

Alpha **HPA**

ASX: **A4N**
ASX Announcement
29 January 2020

The Manager Companies
ASX Limited
20 Bridge Street
Sydney NSW 2000

(5 pages by email)

REPORT ON ACTIVITIES FOR THE QUARTER ENDED 31 DECEMBER 2019

HIGHLIGHTS

PHASE 3 PILOT PLANT PRODUCTION RUN SUCCESSFULLY COMPLETED

- 3rd phase Pilot Plant production run undertaken to meet additional demand volume from end-users
- Successful trialling of alternative feedstocks sourced from potential WA and QLD suppliers
- Over 600 hours of Pilot Plant operating time, with consistent purity improvement

US BASED MILLING FACILITIES SUCCESSFULLY COMMISSIONED, HPA SAMPLES DESPATCHED

- Dedicated jet mill successfully commissioned in Binghamton, New York, USA
- Testing confirmed capabilities to deliver desired Particle Size Distribution (PSD) with milled samples successfully passing quality controls for purity (>99.99%)
- HPA samples from Pilot Plant campaign now distributed to several potential offtake partners

SUCCESSFUL PRODUCTION OF BOEHMITE

- Successful manufacture of crystalline high purity boehmite
- Boehmite process developed in consultation with a Japanese lithium-ion separator manufacturer
- Larger boehmite batch runs currently under production for end-user qualification testing

CHEMICAL COUNTERPARTY DISCUSSIONS ADVANCED

- Significant progress made in negotiations with select chemical counterparties for supply of key process reagents and by-product offtake
- Chemical counter party selection a final precursor to site selection and DFS completion

TESTWORK COMMENCED IN COLLABORATION WITH GERMAN RESEARCH GROUP

- Collaborative research program identifies two new applications for HPA inside lithium-ion cells
- Testwork underway in Germany to confirm suitability of Alpha's HPA to these new applications

HPA FIRST DFS NEARING COMPLETION

- All design and engineering steps complete
- Final OpEx and CapEx estimation underway

OPERATIONS

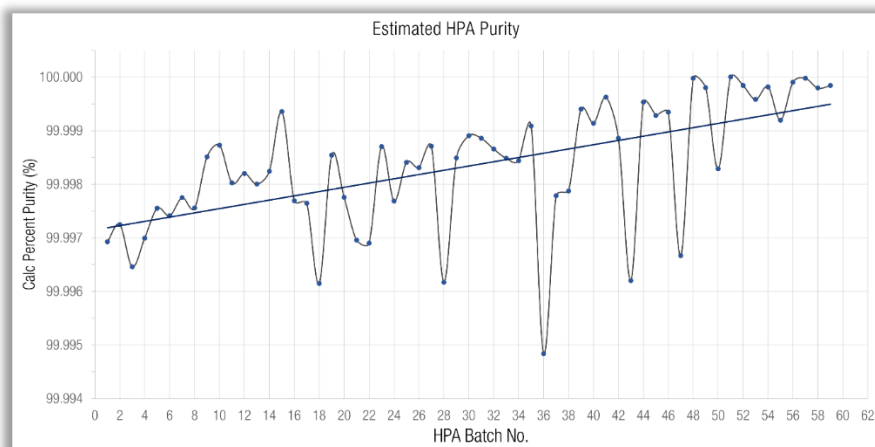
HPA FIRST PROJECT

Pilot Plant Production Run (Campaign 3)

A 3rd Pilot Plant production run (Campaign 3) was commenced in the second week of November, with the 1st stage (Campaign 3A), being the Solvent Extraction (SX) operation and the production of aluminium salt. In total Campaign 3A produced approximately 250kg of very high-purity intermediate aluminium salt, with the SX component of the campaign featuring a switching between feedstocks sourced from both WA and QLD to assess process performance of the two most likely feedstocks once the final project location is determined. Both feedstocks performed equally robustly, with no discernible variation in process conditions, extraction percentage or salt purity. The robustness, selectivity and longevity of the SX organic was also confirmed with all organics from previous campaigns recycled for Campaign 3 surviving over 600 operating hours.

Campaign 3B was also completed in the quarter which saw the Aluminium Salt from campaign 3A successfully converted into HPA-precursor. This pre-cursor has since been calcined and jet milled (to a desired particular particle size distribution) and distributed for end-user qualification testwork and HPA research programs. Campaign 3 was undertaken principally to meet additional product demand required from end-users.

The entire 2019 Pilot Plant production (Campaigns 1, 2 and 3) comprised over 600 hours of operating time and included the production of 62 individual batches of HPA pre-cursor. Assays of all 62 batches of HPA pre-cursor, which are predictive of final HPA purity before calcination and milling, show the implied HPA purity progressively improving over the Pilot Plant life, and now reaching 5N (99.999%) purity (see below).



