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Australian Strategic Materials Ltd

ASX Release

Release Date: 26 October 2020

Quarterly Activities Report to September 30 2020

Highlights

ASM Korean Metals Technology

- High purity titanium (Ti) metal 20.8kg produced assaying 99.83%
- Innovative metals process confirms 70% lower energy consumption
- Ziron Tech optimisation increases metal efficiency by 50%
- Significant environmental benefits of innovative metal process confirmed
- Production of 7.6kg of neodymium metal at 99.8% purity
- Production of 5.3kg praseodymium metal assaying 99.3% purity
- Production of 9.2kg of titanium metal powder assaying 99.83%
- Production of 9.0kg of Neodymium Praseodymium (NdPr) alloy assaying 99.65%
- Production of 7.5kg of heavy rare earth dysprosium metal assaying 99.53%



Figure 1 : Successful Metal Production - Nd Alloy, Ti Metal Powder, Dy metal

Optimisation of the Dubbo Project

- Work completed on initial flotation test work programme to deliver an increased ore feed grade to the solvent extraction plant. The integration of flotation into the proven flowsheet is a key part of targeting a reduction in the capital and operating costs for the development of the Dubbo Project.
- Production of metals from the Dubbo Project products have confirmed the proven flowsheet.
- Key products defined as zirconia, dehafniated zirconia for zirconium metal production and hafnium oxide; rare earths in the form of oxides for neodymium, praseodymium, dysprosium and terbium, and niobium.
- Hatch engineering has been engaged to complete the optimisation study by the end of the first quarter 2021.

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Corporate

- Successful demerger from Alkane Resources Ltd
- Cash position totalled A$ 16.5M.
- Acquisition of a 95% interest in joint venture partner Ziron Technology Corporation (Ziron Tech)
- Ziron Tech acquisition gives ASM ownership of all associated intellectual property including patented metal-refining technology
- Ziron Tech team will continue development of metallisation technology within ASM

DUBBO PROJECT OPTIMISATION

With the successful metal production of key products for the Dubbo Project, ASM is progressing its optimisation of the 2018 Study to its construction ready, approved project to further improve the solid business case.

ASM has now confirmed the integrated business plan of "mine to manufacturing", following successful production of key metals at the pilot plant in Korea. The optimisation of the demonstrated flowsheet is targeting improvements in both the capital and operating costs. This can best be illustrated in the products within the zirconia circuit to significantly reduce the percentage of zirconium oxychloride (ZOC) produced, with the production of zirconium metal in a more cost-efficient manner and importantly the recovery of hafnium for metallisation. Potential benefits would be the reduction in the size of the brine concentrator area, water recovery, and residue treatment with potential reduction in reagent costs positively impacting operating costs.

ASM has engaged Hatch Engineering to complete the optimisation of the 2018 Study with a final report due at the end of Q1 2021.

The ASM technical team are progressing the completion of key process review and documentation that required for due diligence process related to financing. This includes the updating and confirmation of capital and operating costs to current rates. In addition, work on detailed operational readiness and project execution plans are being progressed as a part of the larger optimisation study.

ASM METALS BUSINESS

During the quarter ASM entered into a binding heads of agreement (HOA) to acquire 95% of its joint venture partner Ziron Technology Corporation (Ziron Tech), which owns patented low emission, high purity metal-refining technology (see ASX Announcement 2 September 2020). The patented technology is a more environmentally friendly, sustainable and cost-effective alternative to existing conventional, energy-intensive metallisation processes. ASM will also acquire the pilot plant constructed in 2020 to confirm the technology.



Figure 2: ASM's Ziron Tech Team

In collaboration with Ziron Tech, ASM has successfully produced the key permanent magnet metals neodymium, praseodymium, neodymium-praseodymium alloy and dysprosium using its innovative metallisation process. In addition, ASM has also produced other highly valuable technical metals; titanium metal, titanium metal powder, and zirconium metal.



Figure 3: Ziron Tech Pilot Plant - Korea 2020

Ziron Tech (95% owned by ASM) has received confirmation that the laboratory sample of dehafniated zirconium metal previously produced from Dubbo ore and submitted to the Korean Atomic Energy Institute (KAERI) meets the standards set by them that are crucial for the Korean market, with further work planned to produce 2 tonnes of high purity dehafniated zirconium (Zr) before the end of the year (see ASX Announcement 15 October 2020).

ASM is now progressing the production of 200 kg of NdPr metal as part of an initiative between Ziron Tech and the Korea Institute of Industrial technology (KITECH) to produce 600 kg of sintered permanent magnet samples for Korean industry (see ASX Announcement 8 September 2020). This will provide a clear path towards South Korean magnet supply chain independence in partnership with ASM, and supply from the Dubbo Project.

