

Alpha **HPA**

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ASX: **A4N**
ASX Announcement
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(6 pages)

HPA FIRST PROJECT UPDATE **SUPPLYING DE-CARBONISATION**

STAGE 1 – PPF

- **Al-nitrate production reaching ~100 tonnes at target 5N (99.999%) purity**
- **Demo-scale, custom HPA tablet manufacture established**
- **HPA circuit equipment manufacture well underway**
- **First equipment deliveries for HPA circuit received**
- **Solar array quotations under assessment**
- **Second tranche CMDP payment received**

PRODUCT MARKETING

- **Scaled up HPA order delivered to key Li-B cathode counterparty**
- **Multiple test orders from semiconductor and specialty glass sectors**
- **Collaborative CMP testwork underway with semiconductor counterparty**
- **5N purity achieved for Alpha's alumina tri-hydrate (ATH)**
- **Multiple product requests from existing HPA producers**
- **Alpha's 5N Al-nitrate outperforms in next generation micro-LED phosphor**
- **HPA product orders delivered for lithium extraction application**
- **14 new testwork samples and sales generated from Korean Battery Show**

FULL SCALE PROJECT

- **Multi-product engineering advanced**
- **Project financing negotiations advanced**

The Board of Alpha HPA Limited ('Alpha' or 'the Company') is pleased to provide an update on project activities for its HPA First Project, representing the commercialisation and production of critical high purity aluminium products driving de-carbonisation.

The Company's Stage 1, Precursor Production Facility (PPF) in Gladstone, QLD is in production for 5N purity aluminium nitrate (Al-nitrate) precursors with an expansion underway to produce Alpha's full product offering.

The Company is concurrently satisfying the remaining conditions precedent to the full-scale Project Final Investment Decision (FID), with a focus on product sales, offtakes and project financing.

STAGE 1 – PPF

HPA circuit expansion

Alpha continues to rapidly deploy the \$15.5 million grant awarded under the Critical Minerals Development Program (CMDP) to expand the capability of the Stage 1 PPF to include Alpha's full high purity aluminium product range. All major equipment orders are now finalised and under construction (see example images on following page). First deliveries of HPA circuit equipment have been received at site.

In addition, quotations for manufacture and installation of the Stage 1 PPF rooftop solar array have been received and are under assessment ahead of contract award.

As per ASX announcement of 18 April 2023, Alpha has now received both the first and second tranche payments under the CMDP grant.

Once fully deployed, the CMDP grant funding will facilitate:

- the expansion of Stage 1 PPF production capacity of aluminium nitrate and aluminium sulphate;
- the capability to produce up to 10tpa of additional capacity of HPA production;
- the capability to produce up to 10tpa of additional capacity of High Purity Boehmite production;
- production of HPA tablets for sapphire glass growth; and
- installation of a large rooftop solar array and short term battery storage capacity.

