

ASX ANNOUNCEMENT

9<sup>TH</sup> SEPTEMBER 2020

# MOU FOR VANADIUM OFFTAKE, ELECTROLYTE SUPPLY AND BATTERY SALES AGENCY

*MOU and agreement signed with Enerox GmbH, manufacturer of the CellCube vanadium redox flow battery*

## KEY POINTS

- **AVL signs Memorandum of Understanding with CellCube vanadium redox flow battery (VRFB) manufacturer Enerox GmbH.**
- **VSUN Energy signs Value Added Reseller Agreement with Enerox GmbH.**
- **Extensive Memorandum of Understanding includes development of:**
  - **Vanadium pentoxide offtake arrangements to support global VRFB sales by Enerox;**
  - **A vanadium electrolyte facility in Australia to supply Enerox battery installations and;**
  - **Assistance with arrangement of vanadium electrolyte leasing.**
- **Enerox GmbH is a global market leader of VRFBs based in Austria, with over 100 installations worldwide.**

Australian Vanadium Limited (ASX: AVL, “the Company” or “AVL”) is pleased to announce that it has signed a Memorandum of Understanding (MOU) with Enerox GmbH (“Enerox”). Enerox is a global market leader of VRFB energy storage systems. Enerox designs, develops, manufactures, sells, installs, operates and maintains battery storage projects on a global level in the megawatt range, for grid-connected energy storage and offgrid/microgrid applications, under the brand name CellCube.

The MOU establishes a cooperative environment to establish binding agreements for offtake of vanadium products from the planned Australian Vanadium Project at Gabanintha (“the Project”) to support global sales and services of Enerox’s well known VRFB product CellCube. Australian based sales of VRFBs will be supported by the development of a vanadium electrolyte blending facility by AVL. AVL will also assist Enerox with the arrangement of electrolyte leasing on project specific demand.

In addition to the MOU, AVL's 100% owned VRFB-focused subsidiary VSUN Energy has signed a Value Added Reseller (VAR) agreement with Enerox for the supply and installation of CellCube products and services in Australia.

Managing Director, Vincent Algar comments, *"Through AVL's subsidiary VSUN Energy we have developed a strong relationship with CellCube and have experience with the excellent quality of their product. We are delighted to be able to broaden this relationship further, to include future supply of vanadium and vanadium electrolyte from the Australian Vanadium Project as the Project moves towards production. With Enerox developing ever larger VRFB projects around the world and in Australia, the secure supply of high-purity vanadium pentoxide will be crucial for further growth of this reliable energy storage technology as it builds its market presence."*

Alexander Schönfeldt, CEO of Enerox/CellCube comments, *"I am very happy we are growing our Australian business with VSUN Energy as our local partner. Having 3 systems already in the region and taking the Covid situation into account, it is for us and our clients very important to have a trusted partner in Australia who is trained on our systems and who we have known for many years. For the increasing demand of long duration energy storage specifically in hot and remote areas, the Vanadium Redox-Flow technology in combination with renewables is the best solution. Having a local supply chain and value creation will be a major benefit for the people and business in Australia."*



**Figure 1 Solar and CellCube VRFB installation at a commercial and industrial site © Enerox**

The key terms of the MOU and the VAR agreement are:

- The MOU is non-binding.
- Extensive Memorandum of Understanding includes development of:
  - Vanadium pentoxide offtake arrangements to support global VRFB sales by Enerox;
  - A vanadium electrolyte facility in Australia to supply Enerox battery installations and;
  - AVL's assistance with arrangement of vanadium electrolyte leasing.
- One or more formal and binding agreements concerning the above matters are to be finalised by the six-month anniversary of the MOU's execution.
- Each party must pay its own costs in relation to the MOU and any agreements contemplated by the MOU.
- The VAR agreement provides VSUN Energy with the non-exclusive right to market, sell and install Enerox products in Australia.
- The agreement does not preclude VSUN Energy from marketing VRFBs from other suppliers, but provides protection for Enerox's commercial information which will be extended to other manufacturers in similar agreements.
- The agreement is for a term of 2 years, with a 2-month notice period on either side for termination.



**Figure 2 Solar, wind and VRFB installation © Enerox**

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The VRFB was invented in the 1980s by Emeritus Professor Maria Skyllas-Kazacos at the University of New South Wales (UNSW) where a CellCube VRFB has been installed.

The battery's characteristics mean that it is suited to stationary energy storage paired with renewable energy generation. The product is non-flammable and has the ability to provide almost unlimited cycles without degradation in performance. The power and energy can be scaled separately, with the energy component provided by two tanks of vanadium electrolyte. This simplifies the management of the battery's charge.



**Figure 3** *Installing a 10kW/100kWh VRFB at a native tree nursery in Busselton, Western Australia*

The Enerox CellCube has been installed in many locations around the world, with an installation of a 10kW/100kWh system in Busselton by VSUN Energy being the second CellCube VRFB to be installed in Australia.

