

Battery Grade Vanadium Electrolyte Produced

MTMP Ore to Electrolyte Pathway Confirmed

HIGHLIGHTS

Vanadium electrolyte produced using high purity feedstock sourced from Technology Metals 100% owned Murchison Technology Metals Project (MTMP)

High quality electrolyte meets specifications of major global Vanadium Redox Flow Battery (VRFB) manufacturers

Initial performance testing demonstrated very positive results and compared favourably to commercially available vanadium electrolytes

Developing the MTMP to meet the increasing vanadium demand forecast for the rapidly growing long duration energy storage markets

14 February 2023

Advanced vanadium developer, Technology Metals Australia Limited (ASX: TMT) (**Technology Metals**, or the **Company**), through its wholly owned subsidiary vLYTE Pty Ltd (**vLYTE**), is pleased to announce its Japanese technology partner LE System Co., Ltd (**LE System**) has successfully produced high quality vanadium electrolyte utilising feedstock from Technology Metals' MTMP located in mid-west Western Australia. LE System completed the manufacture, and subsequent performance testing, of the electrolyte in its Tsukuba Technical Centre, in Ibaraki, Japan.

The successful production of vanadium electrolyte is a component of the feasibility study Technology Metals is undertaking through vLYTE to progress the Company's downstream vanadium electrolyte production capacity in Australia¹. LE System is providing technical support for the feasibility study from its knowledge, expertise, and experience from operating its own vanadium electrolyte plant in Namie, Fukushima Prefecture, Japan.

vLYTE is in discussions with global VRFB manufacturers regarding their vanadium electrolyte specifications and objectives for deployment of VRFB long duration stationary storage in Australia. The Company's intention is to supply high quality vanadium electrolyte to support the deployment of VRFBs in Australia as well as high purity feedstock from the MTMP to supply to electrolyte production facilities across the globe.

Managing Director Ian Prentice commented:

"Production of high quality vanadium electrolyte from MTMP feedstock is a significant step in TMT's strategic goal of becoming an integral participant in the VRFB supply chain.

"The fact that this maiden batch of electrolyte meets the strict specifications of VRFB manufacturers is a testament to the first-class orebody at the MTMP and the industry leading status of our technology partner LE System.

"TMT is looking forward to progressing its relationships with global VRFB manufacturers and moving towards electrolyte production to support the growing long duration energy storage market in Australia."

¹ ASX announcement 14 July 2022 – Vanadium Electrolyte Feasibility Study to Supply Australian Batteries

Technology Metals, through its wholly owned subsidiary vLYTE, is progressing the downstream feasibility study to produce vanadium electrolyte in Australia using low cost, high purity vanadium produced from the MTMP. The Company's technology partner, LE System, is providing technical support for the feasibility study from its knowledge, expertise, and experience from operating its own vanadium electrolyte plant in Namie, Fukushima Prefecture, Japan.

As a component of its technical support, LE System has successfully produced high quality vanadium electrolyte utilising feedstock from the MTMP. LE System completed the manufacture, and initial performance testing, of the vanadium electrolyte in its Tsukuba Technical Centre, in Ibaraki, Japan.

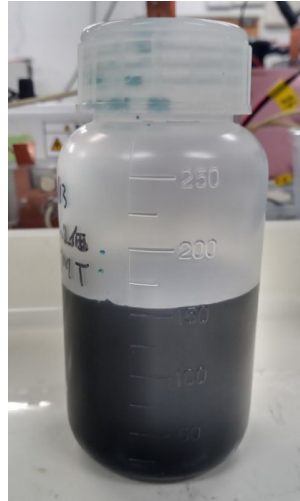


Figure 1: TMT's electrolyte product suitable for use in VRFBs. Source: LE System.

MTMP's feedstock delivers high quality vanadium electrolyte

The vanadium electrolyte produced by LE System in its Tsukuba Technical Centre has been subject to an initial series of mini-cell short-term performance tests examining aspects including the charge and discharge at cell, and the electrolyte flow rate to understand the current, power, and voltage efficiency.