USA based HPA milling operations fully commissioned

During the quarter the Company's dedicated jet mill was successfully installed and commissioned within a battery lab in Binghamton, New York, USA. Commissioning included multiple milling runs using both sacrificial HPA and also the Company's Pilot Plant HPA to confirm operating conditions to deliver the desired Particle Size Distribution (PSD) at near zero measurable contamination ahead of distribution to end-users. Milled samples successfully passed quality controls for purity (>99.99%).



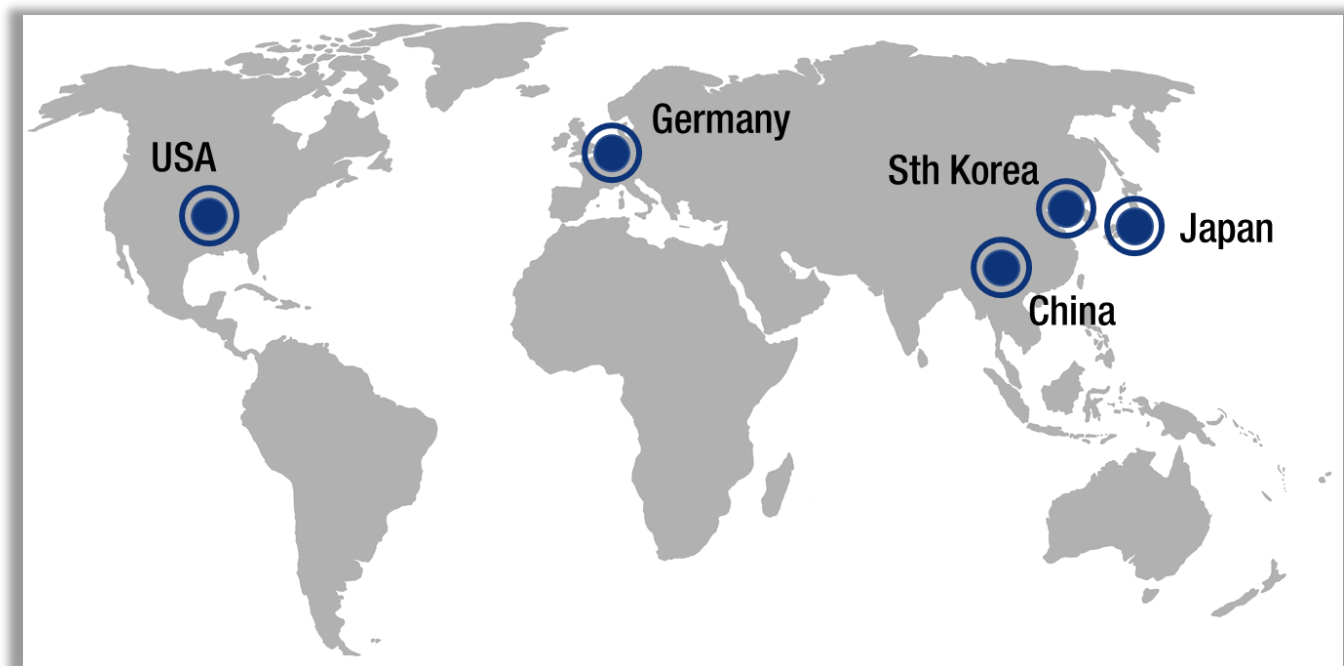
Alpha's dedicated Jet mill installation – Binghamton, USA

HPA End Users

The Company continued its market outreach program into the application of HPA in the lithium-ion battery and LED sectors and has identified a number of large HPA end-users in multiple jurisdictions, including USA, Germany, Japan, Sth Korea, Japan and China.

Ongoing dialogue has resulted in the Company having a sound understanding of individual customer specifications and desired volumes. Milled product from the Company's HPA First Pilot program has now been distributed to these potential offtake partners for commercial qualification testwork.

Alpha HPA's market outreach has continued in the March quarter, including a marketing trip to South Korea in January 2020, where several new potential end user relationships were established and product samples were requested.



HPA samples have been distributed to end-users in multiple jurisdictions

Successful Boehmite production

In consultation with a significant Japanese lithium-ion battery separator manufacturer, Alpha HPA successfully manufactured crystalline, high-purity boehmite (aluminium-oxide-hydroxide) using the HPA First process. Boehmite represents the only material, other than HPA, used in significant volumes in the manufacture of ceramic coated separators (CCS) for the lithium-ion battery market. The Company is currently completing larger scale batch production of high-purity boehmite to provide sufficient sample for assessment by the Japanese separator manufacturer and other potential end-users who have subsequently expressed interest in this product.

German research collaboration identifies two new key HPA growth markets

During the quarter Alpha HPA completed a collaborative research program with a German based research group which identified two exciting new applications for HPA inside lithium-ion cells. In each case the new applications have absolute (>4N) purity requirements and the potential for large volume demand.

