



Alpha **HPA**

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ASX: **A4N**
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HPA FIRST PROJECT UPDATE

SUPPLYING DE-CARBONISATION

STAGE 1 – PPF

- **Facility building at lock-up stage**
- **First phase electrical install nearing completion**
- **Mechanical install of SX near complete**
- **Potable water connection in place**

PRODUCT MARKETING

- **Additional product orders received**
- **High purity nano-alumina process confirmed**
- **Marketing interest builds across the following key industries:**
 - **Li-ion battery sector**
 - **LED and general lighting sector**
 - **Specialty ceramics**
 - **Catalysts**
 - **Sapphire glass for both the LED and optics sectors**

STAGE 2 – FULL SCALE

- **A further two commercial lenders enter EOI's as potential debt financiers**

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.

Alpha is fully funded to commercial production at its Stage 1, Precursor Production Facility (PPF) which is under construction in Gladstone, QLD and scheduled to commence commissioning ahead of production of the Company's high purity Aluminium Precursors from the September quarter 2022.

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

STAGE 1 – PPF

The Company continues to make good progress on the construction of Stage 1 PPF component of the HPA First Project as detailed below:



Stage 1 PPF building at lockup stage



Installation of solvent extraction (SX) circuits

The Stage 1 PPF remains on track for commissioning in the September quarter.

Facility building at lock-up stage

Cladding and roofing of the PPF building is complete with roller door access installed (*refer image above*).

First phase electrical install nearing completion

Interior and exterior lighting is installed and operating. Wiring of the main switch board to the motor controls centres (MCC's) is underway and the CCTV contract has been awarded.

Mechanical install of SX modules

The mechanical installation of the front-end solvent extraction (SX) modules is nearing completion with the final modules delivered to site (*refer image above*).

Potable water connection in place

The site has now been connected to potable water under the supply contract with the Gladstone Area Water Board (GAWB).

PRODUCT MARKETING

Following marketing trips to both existing and prospective customers in the EU and USA, the Company continues to receive and deliver product test orders, collect technical feedback and participate in tonnage, pricing and freight discussions for the commercial supply of its high purity aluminium products. With international travel now possible, additional marketing trips to key target customers are planned for Japan in July and South Korea in August.

Additional product orders received

Twelve test orders were completed and shipped from the Company's Brisbane based demonstration facility in the last two weeks, with a further four follow-on test orders from EU and South Korean based end-users.

Orders which remain under manufacture within the Company's Brisbane facility include:

- High volume (+300kg) orders of sintered HPA pellets for sapphire glass growth
- High purity gamma aluminas and high purity boehmite samples for the catalysts sector
- High purity nano alumina samples for micro-LED phosphor synthesis (see below)

High purity nano-alumina process confirmed

Following extended product development work, Alpha has now confirmed a process for the manufacture of ultra-fine high-purity 'nano'-alumina, with a p50 particle sizing of 300-500 nanometres. The process was developed following multiple end-user requests, predominantly for the use in manufacturing micro-LED phosphors and lithium-ion battery electrode (cathode and anode) particle coatings.

Alpha has already shipped seven samples of high-purity nano-alumina, with a further two product test orders under manufacture in Brisbane.

Product Marketing Summary

The following table summarises the status of marketing activities of selected counterparties within each target sector:

Li-ion Battery Counterparties

- EU based leading cathode materials manufacturer
- Focus on high Ni chemistries.
- Carbon zero supply chain by 2030
- Precursor products under assessment
- HPA powder test samples requested

- Global EU based chemical distributor
- Recently launched battery chemicals division
- Actively marketing Alpha's Al-precursors
- Established relationships with battery sector manufacturers

- Large manufacturer of Electric Vehicles
- Pursuing full vertical integration of battery supply
- NDA in place with products currently under paper screening
- Focus on low carbon supply chain

- US based OEM of ceramic coated separators
- Alpha's HPA powder confirmed as direct swap-out with existing supplier
- Bid prices submitted for 300t per month supply

- Japan based battery OEM
- Alpha HPA products under paper screening
- For internal manufacture of separators

- Japan based graphite anode OEM
- Active coating testwork underway using Alpha's Al-Nitrates
- Coating of graphite anode material using the Al-Nitrate wet-coating process

- North America based, mid-sized, specialist chemical distributor with a focus on battery materials
- Trial marketing of Alpha's Al-Nitrate underway
- Focus on Al-Nitrate for coatings in the anode sector
- Test samples issued

