energy Services Inc.](#) (OTC: TOTZF) (TSX: TOT), Exxon Mobil Corporation (NYSE: XOM), Chevron Corporation (NYSE: CVX), Brookfield Renewable Partners L.P. (NYSE: BEP).

One attractive aspect for investors in this field is the potential cost-effectiveness. Experts believe that engineered or natural hydrogen could eventually become one of the most cost-efficient forms of clean hydrogen due to the earth's natural gas production capabilities, reducing the need for extensive industrial energy inputs. The global hydrogen market is expected to see significant growth, reaching approximately \$66.5 billion by 2034 from \$21.7 billion in 2026, driven by increasing industrial demand, transportation, AI-driven data centers, and energy storage applications. Simultaneously, the emerging natural and engineered hydrogen sector is projected to experience even faster growth, with market analyses suggesting that the natural hydrogen market could surge from about \$158 million in 2025 to over \$2.2 billion by 2032.

The excitement surrounding Engineered Mineral Hydrogen is fueled by rising concerns over energy security and growing interest in low-carbon industrial fuels. Companies are increasingly looking for reliable domestic energy sources to reduce dependence on imported fuels while supporting decarbonization efforts. Analysts predict a notable increase in drilling projects, pilot installations, and long-term contracts beyond 2026 as the sector develops. Although still in its early stages and carrying exploration risks similar to mining or oil exploration, many investors see it as a disruptive opportunity within the broader clean energy market landscape. If commercial-scale production proves successful, Engineered Mineral Hydrogen has the potential to play a crucial role in the global energy mix in the next decade.

Vema Hydrogen and First Atlantic Nickel & Cobalt Sign LOI to Develop Engineered Mineral Hydrogen at Pipestone XL Awaruite Project in Newfoundland

- Vema's Engineered Mineral Hydrogen could supply regional industry and seaborne export markets from the Pipestone XL Project in central Newfoundland.
- The Pipestone Ophiolite Complex spans 30 kilometers of ultramafic rock, and holds enough potential hydrogen to power industrial demand in Newfoundland for generations

Vema Hydrogen ("Vema") today announced that it has entered into a non-binding Letter of Intent (the "LOI") with [First Atlantic Nickel & Cobalt Corp.](#) (TSXV: FAN) (OTCQB: FANCF) (FSE: P21) ("First Atlantic"), to jointly develop Engineered Mineral Hydrogen, or EMH, at the Pipestone XL project, a 30-kilometer ultramafic belt in central Newfoundland. Under the LOI, the parties intend to establish a 50/50 joint venture to produce low-carbon hydrogen alongside First Atlantic's primary awaruite nickel-cobalt program. The partnership is intended to serve as a first-of-its-kind template for combining hydrogen production with critical mineral development at ultramafic sites, with the potential to attract co-located investment in clean fuels, ammonia, and downstream industry.

"Vema's Engineered Mineral Hydrogen is on the verge of delivering clean energy at a scale cost-competitive with hydrocarbons," said Dr. Douglas Wicks, Strategic Advisor to First Atlantic & Cobalt and former Program Director for ARPA-E's MINER program and Geologic Hydrogen portfolio. "Awaruite forms through serpentinization when hydrogen reduces nickel and iron, so its presence at Pipestone XL is a clear signature of a hydrogen-rich system. Vema's technology could engineer that same reaction for hydrogen production, and Pipestone XL is an ideal location due to its size, proximity to infrastructure, and the potential for cost efficiencies in co-locating hydrogen production with nickel & cobalt mining. Having worked closely with Vema's founders since before the company's founding - and having seen firsthand how they developed the engineered approach to geologic hydrogen - I believe Pipestone XL represents a compelling opportunity to bring this technology to commercial scale."

Over the past twelve months, Vema has worked with First Atlantic to evaluate the Pipestone Ophiolite Complex, analyzing geological and geophysical data as well as infrastructure across the 30-kilometer belt. Laboratory testing of Pipestone rock samples at Vema's Orléans facility in France confirmed hydrogen production through stimulated serpentinization, indicating that the formation is well suited to EMH. Vema will leverage the experience gained in its established site in the Thetford ophiolite in Quebec, where Vema operates the world's first Engineered Mineral Hydrogen project.

Newfoundland is a significant region for critical minerals and clean energy development, but exploration and mining remain energy-intensive. Engineered Mineral Hydrogen (EMH) produces hydrogen from iron-rich rock through naturally occurring geochemical reactions, with no grid electricity required. Locally produced hydrogen at Pipestone could, over time, support on-site energy needs for a large-scale nickel and cobalt mining district and related downstream industries.

"Vema operates the world's first Engineered Mineral Hydrogen project at the Thetford ophiolite in Quebec. Rock samples collected during Vema's site visit to Pipestone XL were tested at their lab in Orléans, France, confirming the hydrogen generation potential of the ultramafic host rocks. Given the link between awaruite formation and hydrogen, we're excited about the potential for Vema's technology to maximize the value of our unique nickel-cobalt alloy project," said Adrian Smith, P.Ge., CEO of First Atlantic.