The Company's vanadium electrolyte demonstrated very positive results from this initial testwork, including high power efficiency, and compares favourably to electrolyte produced from other vanadium feedstock. In particular, analysis of the electrolyte confirmed that it meets the quality specifications of major VRFB manufacturers.



Figure 2: Mini-cell testing of TMT vanadium electrolyte – LE System's Tsukuba Technical Centre, in Ibaraki, Japan.

Downstream Feasibility Study next steps

The Company is undertaking further work on the manufacture of vanadium electrolyte in Australia including testwork to optimise the processing pathway for electrolyte, consideration of potential facility locations, and the generation of commercial vanadium electrolyte samples for global VRFB battery manufacturers.

The Company is also proposing to develop a pilot plant for the production of vanadium electrolyte to demonstrate process viability and commercial samples for potential customers. The focus of the pilot plant will be to leach and refine ore extracted from the MTMP under controlled conditions to produce high purity vanadium electrolyte, demonstrating the full ore to electrolyte production viability. TMT is engaging with its Tier One partners to assist with the pilot plant.



Figure 3. The Yokohama Works VRFB designed and installed by Sumitomo Electric. Source: www.sumitomoelectric.com

Growing demand for vanadium from long duration energy storage markets

There is growing support for VRFB installations globally, driven by the world's need for long duration energy storage to achieve net zero targets.

The Inflation Reduction Act now in effect in the United States, has directed new federal funding of nearly USD400 billion towards supporting clean energy in the form of tax credits, grants, and loans. This has stimulated several publicly announced VRFB projects and interest from VRFB manufacturers in long-term vanadium supply.

Similar policies and legislation are evident in Canada where a refundable tax credit is in place to encourage investment into stationary electricity storage systems, and in Europe where the REPowerEU plan and the Green Deal Industrial Plan for the Net-Zero Age are expected to see accelerated permitting for renewable projects that include standalone energy storage and greater availability of funding.

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China is also investing heavily in vanadium energy storage, with some of the biggest Chinese vanadium producers allocating significant quantities of annual vanadium production to meet the domestic demand for electrolyte to be utilised in VRFBs².

Demand for vanadium from the battery sector is expected to grow significantly from now until to 2040 (See Figure 4, Source: CRU Group). Demand from the steel market currently represents ~ 90% of the market and this is expected to reduce to 25% by 2040, with VRFBs consuming more than two thirds of vanadium demand in 2040.

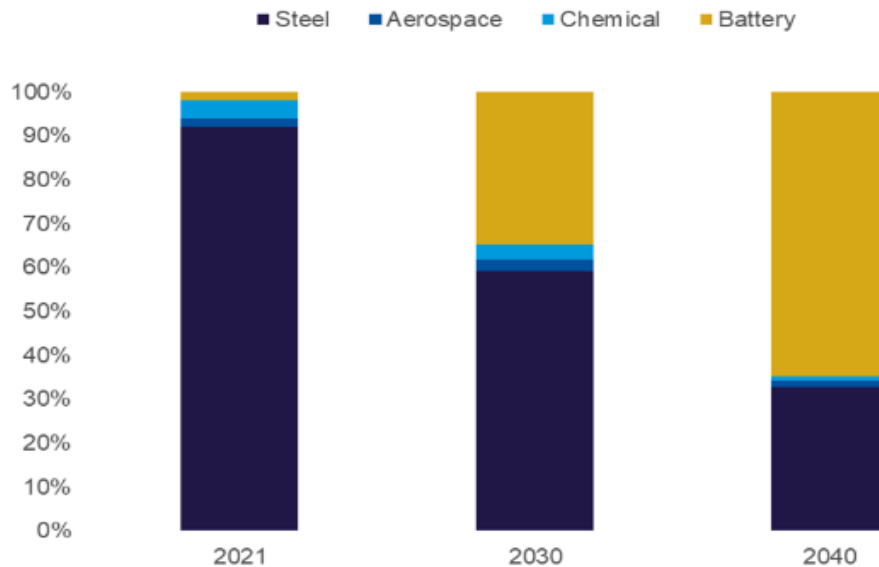


Figure 4: Forecast demand from the battery industry is expected to increase dramatically. Source: CRU

The Company has established relationships with multiple global VRFB and vanadium electrolyte manufacturers, gaining an insight into the vanadium feedstock and vanadium electrolyte requirements of the industry, including various quality specifications and supply chain challenges.

