



Orion Minerals

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Orion signs exclusivity agreement for the development of a specialist battery product refining facility in the Northern Cape

Term sheet signed with Stratega Metals to investigate the use of its licenced refining technology to produce specialist battery precursor products

- ▶ Term sheet signed with Stratega Metals, providing Orion with binding exclusivity to undertake amenability test work on a 250kg sample of Ni-Cu-Co-PGE-Au concentrates from its Jacomynspan Nickel-PGE Project in South Africa's Northern Cape Province.
- ▶ Orion has the exclusive right to enter into an earn-in agreement to earn a 75% interest in Stratega by funding construction of a demonstration-scale refinery.
- ▶ Stratega holds an exclusive licensing agreement to use TCM Research's suite of proprietary vapour metallurgical technologies (including advanced carbonylation and chlorination techniques) for base metal refining in the Northern Cape.
- ▶ Stratega/TCM technology offers the potential to both increased total metal recovery and the payability of metals-in-concentrate produced from polymetallic sulphide ores, such as Orion's Jacomynspan Project, Prieska Copper-Zinc Mine and Okiep Copper Project.
- ▶ Value-added metal products (including Carbonyl Nickel Powders) produced by the TCM process – commonly referred to as “battery precursor products” – can trade at a considerable premium to spot metal prices.

Orion's Managing Director and CEO, Errol Smart, commented:

"We are thrilled to have secured exclusive access to what we believe could be game-changing refining technology for the production of battery metal salts and fine carbonyl powders, both of which are experiencing surging demand within the burgeoning battery manufacturing sector. The battery materials sector is a key focus for Orion due to its strong growth outlook and its pivotal role in driving reduced global carbon emissions.

"Not only is the Stratega/TCM refining process able to produce premium metal products, the process also has low environmental impact and is well-suited for the use of clean, renewable energy. The process comprises a chemical vapour technology that does not consume any water, has low energy consumption, produces close to zero emissions and occupies a very small surface area.

"These characteristics make it an ideal fit with Orion's ambitions to become a fully-integrated mining and processing business that produces premium metal products with strong ESG credentials that are certified from point-of-source to market."

Orion Minerals Limited (**ASX/JSE: ORN**) (**Orion** or the **Company**) is pleased to announce a significant development in its strategy to create a fully-integrated base metal mining and processing business, producing high-value metals for the fast-growing battery materials sector, achieved through entering into a Term Sheet that could see it acquire a cornerstone interest in a future base metal refining facility in the Northern Cape region of South Africa.

The Term Sheet contains binding exclusivity arrangements through which Stratega Metals (Pty) Ltd (**Stratega**) will undertake technical due diligence, including amenability test work, for the use of carbo-chloro metal vapour

extraction technology (**CCMVT**) for base metal refining of polymetallic concentrates produced from Orion's Northern Cape projects.

During this 90-day exclusivity period, Orion is entitled to conduct amenability test work and due diligence, and during which Stratega and Orion may enter into a comprehensive earn-in agreement under which Orion may earn a 75-percent ownership in Stratega, by funding the establishment of a bespoke test work facility and demonstration plant, to be located at Orion's Prieska Copper-Zinc Mine site.

Stratega has secured licencing from TCM Research Ltd (**TCM Research**) to use TCM Research's proprietary CCMVT technology. The CCMVT refining process promises very attractive characteristics including:

- A dry process using no water;
- Low energy consumption amenable to renewable energy power supply;
- Near zero immisions – only minor non-toxic waste products;
- Small compact plant with very small footprint; and
- Production of metal products that trade at significant premiums to contained metal targeting the battery and specialist chemical industries.

The CCMVT process is a derived from the modification of well-established refining technology used at refineries such as Vale's Sudbury Refinery in Canada, Norilsk Nickel Refinery in Russia and Jinchuan Metals in China. The key reaction in CCMVT uses carbonyl (carbon monoxide), which is harvested from air and recycled within a sealed, pressurised reactor vessel and circuit then feeding to distillation vessels to recover separated refined carbonyl metal powders.

The enabling process engineering has become more accessible in recent decades due to the growth of the petrochemical industry that used the same apperatus and process management technology.