For further information, please contact:

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*This announcement has been approved in accordance with the Company's published continuous disclosure policy and has been approved by the Board.*

## ABOUT AUSTRALIAN VANADIUM LIMITED

AVL is an Australian-owned resource company focused on production of high value vanadium products in Australia. AVL is seeking to offer investors a unique exposure to all aspects of the vanadium value chain – from resource through to steel and energy storage. AVL is advancing the development of its world-class Australian Vanadium Project and intends to produce a value-added vanadium product in Australia prior to sale to steel, battery and specialty chemical customers.

The Australian Vanadium Project one of the highest-grade vanadium projects being advanced globally, with 208.2Mt at 0.74% vanadium pentoxide ( $V_2O_5$ ) and containing a high-grade zone of 87.9Mt at 1.06%  $V_2O_5$  reported in compliance with the JORC Code 2012<sup>1</sup>.

AVL has developed a local production capability for ultra-high purity vanadium electrolyte, which forms a key component of vanadium redox flow batteries (VRFB). AVL, through its 100% owned subsidiary VSUN Energy Pty Ltd, is actively marketing the VRFB in Australia.

*The company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and, in the case of estimates of Mineral Resources or Ore Reserves, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.*

## ABOUT ENEROX GmbH

Enerox, is one of the world's first and largest researchers, developers, manufacturers and distributors of vanadium redox flow batteries. Enerox is an industry leader – well known under its product brand CellCube in the energy storage sector and is headquartered in Wiener Neudorf, Austria.

With more than 100 installations globally, the company can refer to substantial industry experience and a decade of operational experience. The technology has been proven to deliver long lasting energy storage which is rated for 20-30 years and infrastructure for deployment in a wide range of applications including: grid storage and micro grid; off grid storage for solar and wind; time shift; diesel power replacement; back-up power; farming; electrical vehicle charging stations; industrial plants; office buildings and emergency power sources.

<sup>1</sup> See ASX announcement dated 4th March 2020 'Total Vanadium Resource at The Australian Vanadium Project Rises to 208 Million Tonnes'

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## APPENDIX 1

The Australian Vanadium Project – Mineral Resource estimate by domain and resource classification using a nominal 0.4% V<sub>2</sub>O<sub>5</sub> wireframed cut-off for low-grade and nominal 0.7% V<sub>2</sub>O<sub>5</sub> wireframed cut-off for high-grade (total numbers may not add up due to rounding).

	Category	Mt	V <sub>2</sub> O <sub>5</sub> %	Fe %	TiO <sub>2</sub> %	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	LOI %
<b>HG</b>	Measured	10.1	1.14	43.9	13.0	9.2	7.5	3.7
	Indicated	25.1	1.10	45.4	12.5	8.5	6.5	2.9
	Inferred	52.7	1.04	44.6	11.9	9.4	6.9	3.3
	<b>Subtotal</b>	<b>87.9</b>	<b>1.06</b>	<b>44.7</b>	<b>12.2</b>	<b>9.2</b>	<b>6.8</b>	<b>3.2</b>
<b>LG 2-5</b>	Indicated	44.5	0.51	25.0	6.8	27.4	17.0	7.9
	Inferred	60.3	0.48	25.2	6.5	28.5	15.3	6.7
	<b>Subtotal</b>	<b>104.8</b>	<b>0.49</b>	<b>25.1</b>	<b>6.6</b>	<b>28.0</b>	<b>16.1</b>	<b>7.2</b>
<b>Trans 6-8</b>	Inferred	15.6	0.65	28.4	7.7	24.9	15.4	7.9
	<b>Subtotal</b>	<b>15.6</b>	<b>0.65</b>	<b>28.4</b>	<b>7.7</b>	<b>24.9</b>	<b>15.4</b>	<b>7.9</b>
<b>Total</b>	Measured	10.1	1.14	43.9	13.0	9.2	7.5	3.7
	Indicated	69.6	0.72	32.4	8.9	20.6	13.2	6.1
	Inferred	128.5	0.73	33.5	8.8	20.2	11.9	5.4
	<b>Subtotal</b>	<b>208.2</b>	<b>0.74</b>	<b>33.6</b>	<b>9.0</b>	<b>19.8</b>	<b>12.1</b>	<b>5.6</b>

### COMPETENT PERSON STATEMENT — MINERAL RESOURCE ESTIMATION

The information in this announcement that relates to Mineral Resources is based on and fairly represents information compiled by Mr Lauritz Barnes, (Consultant with Trepanier Pty Ltd) and Mr Brian Davis (Consultant with Geologica Pty Ltd). Mr Barnes and Mr Davis are both members of the Australasian Institute of Mining and Metallurgy (AusIMM) and the Australian Institute of Geoscientists (AIG). Both have sufficient experience of relevance to the styles of mineralisation and types of deposits under consideration, and to the activities undertaken to qualify as Competent Persons as defined in the 2012 Edition of the Joint Ore Reserves Committee (JORC) Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Specifically, Mr Barnes is the Competent Person for the estimation and Mr Davis is the Competent Person for the database, geological model and site visits. Mr Barnes and Mr Davis consent to the inclusion in this announcement of the matters based on their information in the form and context in which they appear.