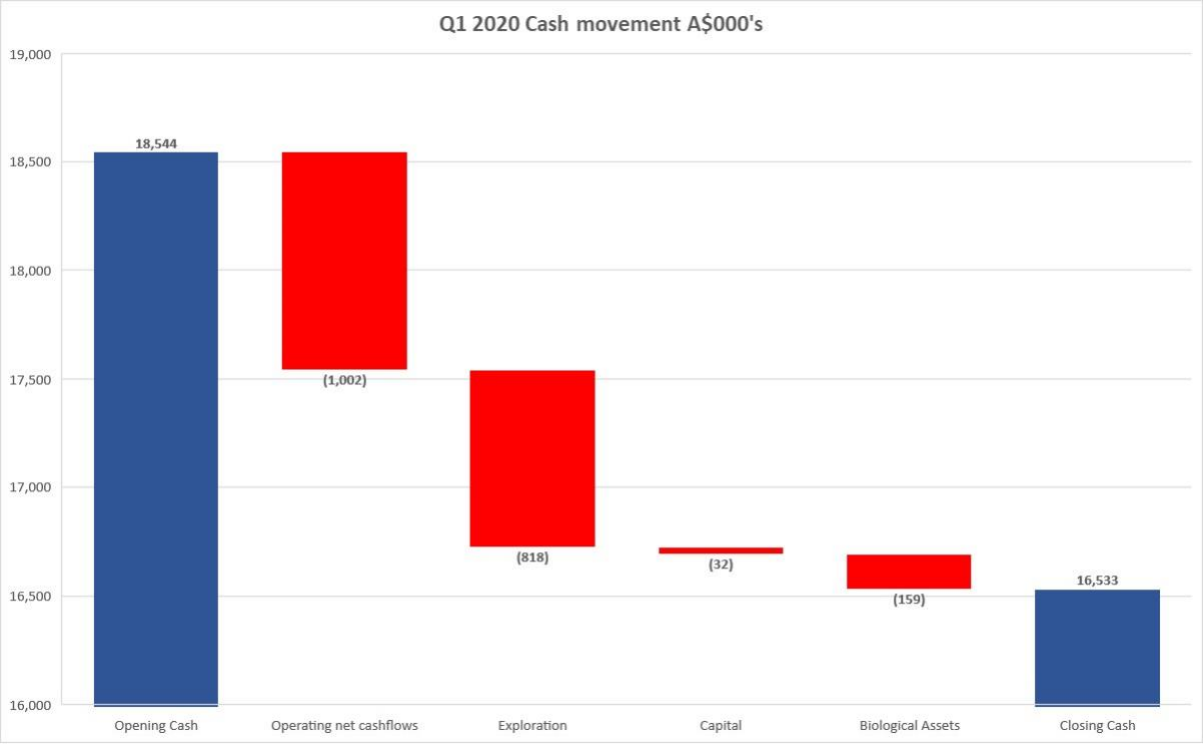
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CORPORATE

Cash

Cash position totalled $16.5M. The below waterfall chart highlights the quarterly movement in cash held.



ASM and Alkane Demerger

The demerger of Australian Strategic Materials (ASX:ASM) and Alkane Resources (ASX:ALK) was successfully completed with the listing on the ASX on 30 July 2020. ASM has performed strongly with share price highs in October 2020 above $4.00 per share and market capitalisation in excess of A$400M-an excellent result for shareholders of ASM and ALK.

PRODUCT MARKETING

The ongoing impacts of the Covid 19 virus on critical metals has been uneven, with the demand, supply and resultant pricing of some elements being affected more than others. The global shutdown of travel and the introduction of hard border quarantine measures has resulted in most airlines grounding fleets, pushing back deliveries of new aircraft, while reducing maintenance requirements for existing aircraft. The flow on effects to the commercial aerospace supply chains have been severe, with many analysts predicting ongoing impacts for years to come. Supply disruptions have also occurred due to lockdowns of mines, processing plants and factories across supply chains, as well as interruptions to shipping and logistics which have slowed or prevented the movements of goods. The automotive industry has also been significantly impacted, but is expected to recover more quickly, particularly the rapidly growing electric vehicle segments. In contrast, the electronics industry has seen a surge in demand with the increasing trend towards working from home and remote learning for education.

