

ASX RELEASE

23 MAY 2025

MTM Validates Production-Scale FJH Reaction System for Commercial Rollout and Modular Scale-Up

Production-scale FJH crucible validated, de-risking modular Texas plant ahead of Q4 2025 commissioning

- MTM has successfully validated its production-scale reaction chamber (“crucible”), confirming readiness for deployment in the Company’s 1 tonne-per-day (1TPD) Flash Joule Heating (FJH) metal recovery plant in Texas.
- The upsized unit matched the heat transfer performance of smaller-scale prototypes, confirming scalability and materially reducing scale-up risk for commercial deployment.
- The validated crucible design reflects a substantial scale-up from the original lab-scale system developed at Rice University, underscoring MTM’s successful transition of FJH technology into an industrially viable platform.
- Additionally, test results suggest that each module may exceed prior throughput expectations, indicating the 1TPD plant—comprising multiple parallel crucibles—could achieve higher capacity from day one.
- This modular architecture enables efficient replication, with the newly secured site capable of accommodating multi-fold capacity expansions using the same validated design.

MTM Critical Metals Limited (“MTM” or the “Company”) (ASX: **MTM**; OTCQB: **MTMCF**) is pleased to report the successful validation of its production-scale reaction chamber design – a core component of the proprietary FJH process – confirming readiness for scaled deployment at the Company’s U.S. commercial production facility in Texas. The reaction chamber or “crucible” forms part of MTM’s proprietary, patent-backed FJH process, which was developed by leading researchers at Rice University and is exclusively licensed to MTM for all metal recovery and mineral processing applications. FJH combines rapid electrical heating with targeted chemistry to unlock critical and precious metals from various feedstocks.

- The enlarged reaction chamber demonstrated consistent and uniform heat transfer under representative conditions, validating its performance at full scale. With thermal performance confirmed, gas-solid reactions are expected to scale similarly—reinforcing confidence in the system’s overall scalability.
- These results not only materially de-risk the modular scale-up strategy but also indicate that each crucible may outperform initial assumptions, suggesting the overall 1TPD plant—comprising multiple such units—could deliver significantly higher throughput than originally planned.

MTM Managing Director & CEO, Michael Walshe, commented: *“This successful test of the commercial-scale crucible marks a major technical milestone for MTM. It confirms that our Flash Joule Heating process scales effectively and that key thermal performance parameters are preserved at commercial reactor size. This materially reduces scale-up risk and supports potential throughput uplift from day one of operations.”*

“The modular plant design gives us flexibility to expand capacity by simply replicating this validated unit, making our approach both capital-efficient and rapidly scalable. As we progress toward commissioning later this year, our strategy continues to align with U.S. government policy on reshoring manufacturing and securing domestic supply chains for metals. MTM is well-positioned to support these goals and to advance as a leading player in the U.S. critical metals space as we execute on our commercial strategy”.

Texas Processing Facility: MTM’s 5-hectare site in Chambers County, Texas, is fully permitted for industrial waste processing, with sealed road access, industrial-grade power supply, and capacity for multi-module expansion¹. **With the full-scale design validated and an expandable site secured, MTM is well-positioned to increase capacity significantly beyond the initial 1 TPD target—without modifying the core FJH process. Commissioning of the plant in Texas remains on schedule for the end of calendar year 2025 supporting U.S. critical metal supply chains.**

¹ See ASX: MTM announcement dated 13/05/2025 ‘Pre-permitted Production Site Secured for FJH Pilot Plant’.

The FJH Process: The FJH process utilises advanced electrical-based heating and proprietary chemical pathways to rapidly convert complex feedstocks into recoverable metal chlorides. Feedstock is prepared and flash-heated to desired reaction temperatures, enabling selective chlorination of critical and precious metals such as gallium, indium, germanium, and gold. These vapours are then condensed and collected for refining or direct sale, while solid residues are safely managed and discharged.



Figure 1: Commercial-scale crucible prototype used in recent testing – validated for modular deployment at MTM's production plant

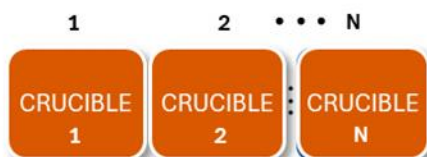


Figure 2: MTM's 5-hectare site – permitted, infrastructure-equipped, and ready to host scalable FJH metal recovery operations

