MACARTHUR Minerals

News release

For Immediate Dissemination

1 June 2021

LAKE GILES ULARRING DSO UPDATE: Macarthur to trial integration of hydrogen power under Strategic Agreement with LAVO

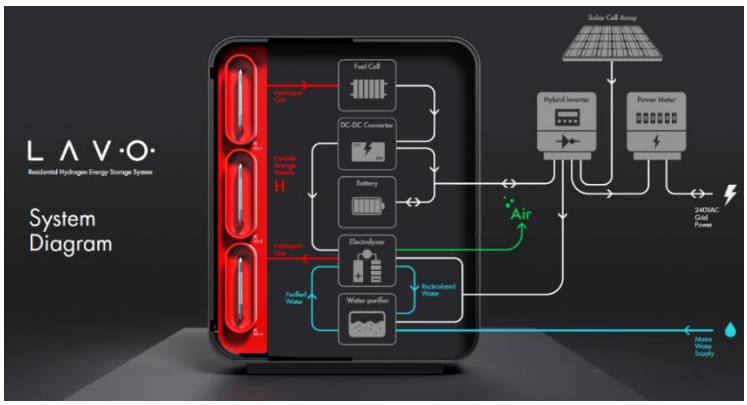
Macarthur Minerals Limited (ASX: MIO) (TSX-V: MMS) (OTCQB: MMSDF) (the "Company" or "Macarthur") is pleased to announce that it has signed a Strategic Partnership and Collaboration Agreement ("Agreement") with LAVO Hydrogen Technology Holding Pty Ltd ("LAVO") to investigate the facilitation of a staged technology solution that is intended to deliver a clear carbon reduction strategy for Macarthur's flagship Lake Giles Iron Project ("Project") in the Yilgarn region of Western Australia, with a first phased roll-out to support Macarthur's intended early hematite direct shipment ore ("DSO") mining operations at Ularring.

LAVO uses an innovative, patented metal hydride to produce hydrogen energy batteries. The battery system acts as a solar sponge, integrating with solar arrays to capture and store renewable energy for use when needed. The unit creates Hydrogen from water, stores the Hydrogen into LAVO's patented metal hydride and generates electricity by converting hydrogen into power.

LAVO is an Australian company headquartered in New South Wales. Its cornerstone investors are leading ESG investment firm Providence Asset Group (PAG) and the University of New South Wales (UNSW). Together with UNSW, PAG established the Hydrogen Energy Research Centre (HERC). HERC is the world's leading university-industry partnership in hydrogen technologies with a main purpose of translating the university's leading research in hydrogen production, storage and use into real world commercial products under the brand name 'LAVO'.

Under the Agreement, the first phase of collaboration is expected to involve Macarthur being assigned between three to five patented LAVO 40 kWh hydrogen storage units for integration into the remote worker accommodation facilities which are planned to be constructed to support a DSO mining operation at Ularring, near Lake Giles in Western Australia. (See announcement dated 26 May 2021 here).

Subject to successful project definition and satisfactory supporting economics being assessed, the LAVO hydrogen storage units could be installed on site at Ularring as early as Q4 2021.



Figures: LAVO 40 kWh Hydrogen Battery and System Diagram, planned for installation at Ularring

If the trial program at Ularring is successful, then Macarthur and LAVO intend to examine opportunities to develop a fully localised micro-grid engineering solution that includes a solar PV array, a centralised hydrogen hydride containerised storage system and appropriately sized fuel cell to support the energy requirements for Macarthur's planned high grade magnetite iron ore mine at Lake Giles, following successful delivery of the Company's current Feasibility Study. This could involve the integration of larger, containerised 'HEOS' hydrogen energy batteries with up to 13 MWh of capacity (currently being developed by LAVO), potentially delivering energy to Macarthur's magnetite operations at a commercial scale.

Figure: LAVO 13 MWh 'HEOS' Hydrogen Energy Operation System (under development) and potentially delivering energy at a commercial scale

Alan Yu, CEO of LAVO commented:

"Macarthur Mineral's pursuit to de-carbonise mining and provide resources for green steel production is market leadership and an endeavor that LAVO is excited to be involved with. We are demonstrating our LAVO hydrogen hydride technology has practical, environmental and economically viable applications that extend from residential to significant mining projects. The LAVO | HEOS hydride platform aids in the transition to carbon neutrality across many sectors, integrating with existing infrastructure to support the heartland of industry in rural Australia. The potential for energy independence in the mining sector will reduce costly capital works and leverage the current transport gateways to drive profitable growth and improve environmental impacts."

Andrew Bruton, CEO of Macarthur Minerals commented:

"Macarthur is pleased to be partnering with LAVO on this ground-breaking initiative. Macarthur plans to roll-out integration of LAVO hydrogen storage units at Ularring to support intended early DSO hematite mining operations.

This collaboration is also aimed at enabling Macarthur to achieve a clear carbon reduction strategy for its planned future magnetite operations at Moonshine, as it can allow for potential integration with magnetite processing on a modularised and gradual 'scale-up' basis over a target 5 to 10-year time horizon.