- Cathode active materials developer
- NDA in place
- Imminent commencement of coating testwork– coating of graphite materials using the Al-Nitrate wet-coating process

- EU based materials company – developer of silicon-based anode materials
- Active coating testwork underway – coating of silicon anode material using the Al-Nitrate wet-coating process

Specialty Ceramics/Catalyst Counterparties

- Global materials company
- Multiple testing rounds successful - product now qualified at lab scale
- 1 metric tonne production scale order received – delivery February 2023
- Indicative future demand +500tpa

- European based chemicals manufacturer
- Assessing multiple products for catalyst applications
- +4,000t pa indicated future demand
- Actively seeking to de-carbonise their supply-chain

- Global conglomerate with EU based specialty chemicals division
- Al-Nitrate qualified for third party Li-B customers
- High volume bid pricing for Al-Nitrate supply submitted
- Also testing Alpha's alumina products for catalyst applications

LED Lighting Counterparties

- EU based large global lighting company
- Testing a range of Alpha's alumina products
- First stage testwork showing outperformance vs alternatives
- Indicative demand +50tpa
- Additional test orders shipped in June

- Top 3 global LED OEM
- Alpha's HPA has been qualified for LED phosphor manufacture
- Supply bids submitted – pending confirmation

- EU based LED phosphor manufacturer
- Alpha's 1-10 μ m HPA already qualified and small scale sales initiated (@US\$20-25/kg)
- Small scale end-user, likely maximum demand 10tpa

- LED technology developer – focus on micro-LED's
- First stage testwork of Alpha's Al-Nitrate for nano-phosphors showing outperformance vs alternative
- Will look to licence technology to global LED manufacturers
- Potential for large scale demand

- Japanese manufacturer of metal nitrides for LEDs
- Successful first stage testwork of Alpha's HPA for aluminium-nitride production
- Larger volume test samples requested and under manufacture
- Small scale end-user, likely maximum demand 10tpa

Sapphire Glass Counterparties

- USA – EU based established grower of sapphire glass for optics industry
- Established customer base
- Alpha's pellets qualified through to final end users (watch makers)
- Approximate 20x lift in end-user demand since March 2022
- Seeking to expand rapidly to meet demand
- Indicative +200tpa demand within 4 years

- Subsidiary of established, privately owned, global furnace manufacturer
- +1,400 employees and production sites in Europe, USA and China
- Have developed in-house sapphire crystal growth machines and crystal growth process
- Have established strategic partnerships at both investment and customer level
- Key focus on low-carbon supply in ex-Russia, ex-China jurisdictions
- Focus on LED market, with a particular focus on expanded sapphire demand associated with micro-LED adoption
- Alpha now manufacturing standing order for 3 x 100kg products for qualification
- Indicative 2,000tpa demand within 4 years

- South Korea established grower of sapphire glass
- 20kg order of sintered granules under manufacture in Brisbane
- Demand unknown

- Japan based, global ceramics business – established OEM of sapphire glass
- Standing 25kg order of high density sintered pellets
- Demand unknown

STAGE 2 – FULL SCALE PROJECT

In parallel with the PPF, the Company maintains a number of workstreams directed at completing the remaining conditions precedent to the full-scale HPA First Project FID:

A further 2 commercial lenders enter EOs as potential debt financiers

Alpha is pleased to note that a further two commercial lenders have executed NDAs following an expression of interest to provide debt finance. This is in addition to the continuing due diligence process being advanced with Government lenders.

Alpha's Managing Director Rimas Kairaitis commented "Alpha remains highly encouraged by the continuing degree of engagement with end users. The capacity to directly interface with customers, combined with strong Government support, near term production and Alpha's market leading product continues to build the Alpha brand."

About the HPA First Project

The Company's HPA First Project represents the commercialisation of the production of ~10,000tpa equivalent of high purity alumina (HPA) and related high purity 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 the lithium-ion battery and LED lighting industry.

Alpha completed a Definitive Feasibility Study in March 2020 following a successful pilot plant campaign in 2019. Alpha has since upscaled its Brisbane facility to demonstration scale and has now recorded over 7,000 operating hours and delivered an expanded range of over 90 high purity product orders to end-users globally.

Alpha is fully funded to the commercial production at its Stage 1, Precursor Production Facility which is scheduled to commence commercial production for the Company's high purity Aluminium Precursors from September quarter 2022.

The Company is now in the mature phases of market outreach and project financing with respect to the full scale HPA First Project, with the expectation of positioning the HPA First Project to Final investment Decision.

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