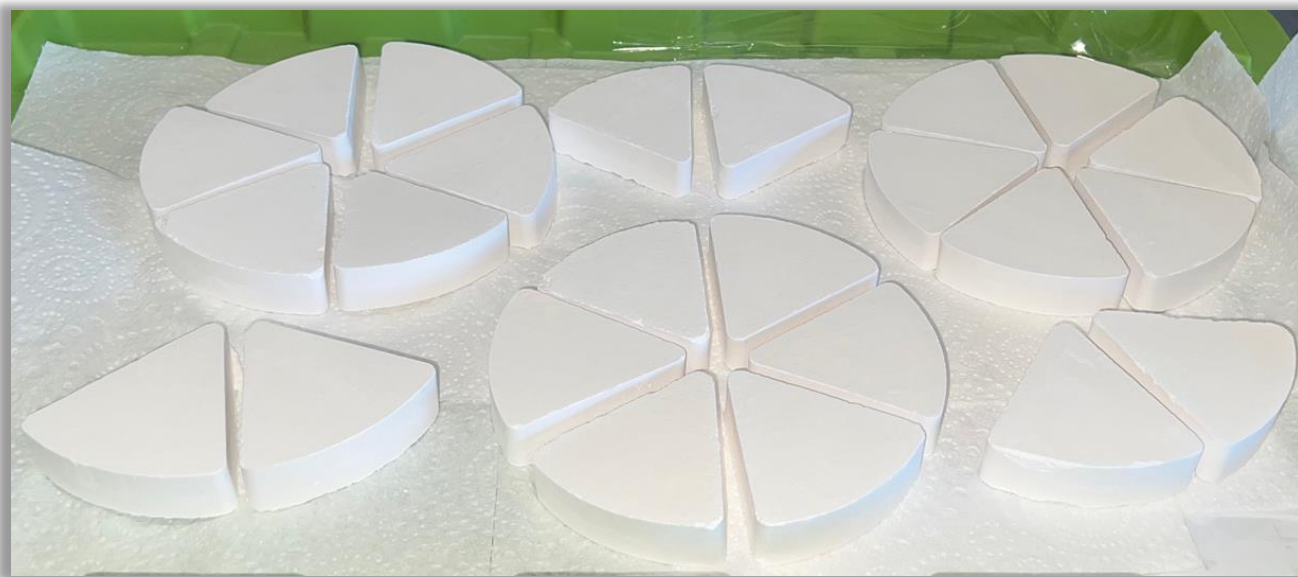
Layout and progress of the HPA circuit expansion is presented as a 3D schematic on page 3 of this announcement.

Stage 1 production

Production of high purity Al-nitrate has continued, with cumulative Al-nitrate production having now reached approximately 100 tonnes at the target 5N (99.999%) purity level. Production levels are being maintained at around 850kg per day, as the conversion of Al-nitrate into additional product lines ramp up.

Ahead of the commissioning and installation of the Stage 1 HPA circuit, the Stage 1 PPF is now also at steady state for demonstration scale production of 4N purity gamma phase alumina and alpha phase aluminas, as well as the production of custom-shaped sintered HPA tablets for Ebner-Fametec (refer ASX: 23 March 2023).

These production lines are now servicing approximately 500kg of HPA product orders across a range of potential customers.



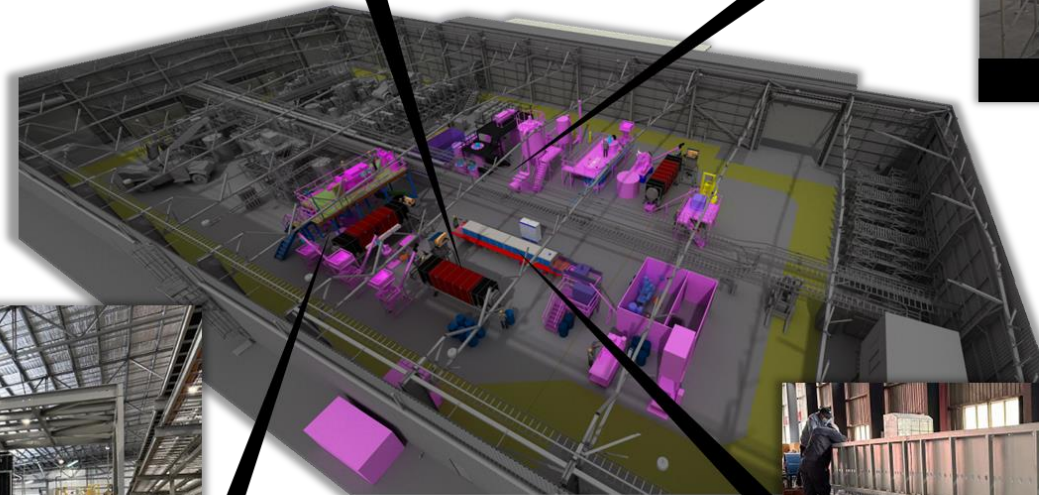
Production of custom shaped, sintered HPA tablets (+4N5 purity) for Ebner-Fametec



Rotary HPA Kilns



Boehmite spray dryer



HPA Precursor Structural Steel Module



HPA Tunnel Kiln

3D schematic of the Stage 1 PPF showing installed and operating equipment in greyscale and equipment being installed in pink (the HPA products equipment). Call out windows show construction progress of key equipment.