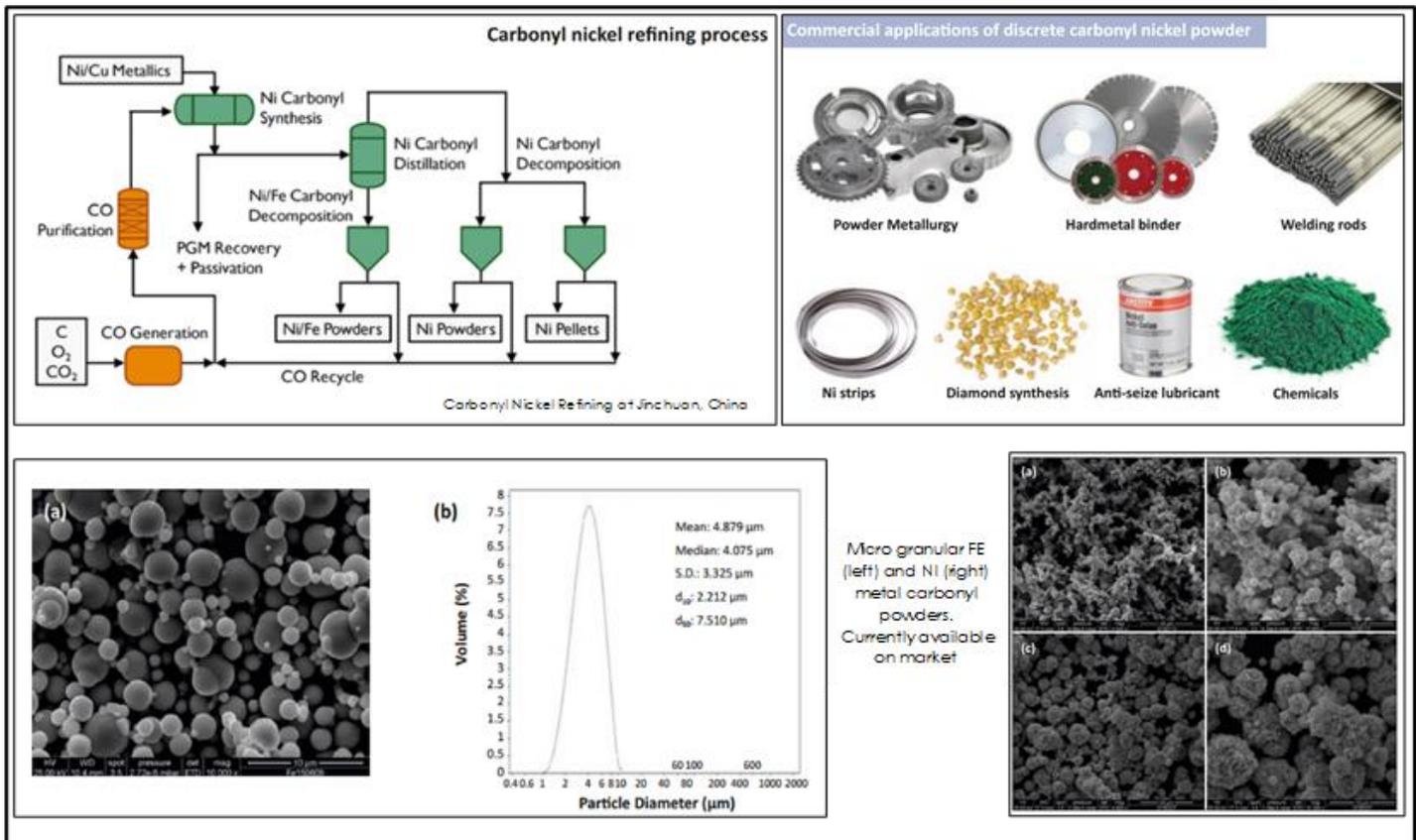


Figure 1: Carbonyl nickel refining process.

About Stratega Metals

Stratega Metals is a corporate vehicle formed to provide specialised project management for the design, construction and operation of metal vapour process metal refineries, using both the in house IP of the Stratega principals and licenced IP sourced from TCM Research and other IP providers. Stratega's specialist chemical engineering management operations are integrated with a product and market development function, with the objective of producing specialist metal powders and battery metals that are certified to the highest standards of ESG compliance from mine face to point of sale

The principals of Stratega Metals are Zoran Marinkovic and Vred von Ketelhodt.

Zoran is a Chemical Engineer and has over 35 years of international experience leading projects that enable the development and implimentation of novel processing technologies on an industrial scale. Zoran is a former Director of HDPE at Petrochemical Complex in Yugoslavia. He is also a former director of Sylvania Platinum plc and Ironveld plc, where he was responsible for technical strategy and project implementation. Zoran is well known in South Africa for his role in identifying and developing the metallurgical process to extract platinum group metals from chrome ore and tailings from the Bushveld Complex, Zoran has also piloted, managed and lead numerous projects in the Metal Vapor Extraction Technology space specifically targeting strategic, critical and battery metals.

Vred has over 30 years experience in the global metals and mining sector working as both a Mining Engineer and Corporate Finance professional. As former CFO at Ironveld plc and former Head of Corporate Finance at Kumba Iron Ore Limited, Vred became proficient in all aspects of project finance.

About TCM Research

TCM Research principals; Colwyn van der Linde and Dmitri Terekhov have 50 years' combined experience in the metallurgical processing and chemicals industries, with a strong track record of introducing new technologies and products to international markets.

TCM Research Ltd is a company established in the Republic of Ireland, with representation in Canada and South Africa, and has been established to develop, apply and commercialise a suite of Vapour Metallurgy, processing and manufacturing technologies that are innovative, environmentally responsible, and commercially highly competitive, adding value exponentially beyond their cost.

TCM Research is a proud member of 'The European Raw Materials Alliance' <https://erma.eu> 'ERMA's vision is to secure access to critical and strategic raw materials, advanced materials, and processing know-how for EU Industrial Ecosystems. The alliance will involve all relevant stakeholders, including industrial actors along the value chain, Member States and regions, trade unions, civil society, research and technology organisations, investors and NGOs.

Some recent and current TCM projects:

- Preliminary Economic Evaluation for an integrated Rare Earth Elements Extraction Facility in Africa.
- Scoping Study for recovery of Rare Earth Elements from Fly Ash and other industrial waste streams in the USA.
- Scoping Studies for the extraction and refining of Tantalum, Niobium, Tin and Tungsten from multiple sources in Africa, Australia and South America.
- Pre-feasibility Study for valorization of slag from Highveld Steel and Vanadium in South Africa.
- Pilot Plant and Pre-Feasibility Studies for Proprietary refractory Gold/Polymetallic process in USA, Canada and South Africa.
- Concept Design - Metals 3D Printing Process for Earth and Space Applications.
- Scoping Study for proprietary low grade Tin extraction and refining process.
- Pre-feasibility Study and Metallurgical Testwork for the extraction and refining of Vanadium, Iron and Titanium from Vanadiferous Magnetite, in South Africa.
- Pre-feasibility Study for a Tantalum (and associated metals) Refinery, in Namibia.
- Pre-commercialization prototype testing for an integrated Metals and Alloys Additive Manufacturing Process.

For and on behalf of the Board.



Errol Smart
Managing Director and CEO

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