The collaboration also positions both companies to explore how locally produced hydrogen could reshape energy planning for remote industrial sites. By pairing EMH supply with critical mineral development, the partners aim to demonstrate a model that strengthens regional energy resilience while reducing reliance on long-distance fuel transport.

"Engineered Mineral Hydrogen is a promising new primary energy source for regions with iron-rich rock, like at Pipestone," said Pierre Levin, CEO and Co-Founder of Vema Hydrogen. "Now with validated rock samples and permitting in place, we have a clear path to advance EMH at Pipestone and to expand the model across North America."

Awaruite (Ni₈₃Fe) is a naturally occurring, magnetic nickel-iron-cobalt alloy (Ni-Fe-Co). The U.S. Geological Survey has identified awaruite as a potential solution to nickel concentrate shortages, noting that it is much easier to concentrate than pentlandite, the principal nickel sulphide. Its magnetic, metallic nature allows recovery by both magnetic separation and flotation, without the smelting, roasting, or acid leaching that conventional nickel ores require. CONTINUED... Read this and more news for First Atlantic Nickel at: <https://www.fanickel.com/archive>

In other market news of interest today includes:

Total Energy Services Inc. (OTC: TOTZF) (TSX:TOT) recently announced its consolidated financial results for the three months ended March 31, 2026.

Total Energy's results for the three months ended March 31, 2026 reflect continued strong North American demand for natural gas compression and process equipment and the deployment of upgraded drilling and service rigs in Australia and Canada that more than offset a year over year decline in North American drilling and completion activity. Negatively impacting first quarter financial results was a \$6.5 million year over year increase in share-based compensation expense due to the 52% increase in the Company's share price during the first quarter of 2026. This was partially offset by a \$2.9 million year over year increase on the gain

on sale of property, plant and equipment following the sale of certain well servicing equipment in the United States in February 2026.

Exxon Mobil Corporation (NYSE: XOM) recently announced its Board of Directors has unanimously recommended shareholders approve changing the company's legal domicile from New Jersey to Texas. The Board concluded that aligning ExxonMobil's legal domicile with where its leadership and core operations have been based since 1989 will benefit shareholders.

"Over the past several years, Texas has made a noticeable effort to embrace the business community. In doing so, it has created a policy and regulatory environment that can allow the company to maximize shareholder value," said Darren Woods, ExxonMobil chairman and chief executive officer. "Aligning our legal home with our operating home, in a state that understands our business and has a stake in the company's success, is important."

In making its recommendation, the Board considered Texas' legal and regulatory environment, including its modernized business statutes and the Texas Business Court, which is designed to resolve complex disputes efficiently. When corporate decisions are challenged, Texas courts are required to apply clear, statute based standards, which support sound decision-making.

Chevron U.S.A. Inc., a subsidiary of Chevron Corporation (NYSE: CVX), recently announced the introduction of next-generation Techron®, a reformulated version of its proprietary gasoline additive designed to provide greater protection for engines from harmful deposits caused by lower quality fuels, supporting long-term engine performance.

Techron has been trusted by drivers for decades as part of Chevron- and Texaco-branded gasolines. The latest reformulation reflects Chevron's continued investment in fuel quality and scientific testing to help ensure its fuels meet the needs of today's engines and driving conditions.

"Fuel technology never stands still," said Andy Walz, president, Chevron Downstream, Midstream and Chemicals. "This new Techron formulation builds on what drivers already expect from our branded fuels - clean engines, reliable performance and confidence at the pump - while reinforcing our continued focus on science based innovation."

Brookfield Renewable Partners L.P. (NYSE: BEP) recently reported financial results for the three months ended March 31, 2026.

"We had a strong start to the year, delivering record financial results, advancing our growth priorities and strengthening our balance sheet. The quarter was highlighted by our acquisition of Boralex, a global, listed renewable platform with a significant operating base and a large, de-risked development pipeline that complements our existing business and where we are uniquely positioned to accelerate growth and create value," said Connor Teskey, CEO of Brookfield Renewable.

He added, "We also continue to increase our development activities, advance key workstreams to support new nuclear deployment at Westinghouse, and scale our capital recycling strategy, agreeing to sell nearly \$3 billion of assets this quarter alone. Growing energy demand is now occurring alongside a renewed focus on energy security. In an environment with strong demand for low-cost, quick to market, and increasingly locally sourced energy, we are well positioned to deliver sustainable long-term cash flow growth for our investors."

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This release contains "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E the Securities Exchange Act of 1934, as amended and such forward-looking statements are made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. "Forward-looking statements" describe future expectations, plans, results, or strategies and are generally preceded by words such as "may", "future", "plan" or "planned", "will" or "should", "expected," "anticipates", "draft", "eventually" or "projected". You are cautioned that such statements are subject to a multitude of risks and uncertainties that could cause future circumstances, events, or results to differ materially from those projected in the forward-looking statements, including the risks that actual results may differ materially from those projected in the forward-looking statements as a result of various factors, and other risks identified in a company's annual report on Form 10-K or 10-KSB and other filings made by such company with the Securities and Exchange Commission. You should consider these factors in evaluating the forward-looking statements included herein, and not place undue reliance on such statements. The forward-looking statements in this release are made as of the date hereof and MNU undertakes no obligation to update such statements.

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