

ASX ANNOUNCEMENT  
12 September 2024

## SUCCESSFUL DELIVERY OF FIREBIRD'S ENERGY SAVING PILOT CALCINING KILN FROM SUNWARD

### HIGHLIGHTS

- **Delivery of pilot scale calcining kiln to Hunan Firebird Battery Technologies Plant in Hunan Province, China**
- **Firebird designed the calcining kiln, which has the potential to reduce energy usage by 80% and further enhance the cost-efficiency of the Company's proposed Battery Grade High-Purity Manganese Sulphate (MnSO<sub>4</sub>) Plant**
- **The strategic agreement between Sunward and Firebird is for all detailed technical engineering and construction of the calcining kiln to be completed by Sunward**
- **Installation of the kiln has been completed and testing commenced, with results expected in the next six weeks**
- **Successful testing of 10 tonnes of manganese ore could demonstrate significantly lower energy consumption, with additional promising applications in industries such as iron ore beneficiation and lithium sulphate production**
- **The new calcining unit has broad industrial applications. Sunward has agreed to pay Firebird a 5% royalty on future sales revenue and the Company retains the right to collaborate with other manufacturers**
- **Firebird continues to progress key workstream as the Company focuses on rapidly developing into a low-cost producer of high-purity manganese sulphate**

**Firebird Metals Limited (ASX: FRB, Firebird or the Company)** is pleased to announce the delivery of a new energy efficient pilot scale calcining kiln to the Company's Battery Grade High-Purity Manganese Sulphate Plant (**Plant**) by Sunward. Installation of the unit has been completed and testing is underway, with results expected within six weeks.

Successful testing of the kiln could demonstrate significantly lower energy consumption by up to 80% and potentially further enhance the cost-efficiency of Firebird's proposed Plant, which will be located in the Jinshi High-Tech Industrial Park. The unit will also be assessed for use across industries such as iron ore beneficiation and lithium sulphate production.

**Firebird Managing Director, Mr Peter Allen, commented:** *"Our industry-leading sulphate technical team in China are always looking to improve our proposed production processes, with a very strong focus on reducing our already impressive low-cost profile to produce high-purity manganese sulphate."*

*"The testing of this pilot scale kiln holds potential to significantly reduce our operational expenses in the production of manganese sulphate, a key component for the battery industry in China and beyond. Importantly, we already sit in the lowest quartile of operational costs to produce high-purity manganese sulphate, which again highlights the significant cost, development and operational advantages through establishing operations in China."*

*"The high calibre of our development partners in China, including Sunward, reinforces our commitment and the robust in-country support we have in becoming a near-term, low-cost producer of manganese sulphate with global significance. We eagerly anticipate completing the testing phase and sharing the results as they become available."*



**Image 1:** Installation of pilot scale calcining unit at Hunan Firebird Battery Technologies' Plant

## SUNWARD CALCINING UNIT

In June 2024, Firebird entered into a development agreement with Zhongji Sunward Technology Co, Ltd (**Sunward**)<sup>1</sup>, a leading producer of rotary tunnel kilns used in many chemical plants across China.

The agreement saw Sunward co-fund and evaluate commercialising Firebird's Chinese subsidiary, Hunan Firebird Battery Technologies' (**HFBT**), unique energy saving rotary kiln design

<sup>1</sup> Sunward To Co-Fund Firebird's Energy-Saving Calcining Technology, Firebird to Earn 5% Future Sales Royalty

(patent pending). If proven commercially viable, Sunward will pay a royalty of 5% to Firebird for every kiln sold that utilises HFBT's unique energy saving rotary system.

Calcining is a vital process in the chemical processing of manganese ore and the kiln delivered to the Company's pilot plant, which is also located in the Jinshi High-Tech Industrial Park, will play a critical role in reducing operational expenses in the production of battery grade  $\text{MnSO}_4$  and manganese tetroxide ( $\text{Mn}_3\text{O}_4$ ).

The successful testing of this advanced kiln has the potential to significantly lower energy consumption, with promising applications across industries including iron ore beneficiation and lithium sulphate production.

Following initial inspection of the kiln, the Firebird team were highly satisfied with the quality and professionalism demonstrated by Sunward. Firebird looks forward to continued collaboration with Sunward as results from the unit testing become available.

The pilot unit, measuring 11m in length, with a 0.5m diameter and height of 3m, has a processing capacity of 80kg per hour, or 1.92 metric tons per day. Compared to conventional calcining units that use 300-350kWh per ton of material, this new technology offers significant energy savings.

**This announcement has been approved for release by the Board.**

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## About Firebird Metals Limited

Firebird Metals is an advanced manganese developer focused on combining mining and downstream processing with a dedication to the advancement of the EV battery sector.

The Company is currently progressing its unique China-focused lithium manganese iron phosphate (LMFP) battery strategy, which will develop Firebird into a near-term producer of high-purity, battery-grade manganese sulphate, a key cathode material in LMFP batteries for electric vehicles.

Execution of this strategy will place Firebird at the forefront of manganese sulphate production, at a time when the use and demand for manganese in batteries continues to rapidly grow. Due to the low number of ASX-manganese developers and increasing use of LMFP by car manufacturers, Firebird is in a strong position to benefit from this growing market and deliver significant value to its shareholder base.

The Company also owns 100% of its project portfolio, located in the renowned East Pilbara manganese province of Western Australia, which boasts a total Resource of 234Mt<sup>2,3</sup>, with exciting exploration and development growth upside. The portfolio is led by the flagship Oakover Project, which holds a Mineral Resource Estimate<sup>1</sup> of 176.7 Mt at 9.9% Mn, with 105.8 Mt at 10.1% Mn in an Indicated category.

The Company's other key Projects are Hill 616 and Wandanya which provide Firebird with compelling growth opportunities. Hill 616 contains an Inferred Mineral Resource<sup>2</sup> of 57.5Mt at 12.2% Mn and shares similar geological traits to Oakover. Wandanya is a high-grade exploration opportunity, with Direct Shipping Ore potential.

The Company is committed to generating sustainable long-term value and growth for stakeholders, through the implementation of best practice exploration methods while prioritising the well-being, health and environmental protection of its employees and communities it operates in.

## JORC Compliance Statement

This announcement contains references to Mineral Resource Estimates, which have been reported in compliance with Listing Rule 5.8 and extracted from previous ASX announcements as referenced.

The Company confirms that it is not aware of any new information or data that materially affects the information previously reported and that all material assumptions and technical parameters underpinning the Mineral Resource Estimates continue to apply and have not materially changed.

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<sup>2</sup> See ASX announcement dated 23 March 2023: Indicated Resource of 105.8Mt at 10.1%; Inferred Resource of 70.9Mt at 9.6% for global Resource of 176.7 Mt at 9.9% Mn.

<sup>3</sup> See ASX announcement dated 1 December 2021: Inferred Resource of 57.5 Mt at 12.2% Mn.