

# FIREBIRD SECURES ENERGY-SAVING KILN PATENT ADP TO SHOWCASE THE PROVEN FLOWSHEET IN AUSTRALIA

Key patent along with Australian Demonstration Plant to advance Firebird's Western commercialisation plans

## Highlights

### Energy Saving Kiln Patent Secured

- Core patent secured for Firebird's high-efficiency roasting and drying kiln
- Patent anchors Firebird's integrated concentrate-to-battery-materials flowsheet
- Demonstrated up to 70% energy savings on high-grade manganese ore
- Creates pathway for commercial kiln sales to Western manganese sulphate producers

### Australian Demonstration Plant (ADP)

The planned ADP will showcase end-to-end conversion of manganese concentrate into:

- **HPMSM:** High Purity Manganese Sulphate Monohydrate
- **LMFP PCAM:** Lithium Manganese Iron Phosphate Precursor Cathode Active Material
- **LMFP CAM:** Cathode Active Material

ADP can potentially access significant Australian Government funding for downstream, value-added battery-materials demonstration projects

### Kiln patent + ADP will unlock multiple Western-market revenue streams via:

- Technology licensing
- Equipment supply
- Downstream production of advanced battery materials
- Expected catalyst for partnerships with tier-one battery-value-chain players

### Firebird CEO, Mr Ron Mitchell, commented:

*"Securing patent protection for our energy-saving kiln is a pivotal step that validates Firebird's engineering capability and further supports our integrated concentrate to cathode flowsheet. With the development of the Australian Demonstration Plant (ADP), the Company is executing a capital-light pathway to commercialise our battery materials technology through various revenue streams including equipment supply, licensing and downstream battery materials sales. These initiatives position Firebird to participate in the rapidly rising LMFP electric vehicle and stationary energystorage markets with a first mover advantage outside of China. We look forward to providing shareholders regular updates as the ADP project advances in 2026."*

Australian-owned Firebird Metals Limited (ASX:FRB, Firebird or the Company) is pleased to provide the following update.



*Figure 1. The Company's High-Efficiency Energy-Saving Roasting and Drying Kiln located at Firebird's 100% owned subsidiary laboratory in Hunan, China.*

For personal use only

### Key Technology Patent Secured

Firebird has been awarded a significant equipment-design patent (**Patent No.: ZL202422926714.7**), covering its energy-efficient rotary kiln system. The patented covers key design features including the inner/outer tubes, a screw-type discharge cooler and sealed feeding mechanisms.

The kiln has demonstrated **up to 70% energy savings** via the ingress of external air, enhances reduction efficiency, improves thermal utilisation, and stabilises roasting/drying operations.

The now patented kiln design is subject of an expression of Interest (EOI) received from Taza Metal Technologies to purchase up to five energy-efficient kilns following Firebird's successful test program; generating potential revenue of >US\$10m (kilns to be fabricated by FRB's equipment manufacturer Zhongji Sunward).

The Company has operated a demonstration scale kiln, measuring 11m in length with an 80kg/hr throughput capacity (Fig. 1), since August 2024, successfully at its 100% owned China laboratory in Hunan China (*refer ASX announcement, 12 September 2024*).

Importantly this high efficiency electric calcination kiln design can potentially be applied in a wide range of industries including the downstream lithium production process.

### Australian Demonstration Plant (ADP) Update

Firebird has announced its intention to construct an **ADP** to showcase the Company's fully integrated battery materials production process, engineering capability and commercial pathway.

The proprietary, patent-protected process underpinning the ADP directly supports Australia's national objectives for supply chain resilience and value-adding within the lithium-ion rechargeable battery manufacturing sector.

Firebird's end-to-end flowsheet has been proven across multiple production campaigns at the Company's wholly owned pilot plant in China. Building on this platform, the ADP will produce representative samples of **High-Purity Manganese Sulphate Monohydrate (HPMSM)**, **Precursor Cathode Active Material (PCAM)** and **Cathode Active Material (CAM)** for initial product validation with global OEMs, battery and cathode manufacturers (Fig. 2).