PRODUCT MARKETING

Scaled up HPA order delivered to key Li-B cathode counterparty

As part of the of qualification testwork with an EU based cathode manufacturer, Alpha recently delivered a larger volume HPA test sample for the third phase of testwork. The ability to supply these larger volumes has been enabled through the larger volume production capacity of the Stage 1 PPF.



Large volume HPA test order for Li-B cathode end-user

Semiconductor sector marketing

Alpha has continued to receive test orders for its nano-alumina powders for application within the semiconductor sector for CMP (Chemical Mechanical Polishing) slurries. Alpha has shipped approximately 13kg of nano-alumina powders to CMP end-users in the last month, with a further 2 orders currently under manufacture.

In addition, Alpha is running various bespoke CMP slurry trial formulations in collaboration with a major CMP manufacturer.

5N purity achieved for Alpha's alumina tri-hydrate (ATH)

External, third-party assays on Alpha's recent ATH production has formally confirmed 5N (>99.999%) purity. Purity levels were confirmed by the industry standard glow discharge mass spectroscopy (GDMS) technique, with a total of 73 metals assayed totalling 6 parts per million metal impurities. This is potentially very significant in marketing to end-users utilising ATH as a precursor for specialty HPA product lines.

Multiple product requests from existing HPA producers

Alpha has received and despatched multiple products in response to requests from existing producers of high purity alumina based in Japan and the EU. Samples include various aluminas as well as Alpha's recently developed 5N purity ATH product.

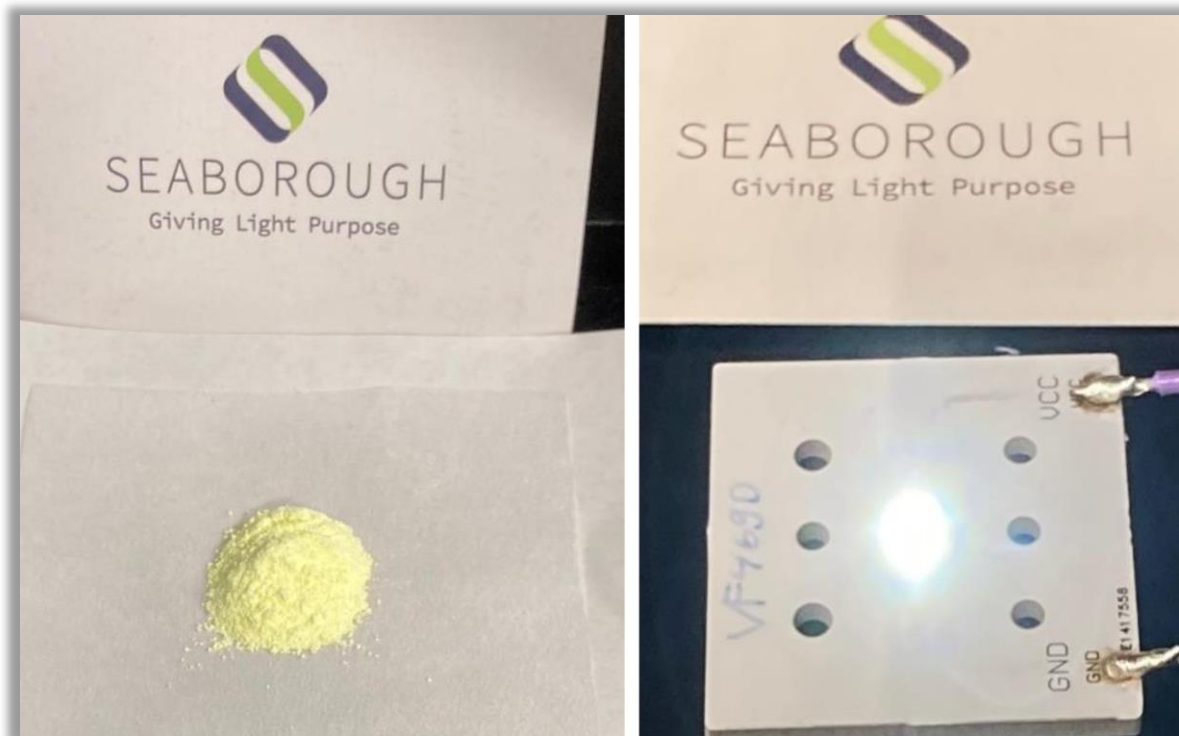
ATH is the first stage product produced via the incumbent alkoxide process used to manufacture HPA from aluminium metal by most established producers.

