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Cipher Neutron's Research Division Receives Funding from Molymet, to Accelerate the Development of Rhenium-Based AEM Electrolysers

Toronto, ON--(January 23, 2024). Canadian company Cipher Neutron Inc. (“Cipher Neutron” or “CN”) received funding from Molibdenos y Metales S.A. (“Molymet”) to accelerate the development of Rhenium-Based Anion Exchange Membrane (AEM) Electrolyser Technology (the “Research Collaboration”). Molymet also issued an additional purchase order for Cipher Neutron’s existing AEM Electrolyser Technology to produce Green Hydrogen to support their industrial operations.

Purpose of the Research Collaboration

The aim of this Research Collaboration is to promote the use of Rhenium as a catalyst in electrolysers. Rhenium has been shown by third-party studies to provide a cost-effective alternative to platinum group metals offering similar catalytic properties without the high expense associated with platinum group metals. Rhenium is seen as mitigating potential supply chain uncertainties associated with platinum group metals.

The use of Rhenium as a catalyst in Cipher Neutron’s AEM electrolysers, which are already free from platinum group metals, can potentially further enhance the performance and durability of the already successful Cipher Neutron AEM Electrolyser Technology.

This Research Collaboration is in furtherance of the collaborative relationship between Cipher Neutron and Molymet agreed upon pursuant to the Memorandum of Understanding between CN and Molymet publicly announced by Cipher Neutron in 2023. See the Press Release of Cipher Neutron dated [April 21, 2023](#). This Research Collaboration and new purchase order is separate from, and in addition to, Molymet’s purchase order for CN’s innovative Anion Exchange Membrane (AEM) Electrolyser Technology announced [January 8, 2024](#).

Molymet Industry Leader in Rhenium Supply

Molymet is a Chilean company and a Rhenium industry leader. Its subsidiaries and offices in the Americas, Europe and Asia allow Molymet to efficiently support its customers and supply 70% of the world's demand for Rhenium.

The largest Rhenium reserves in the world are located in Chile and Molymet is the main participant in the Rhenium processing and market. Given its great hardness and resistance to high temperatures, Rhenium is mainly used as an additive to elaborate super-alloys which, in turn, are used to manufacture turbines within the aeronautic industry and, to a lesser extent, catalyzers for oil refineries.

Cipher Neutron Strategy to Maintain AEM Leadership by Commercialising Rhenium

Rhenium use in Cipher Neutron's AEM Electrolysers is a perfect and timely advancement consistent with the strategy of Cipher Neutron to maintain its leadership in AEM Electrolysers. Rhenium exhibits excellent catalytic activity, making it effective in facilitating electrochemical reactions. This characteristic is crucial in the electrolysis process for the efficient use of electrical energy for the production of Green Hydrogen. Rhenium is known for its durability and resistance to corrosion. In the harsh conditions of electrolysis, where electrodes are subjected to various chemical reactions, the durability of Rhenium contributes to the longevity and reliability of the electrolyser.

Focus of the Research Collaboration Between Cipher Neutron & Molymet

Cipher Neutron and Molymet aim to establish the following state-of-the-art characteristics in AEM Electrolysers using Rhenium which global users of Green Hydrogen Electrolysers increasingly seek:

1. High Current Density
2. High Purity of Hydrogen
3. High electrical efficiency
4. Low Catalyst degradation
5. Low Capital expenditures

Gonzalo Bascuñan, Commercial & Market Development Vice President of Molymet, stated, "Compared to platinum group metals and other traditional catalysts, Rhenium is more cost-effective and efficient. Its availability and lower production costs make it an attractive option for industry participants seeking to reduce expenses in the electrolyser manufacturing process. Molymet is highly confident that our collaborative efforts with Cipher Neutron, integrating Rhenium into AEM electrolysers, will bring about a transformative potency in the Green Hydrogen industry. This partnership is anticipated to pioneer substantial changes, revolutionizing electrolyser technology and contributing to a more sustainable and eco-friendly future."

Gurjant Randhawa, M.Eng., P.Eng., President and CEO of Cipher Neutron, concluded, “Rhenium's unique properties open up opportunities for innovation in electrolyser technology, allowing for the development of more efficient and sustainable electrolysis processes. Molymet's unparalleled dominance in the Rhenium industry presents Cipher Neutron with a unique opportunity to extend our well-established advancements in AEM Electrolyser Technology. Our strategic approach aims to deliver excellent solutions to our global clients who frequently seek diverse attributes in cutting-edge electrolyser innovations. The ongoing Research Collaboration with Molymet marks another positive stride in our journey, reinforcing our commitment to maintaining a leadership position in the rapidly expanding Green Hydrogen Economy.”

About Cipher Neutron Inc.

Cipher Neutron is a rapidly growing disruptive technology company focused on AEM Electrolysers for Green Hydrogen production and Reversible Fuel Cells for power generation and Energy Storage Solutions. Cipher Neutron is a global group of scientists, engineers, technology developers, experts in hydrogen technology, investment bankers and people that have worked in hydrogen for decades. Cipher Neutron’s innovative products, such as AEM Electrolysers and Reversible Fuel Cells have unique advantages over other Green Hydrogen production, power generation and energy storage solutions currently available in the global market. Please see: <https://www.cipherneutron.com/>

For more information, please contact:

Gurjant Randhawa, CEO & President

Cipher Neutron Inc.
101 - 501 Alliance Avenue
Toronto, Ontario M6N 2J1
+1 (647) 803-0002
grandhawa@cipherneutron.com

Nancy Massicotte, Vice-President Corporate Development

Cipher Neutron Inc.
+1 (604) 507-3377
nancy@cipherneutron.com

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