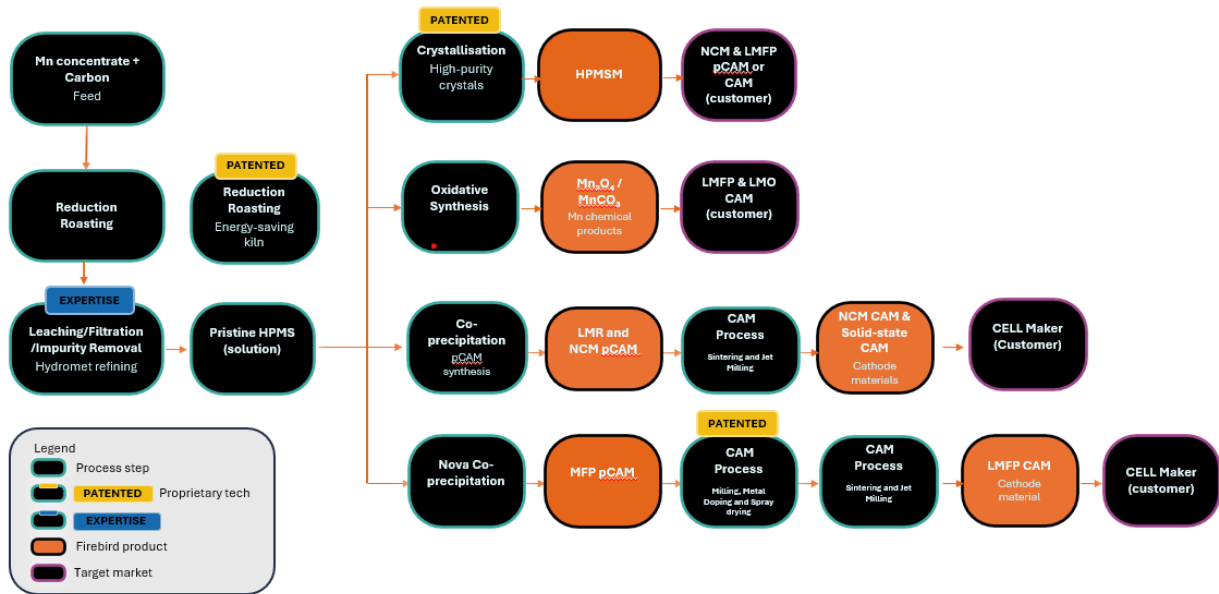


Figure 2. The ADP production process pathway showing patented technology, intellectual property and expertise leading to the production of a variety of manganese-based battery materials.

The ADP integrates China-developed process know-how with Western engineering, safety and regulatory standards, enabling deployment-ready technology suitable for Australian and broader international markets.

Purpose-built LMFP reactors and a fully integrated flowsheet will make the ADP the first facility outside China capable of converting manganese concentrate through to finished LMFP CAM.

Modified Australian feedstock pathways and circular by-product recycling allow the ADP to operate as a zero-tailings system while improving operating efficiency and environmental performance.

The ADP will act as a training, knowledge-transfer and development hub, building local capability in precursor and CAM production LMR while supporting customer-specific R&D. This platform strengthens Firebird’s ability to independently develop, refine and patent new technologies within Australia.

Significant Australian Government funding programs exist to support downstream, value-added battery materials demonstration projects, and Firebird intends to leverage these opportunities. Engagement with Western OEMs, battery and cathode manufacturers is already underway, positioning Firebird within emerging supply chains seeking non-China aligned battery materials.

For personal use only

A formal ADP site selection process is in progress. The Company expects to secure a capital light multi-year lease, for an existing structure, within a light industrial precinct in the Perth Metropolitan Area.

Firebird will receive a licence to apply the proprietary technology and patents held by its wholly owned subsidiary to the ADP operations. Firebird's patented kiln will not be installed at the ADP, however the technical principles and IP validated through the kiln program directly support and enhance Firebird's commercialisation pathway.

The ADP program is expected to unlock multiple potential high-value commercial revenue sources, including:

- a) Technology licensing
- b) Equipment supply
- c) Downstream production of several battery materials (HPMSM, PCAM, CAM)

A key attribute of showcasing the ADP in the Perth Metropolitan area is to facilitate site visits from potential project partners, investors and government officials. The Company is in discussions with several tier one global OEMs, battery and cathode manufacturers and expects significant engagement from these companies as Firebird deploys the ADP in 2026 and aims to produce a range of LMR and LMFP battery materials for customer validation.

LMFP battery technology delivers several notable performance enhancements relative to LFP, which is currently the most widely deployed battery chemistry both in the EV and BESS markets, including:

- **15-20% higher gravimetric energy density**, enabling improved pack-level efficiency
- **Higher nominal voltage**, supporting better power output and system performance
- **Lower cost per kWh**, driven by improved electrochemical performance and the use of lower-cost raw material inputs
- **A smaller physical footprint**, lowering development, civil works and installation requirements

Collectively, these advantages position LMFP-based BESS as a highly competitive solution for large-scale commercial deployment and support its emergence as a preferred technology for next-generation stationary energy storage globally.

Firebird is one of only a few western companies who have successfully manufactured LMFP battery materials in a market which is estimated to exceed \$US100 billion, in the BESS sector alone, by 2030.

This announcement has been authorised for release by the Board of Firebird Metals Limited.

**For further information contact:**

Ron Mitchell

CEO

E: [ron.mitchell@firebirdmetals.com.au](mailto:ron.mitchell@firebirdmetals.com.au)

Ph: +61 407 726 325

For personal use only

## About Firebird Metals Limited (ASX:FRB)

Firebird Metals is an integrated manganese technology company positioned in the EV and energy-storage markets.

The Company's state-of-the-art lab and research facility demonstrate full flow-sheet capability, from manganese ore to finished battery active cathode materials. Firebird pairs downstream processing know-how with proprietary technologies, including a high-efficiency kiln and advanced crystallisation, targeting lower cost and energy use and enabling near-term revenue via equipment sales and licensing.

Firebird is advancing an lithium manganese iron phosphate (LMFP) pathway to near-term production of high-purity manganese sulphate and an LMR program for next-generation cathodes.

Firebird also holds 234 Mt of manganese resources in Western Australia, led by Oakover (176.7 Mt at 9.9% Mn, including Indicated 105.8 Mt at 10.1% Mn<sup>1</sup>) and Hill 616 (57.5 Mt at 12.2% Mn<sup>2</sup>). The Company has the flexibility to source manganese ore through third-party suppliers and stockpiles, with mining optionality retained within its broader portfolio.

## 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.

---

<sup>1</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>2</sup> See ASX announcement dated 1 December 2021: Inferred Resource of 57.5 Mt at 12.2% Mn.