MODULAR FJH DEPLOYMENT MODEL – PROVEN, SCALABLE, EXPANDABLE

1TPD PLANT MODULE = MULTIPLE IDENTICAL CRUCIBLES

Each unit =
independently validated
commercial-scale crucible

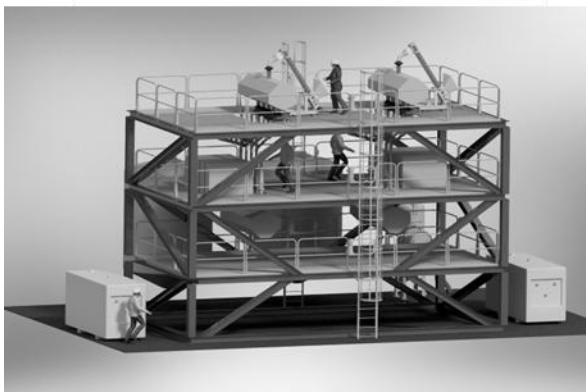


... N TOTAL CRUCIBLES

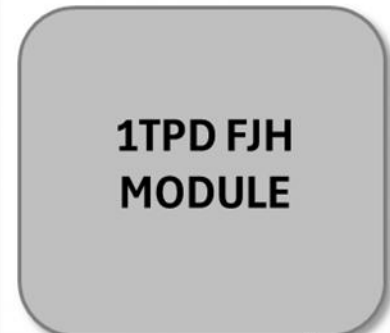
1 TPD aggregate
throughput

Each reactor is a
validated, standalone
processing unit – no
scale-up engineering
required

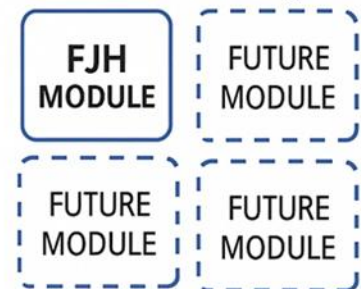
- Throughput increased by adding identical modules in a plug-and-play configuration



SCALABLE U. S. SITE LAYOUT – ROOM FOR MULTI-FOLD EXPANSION



Expansion-ready



- 5-hectare permitted site – Chambers County Texas.
- Permitted for industrial waste



Figure 3: Modular FJH deployment model – the 1TPD system comprises multiple validated FJH crucibles operating in parallel, with the Texas site layout designed to enable future capacity expansion through replication of these modular processing units.

Progress with Feedstock and Offtake

Feedstock and product offtake agreements are advancing. MTM has secured over 1,000 tonnes per annum of e-waste from two leading U.S. recyclers and is progressing commercial arrangements with downstream partners, including for the sale of gallium and germanium products. These agreements, when executed, will underpin long-term operational certainty and support near-term revenue generation.

Supporting U.S. National Strategic Priorities

MTM's FJH technology platform is directly aligned with U.S. federal initiatives to reshore critical mineral supply chains, reduce dependence on foreign refining capacity, and incentivise domestic clean-tech innovation via Department of Energy and Department of Defense grant programs. The Company is actively exploring multiple grant and non-dilutive funding opportunities and recently completed a highly productive visit to Washington, DC, where senior management engaged with Congressional offices and key stakeholders to advance MTM's eligibility for support.

Next Steps

Procurement activities are underway, with on-site works scheduled to commence in Q3 2025. Commissioning remains on track for late Q4, after which MTM expects to initiate staged operations and product qualification with early offtake partners.

This announcement has been authorised for release by the Board of Directors.

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PREVIOUS DISCLOSURE

The information in this announcement is based on the following MTM Critical Metals Limited ASX announcements, which are all available from the MTM Critical Metals Limited website www.mtmcriticalmetals.com.au and the ASX website www.asx.com.au.

| Date | Description |
|-----------------|---|
| 15 May 2025 | Lease Terms for Critical Metals Recovery Facility |
| 13 May 2025 | Pre-permitted Production Site Secured for FJH Pilot Plant |
| 03 March 2025 | Key Engineering Milestone Complete for Technology Demo Plant |
| 29 January 2025 | Excellent Progress on US-Based Technology Demonstration Plant |
| 30 October 2024 | Progress Update on 1 TPD Demonstration Plant |

The Company confirms that it is not aware of any new information or data that materially affects the information included in the original ASX announcements and that all material assumptions and technical parameters underpinning the relevant ASX announcements continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are represented have not been materially modified from the original ASX announcements.

ABOUT MTM CRITICAL METALS LIMITED

MTM Critical Metals Limited (ABN 27 645 885 463), is an ASX & OTCQB-listed company with management teams in Perth, Western Australia, and Texas, USA, and specialises in advanced metal recovery technologies. MTM's 100%-owned USA subsidiary **Flash Metals USA Inc** is based in Texas, USA. MTM possess exclusive licensing rights to the innovative *Flash Joule Heating technology*, a cutting-edge metal recovery and mineral processing method developed by esteemed researchers at Rice University, USA.

Flash Joule Heating (FJH) is an advanced electrothermal process that enhances metal recovery and mineral processing compared to traditional methods. By rapidly heating materials in a controlled atmosphere, FJH efficiently extracts metals like lithium from spodumene, gallium from scrap, and gold from E-Waste, among others. This technology has the potential to revolutionise metal recovery by reducing energy consumption, reagent use, and waste, offering a more economical and environmentally friendly alternative.

To learn more, visit:

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