The first stage of the agreement will allow Macarthur to work with LAVO in the early stages of project planning at Ularring for DSO, so that we can examine opportunities for the scale-up of an integrated hydrogen energy technology solution on site at Moonshine for the magnetite.

By adopting this staged approach and becoming an "early follower", rather than a "first adopter" Macarthur will have the opportunity to contain technology, capital and pricing risk so as to ensure that it achieves the lowest possible levelised cost of energy delivery for its magnetite processing.

The partnership is also great news for an emerging Western Australian hydrogen industry. It has the potential to create an opportunity for a regional energy and logistics solution using hydride to help manage the problem of empty shipping containers moving between the region and ports. Switching to a rail or road-based Energy IN - Product OUT container approach, could be a huge story for the mineral resources sector in WA and the Goldfields region in particular.

It's another example of how going green can be profitable where there is a potential to exploit renewable energy assets far from the grid, and Macarthur is proud to be part of this emerging story as a company that is committed to the highest levels of ESG compliance."

On behalf of the Board of Directors, Mr Cameron McCall, Executive Chairman

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No new information

To the extent that this announcement contains references to prior exploration results and Mineral Resource estimates, which have been cross referenced to previous market announcements (including supporting JORC reporting tables) made by the Company, unless explicitly stated, no new information is contained in accordance with Table 1 checklist in the JORC Code. The Company confirms that it is not aware of any new information or data that materially affects the information included in the relevant market announcements and, in the case of Mineral Resources that all assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.

Company profile

Macarthur is an iron ore development, gold and lithium exploration company that is focused on bringing to production its Western Australia iron ore projects. The Lake Giles Iron Project mineral resources include the Ularring hematite resource (approved for development) comprising Indicated resources of 54.5 million tonnes at 47.2% Fe and Inferred resources of 26 million tonnes at 45.4% Fe; and the Lake Giles magnetite resource of 53.9 million tonnes (Measured), 218.7 million tonnes (Indicated) and 997 million tonnes (Inferred). The JORC reporting tables and Competent Person statement for the magnetite and hematite mineral resources have previously been disclosed in ASX market announcements dated 12 August 2020 and 5 December 2019. Macarthur has prominent (~721 square kilometer tenement area) gold, lithium and copper exploration interests in Pilbara region of Western Australia. In addition, Macarthur has lithium brine Claims in the emerging Railroad Valley region in Nevada, USA.

About LAVO Hydrogen Technology Holding Pty Ltd

LAVO Hydrogen Technology Pty Ltd is an Australian company headquartered in New South Wales. Its cornerstone investors are leading ESG investment firm Providence Asset Group (PAG) and the University of New South Wales (UNSW). Together with UNSW, PAG established the Hydrogen Energy Research Centre (HERC). HERC is the world's leading university-industry partnership in hydrogen technologies with a main purpose of translating the university's leading research in hydrogen production, storage and use into real world commercial products under the brand name 'LAVO'. LAVO uses an innovative, patented metal hydride to produce hydrogen energy batteries. The LAVO Hydrogen Energy Storage System successfully completed laboratory prototype testing at HERC in early 2020, leading to market readiness and subsequent commercialization lead by PAG. LAVO is establishing local manufacturing in Australia during 2021. As part of this initiative, LAVO intends to establish electrolyser and fuel cell manufacturing facilities in Australia utilizing advanced European technology to optimize the value chain and maintain competitive advantage through economies of scale and further technology advancement.

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Caution Regarding Forward Looking Statements

Certain of the statements made and information contained in this press release may constitute forward-looking information and forward-looking statements (collectively, "forward-looking statements") within the meaning of applicable securities laws. All statements herein, other than statements of historical fact, that address activities, events or developments that the Company believes, expects or anticipates will or may occur in the future, including but not limited to statements regarding expected completion of the Feasibility Study; conversion of Mineral Resources to Mineral Reserves or the eventual mining of the Project, are forward-looking statements. The forward-looking statements in this press release reflect the current expectations, assumptions or beliefs of the Company based upon information currently available to the Company. Although the Company believes the expectations expressed in such forward-looking statements are based on reasonable assumptions, such statements are not guarantees of future performance and no assurance can be given that these expectations will prove to be correct as actual results or developments may differ materially from those projected in the forward-looking statements. Factors that could cause actual results to differ materially from those in forward-looking statements include but are not limited to: unforeseen technology changes that results in a reduction in iron or magnetite demand or substitution by other metals or materials; the discovery of new large low cost deposits of iron magnetite; the general level of global economic activity; failure to complete the FS; inability to demonstrate economic viability of Mineral Resources; and failure to obtain mining approvals. Readers are cautioned not to place undue reliance on forward-looking statements due to the inherent uncertainty thereof. Such statements relate to future events and expectations and, as such, involve known and unknown risks and uncertainties. The forward-looking statements contained in this press release are made as of the date of this press release and except as may otherwise be required pursuant to applicable laws, the Company does not assume any obligation to update or revise these forward-looking statements, whether as a result of new information, future events or otherwise.