Alpha's 5N Al-nitrate outperforms in next generation micro-LED phosphor testwork

Alpha has received test results for its Al-nitrate from advanced LED research group, Seaborough, based in the Netherlands. Seaborough are developing the next-generation Euro-LED technology, which uses nano-phosphors to retain high efficiency in 'warm' LED illumination lighting.

Alpha's 5N purity Al-nitrate was used to synthesize the YAG:Ce nano-phosphors used in the Euro-LED and showed superior performance (higher quantum yield) compared to alternative materials.

Seaborough is in the process of commercialising the Euro-LED technology through licensing arrangements with established LED manufacturers.



YAG:Ce nano-phosphors made with Alpha's 5N Al-nitrate (left photo). The same phosphors emitting on top of a mid-power LED chip, showing close to 100% quantum yield (right photo).

HPA product orders delivered for lithium extraction testwork

In March Alpha delivered high-purity gamma alumina and high purity ATH product orders to Europe for testwork in the synthesis of lithium-extraction adsorbents.

Korean Battery Show

Alpha recently attended the Inter Battery Show in Seoul, South Korea. Contact with a number of target end-users and industry intermediaries resulted in a further 14 product test orders, which have been partly fulfilled. Alpha also received a modest HPA sales order (2 x 50kg @ US\$35/kg) now under manufacture at the Stage 1 PPF.

The sentiment amongst participants and agents at the Show confirmed an industry consensus of the tightening supply of the 4N+ HPA sector.

Supplier Onboarding

Alpha is now finalising an independent environment and social sustainability assessment rating as a pre-condition to the supplier onboarding process required by a number of potential end-users.

STAGE 2 – FULL SCALE PROJECT

Multi-product engineering advanced

The Company continues to work on refreshing the full scale Stage 2 facility engineering to accommodate the new product lines. The execution strategy for the project is being developed to optimise costs and leverage contractor knowledge and commercial interest. The estimate for structural, mechanical and piping (SMP) works including wrap around engineering for key vendor packages is progressing well with our SMP partner developing a detailed 3D model for estimating purposes. Early discussions with electrical and instrumentation (E&I) and earthworks/civil contractors are also in progress and the engineering team is updating materials lists to reflect the new layout of the facility.

Project financing negotiations advanced

In conjunction with the engineering design and costing update work, Alpha continues to engage with an array of Project financiers, including industry participants and the Australian and Queensland State Governments, to finalise a financing package for the construction of the full scale Stage 2 Project.

Whilst negotiations are incomplete, Alpha is confident that the HPA First Project sits comfortably in the forefront of the Government's strategy for the development of the critical minerals sector in Australia.

Commenting on recent progress, Managing Director Rimas Kairaitis said:

"Alpha continues to build on the positive momentum in the business and to advance all of the key work streams on the HPA First Project. We look forward to a key few months ahead."

About the HPA First Project

The Company's HPA First Project represents the commercialisation of the production of high purity alumina (HPA) and related high purity aluminium precursor products using the Company's proprietary licenced solvent extraction and HPA refining technology. The disruptive, low-carbon process technology provides for the extraction and purification of aluminium from an industrial feedstock to produce 4N (>99.99% purity) alumina and 5N (>99.999% purity) for sale into high technology markets including semiconductors, lithium-ion battery and LED lighting.

Alpha completed a Definitive Feasibility Study in March 2020 following a successful pilot plant campaign in 2019.

Alpha is now in production at its Stage 1, Precursor Production Facility which has now completed a successful commissioning and entered production ramp-up phase. The Stage 1 facility is also now being expanded to produce the full range of Alpha's high-purity materials with \$15.5M grant funding from the Australian Government.

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