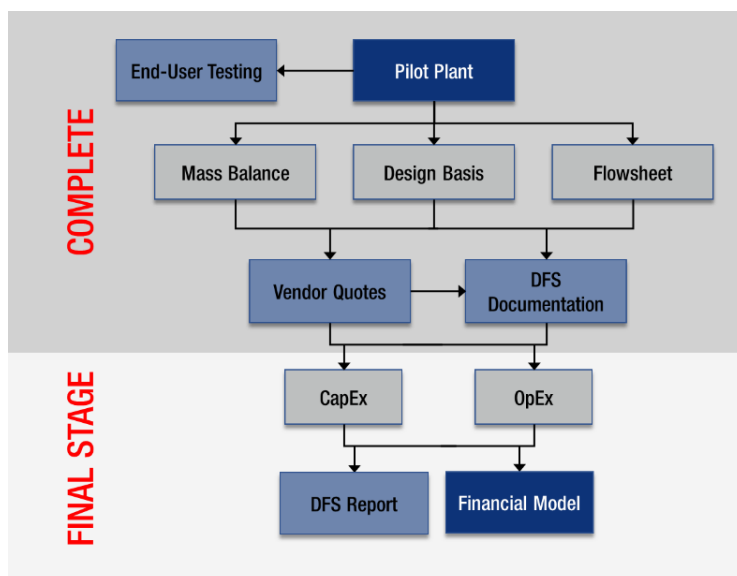
In response, Alpha HPA and the German group have commenced a testwork program in Germany to confirm the suitability of the Company's HPA for these new applications. Samples have been despatched and results are expected in February 2020.

Chemical counterparty discussions

The December quarter saw the Company make significant progress with its engagement with a select group of potential chemical counterparties to the HPA First Project with discussions directed at reaching agreement on terms for the supply of key process reagents and the offtake of the process by-product. As this agreement will dictate the final project location and influence the project interface engineering, labour and project support costs, the Company is seeking to complete negotiations with a chemical counterparty immediately prior to finalising the HPA First Definitive Feasibility Study (DFS).

HPA First DFS Update

Alpha HPA has completed all the key engineering and design stages of the HPA DFS and is now in the final stages of detailed capital cost (CapEx) and operating costs (OpEx) estimation, as per the graphic below.



Final CapEx and OpEx estimates remain subject to final value engineering and finalisation of the chemical counterparty selection. The DFS is expected to be released midway through the March 2020 quarter.

COLLERINA PROJECT – NSW (100% Alpha HPA and subject to commodity split agreement)

In line with the Company's plans to focus on advancing the HPA First project, no exploration activities were undertaken at the Collerina project during the quarter.

WONOGIRI PROJECT – INDONESIA (45% Alpha HPA)

A further extension to the licence suspension was granted at the end of 2019. This will remain in effect until January 2021, allowing work on the AMDAL (environmental impact statement) to be completed, and an application then to be made for a 20 year operation/production licence.

CORPORATE

FY19 R&D Rebate of \$684K Received

In December 2019 the Company received a \$684K R&D rebate, for activities related to the HPA first Project in FY 2019.

Option Conversion

During the December quarter, 30M options, each exercisable at \$0.10, were converted into ordinary shares in the Company resulting in \$3M being added to the Company's treasury. 17.1M of these options were held by the Alpha HPA Board and management team.

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About the HPA First Project

The Company's HPA First Project represents the evaluation and intended commercialisation of the production of ~10,000tpa of high purity alumina (HPA) using the Company's proprietary licenced solvent extraction and HPA refining technology. The technology provides for the extraction and purification of aluminium from an industrial feedstock to produce 4N (>99.99% purity) alumina for the intended use within the lithium ion battery and LED lighting industry. Following a successful testwork program and Pre-Feasibility Study (PFS), updated in March 2019, Alpha HPA has now completed its pilot plant program at its dedicated laboratory facility in Brisbane, with the definitive Feasibility Study (DFS) due for delivery early in the March quarter 2020.

Competent Persons Statement (Process Development Testwork)

Information in this announcement that relates to metallurgical results is based on information compiled by or under the supervision of Dr Stuart Leary, an Independent Consultant trading as Delta Consulting Group. Dr Leary is a Member of The Australasian Institute of Mining and Metallurgy (AusIMM). Dr Leary has sufficient experience to the activity which he is undertaking to qualify as a Competent Persons under the 2012 Edition of the 'Australasian Code for reporting of Exploration Results, Mineral Resources and Ore Reserves'. Dr Leary consents to the inclusion of the technical data in the form and context in which it appears.

For further information on testwork results and processes see ASX announcements dated: 23 December 2019, 10 December 2019, 10 October 2019, 23 September 2019, 28 August 2019, 5 August 2019, 25 July 2019, 2 July 2019, 1 July 2019, 3 June 2019, 17 April 2019, 7 March 2019, 4 December 2018, 20 November 2018, 6 September 2018, 31 August 2018, 9 July 2018, 30 April 2018, 26 April 2018, 21 March 2018, 6 March 2018, 21 February 2018, 8 December 2017, 30 November 2017, 29 November 2017, 24 November 2017 and 13 November 2017.