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Long supply chains involving processing of materials by multiple companies in different countries has highlighted supply risks, which cannot be easily overcome in the short term. This contrasts with ASM's Dubbo Project which is able to go directly from mine to metals, with full control over the supply chain. The table below shows indicative prices for ASM's rare earth metals used in permanent magnets, plus other key Dubbo Project elements, which include zirconium, hafnium, and niobium, as well as titanium alloy used in aerospace. With the ongoing success of ASM's commercial metallisation pilot plant in South Korea, it is now more meaningful to reference downstream value-added metals and alloy prices instead of chemicals or oxides as most Dubbo Project elements are ultimately consumed as metals or alloys.

Material[1]		Dec 2019	Mar 2020	Jun 2020	Sep 2020
Rare Earth Permanent Magnets	US$/kg	$45.6	$48.9	$45.7	$46.0
Neodymium-Praseodymium Metal	US$/kg	$51.3	$49.8	$50.6	$61.6
Dysprosium Metal	US$/kg	$297.5	$375.0	$342.0	$337.0
Terbium Metal	US$/kg	$644.5	$769.0	$787.0	$920.0
Zirconium Sponge	US$/kg	$34.2	$34.2	$24.5	$20.8
Fused Zirconia (98.5% ZrO_2)	US$/t	$3,830	$3,790	$3,750	$3,680
Zirconium Oxychloride (36.0% ZrO_2)	US$/t	$2,130	$2,130	$2,060	$1,950
Hafnium Metal (<1% Zr)	US$/kg	$775.00	$785.00	$775.00	$775.00
Ferro Niobium (65% Nb) [2]	US$/kg	$39.00	$37.25	$35.00	$34.80
Titanium Ingot (Ti 6Al 4V)[3]	US$/kg	$22.65	$22.65	$17.41	$18.19

Sources: Argus Metals and Asian Metal. 1. All prices are FOB China, unless otherwise noted, 2. Du Rotterdam, Netherlands, 3. FOB United States, 4. US$1.00=Yuan 6.73

China's exports of rare earth permanent magnets have been flat with average prices remaining stable. As rare earth permanent magnets contain approximately 31% rare earth metals the potential additional value received through the production of permanent magnets realises an NdPr equivalent price increase from an average price of US$46/kg to US$148/kg on a contained rare earth metals basis. Prices for neodymium-praseodymium metal, the key constituent in rare earth permanent magnets, increased in the September quarter, while prices for the key heavy rare earths metals dysprosium and terbium have continued to trend upwards, with terbium metal increasing by over 40% this year.

Prices for other metals have remained relatively stable, with the exception of industrial grade zirconium sponge from China which has dropped significantly as small producers reduce stocks to boost cash flow. Softer prices for zirconium oxychloride (ZOC) in the September quarter were a result of softer zircon prices, reduced demand, and small ZOC producers reducing inventory. ZOC is the key zirconium chemical for the high purity zirconium chemicals, powders, and metals.

Hafnium metal prices have been stable, with limited supply sources available and growing demand in some new and existing applications. ASM continues to receive significant enquiries for hafnium oxides and metals, with opportunities for value added hafnium metals being evaluated at the commercial pilot plant. Ferro niobium prices remained stable in the September quarter, and have fallen only moderately this year.

Mining Tenements

Australian Strategic Materials Limited confirms the following information as at 30 September 2020 (as required by ASX Listing Rule 5.3.3).

Tenements	Mining tenements acquired during the quarter	Mining tenements disposed during the quarter	Mining tenements held at the end of the quarter	Tenement location
EL 5548			100%	Dubbo NSW
EL 7631			100%	Dubbo NSW
ML 1724			100%	Dubbo NSW

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This document has been authorised for release to the market by David Woodall, Managing Director.

About Australian Strategic Materials – www.asm-au.com

ASM is focused on producing specialty metals and oxides for advanced technologies and is the 100% owner of the Dubbo Project.

Located in central-western NSW, ASM's cornerstone Dubbo Project has a long-term resource of zirconium, rare earths, niobium and hafnium– a globally significant source of these critical materials for a diverse range of emerging and sustainable technologies.

ASM, together with its partners, is advancing oxide separation and metallisation technologies to create a range of value-added materials from the Dubbo Project. ASM's pilot plant in South Korea has been completed with successful production of titanium, neodymium, praseodymium and dysprosium metal. ASM's innovative metallisation process is energy efficient (titanium production uses 70% less energy) and has significant environmental advantages than the industry standard Kroll process.

ASM is progressing an optimisation study with key products for metallisation having been defined to be supplied from the Dubbo Project, and with the potential inclusion of flotation that has potential to positively impact the capital and operating costs of the project, along with increasing the revenue stream. The metals feasibility study is planned to be completed by the end of 2020 with the optimisation study to be completed by the end of Q1 2021.

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