About LE System

LE System Co., Ltd. is a leading supplier of electrolytes to VRFB manufacturers. Established in 2011, the company is the top vanadium electrolyte supplier in Japan and their head office is located in Fukuoka, Japan. LE System's state of the art vanadium electrolyte plant utilising its proprietary technology is located in Namie, Fukushima Prefecture, Japan. The plant has a production capacity of approximately 5,000m³ of vanadium electrolyte per annum, equivalent to approximately 80MWh of energy storage capacity.

LE System enjoys strong relationships with the Japanese government and key Japanese enterprises. LE System's shareholders include Innovation Network Corporation of Japan (INCJ), and TOA ELECTRIC INDUSTRIAL CO., LTD.

² "Pangang Group Vanadium & Titanium signs vanadium battery energy storage material agreement with Dalian Rongke", 13 December 2022, <https://www.asianmetal.com/news/1884491/Pangang-Group-Vanadium-Titanium-signs-vanadium-battery-energy-storage-material-agreement-with-Dalian-Rongke/14>

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Forward-Looking Statements

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About Technology Metals Australia

Technology Metals Australia Limited (ASX:TMT) is an ASX-listed company focused on the exploration and development of its flagship, 100 per cent owned Murchison Technology Metals Project (**MTMP**) located 50km southeast of Meekatharra in the mid-west region of Western Australia. The MTMP is one of the highest-grade vanadium projects in the world and will have lowest quartile operating costs once developed.

The Company has finalised an Integration Study for the MTMP, bringing in high-grade ore from the satellite Yarrabubba deposit into the central processing hub at Gabanintha. The Integration Study completion has facilitated the progression of the Implementation Phase of the MTMP.

About Vanadium

Vanadium is a hard, silvery grey, ductile and malleable speciality metal with a resistance to corrosion, good structural strength and stability against alkalis, acids and salt water. The elemental metal is rarely found in nature. The main use of vanadium is in the steel industry where it is primarily used in metal alloys such as rebar and structural steel, high-speed tools, titanium alloys and aircraft. The addition of a small amount of vanadium can increase steel strength by up to 100% and reduces weight by up to 30%. Vanadium high-carbon steel alloys contain in the order of 0.15 to 0.25% vanadium while high-speed tool steels, used in surgical instruments and speciality tools, contain in the range of 1 to 5% vanadium content. Global economic growth and increased intensity of use of vanadium in steel in developing countries will drive near term growth in vanadium demand.

An emerging and very significant use for vanadium is the rapidly developing energy storage (battery) sector with the expanding use and increasing penetration of the vanadium redox flow batteries (VRFB's). VRFB's are a rechargeable flow battery that uses vanadium in different oxidation states to store energy, using the unique ability of vanadium to exist in solution in four different oxidation states. VRFB's provide an efficient storage and re-supply solution for renewable energy – being able to time-shift large amounts of previously generated energy for later use – ideally suited to micro-grid to large scale energy storage solutions (grid stabilisation).

Some of the unique advantages of VRFB's are:

- a lifespan of 20 years with very high cycle life (up to 20,000 cycles) and no capacity loss,
- rapid recharge and discharge,
- easily scalable into large MW applications,
- excellent long-term charge retention,
- improved safety (non-flammable) compared to Li-ion batteries, and
- can discharge to 100% with no damage.

Global economic growth and increased intensity of use of vanadium in steel in developing countries will drive near term growth in vanadium demand.