
13
Al
Aluminium
26.982
WE SUPPLY
DE-CARBONISATION
Transformative technology producing ultra pure aluminum products
Alpha HPA

Cautionary Statement

The Definitive Feasibility Study (DFS) referred to in this presentation has been undertaken to assess the technical and financial viability of the HPA First project. The DFS is based on the material assumptions about the availability of funding and the pricing received for HPA. While the Company considers all of the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the outcomes indicated by this DFS will be achieved. To achieve the range of outcomes indicated in the DFS, additional funding will be required. Investors should note that there is no certainty that the Company will be able to raise the amount of funding when needed. It is also possible that such funding may only be available on terms that may be dilutive to or otherwise affect the value of the Company's existing shares. It is also possible that the Company could pursue other 'value realisation' strategies such as a sale, partial sale or joint venture of the HPA First project. If it does, this could materially reduce the Company's proportionate ownership of the HPA First project. Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the DFS.

Forward Looking Statements

This presentation contains certain forward-looking statements with respect to the financial condition, results of operations, and business of the Company and certain plans and objectives of the management of the Company. These forward-looking statements involve known and unknown risks, uncertainties and other factors which are subject to change without notice and may involve significant elements of subjective judgement and assumptions as to future events which may or may not occur. Forward-looking statements are provided as a general guide only and there can be no assurance that actual outcomes will not differ materially from these statements. Neither the Company, nor any other person, give any representation, warranty, assurance or guarantee that the occurrence of the events expressed or implied in any forward-looking statement will actually occur. In particular, those forward-looking statements are subject to significant uncertainties and contingencies, many of which are outside the control of the Company. A number of important factors could cause actual results or performance to differ materially from the forward looking statements. Investors should consider the forward looking statements contained in this DFS in light of those disclosures.

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E-Mobility, a future driver of de-carbonisation.

Gasoline Only — Average Emmissions

380 Grams of CO_2e per mile

Plug-in Hybrid Electric

209 Grams of CO_2e per mile

Battery Electric

154 Grams of CO_2e per mile

Source: Inside EV's (www.insideevs.com)

CO_2 Emissions

50%

Per mile travelled

WE SUPPLY

- HPA for separators
- AI-precursors for cathode
- AI-precursors for anode

Alpha **HPA**

LED Lighting: The dominant current driver of de-carbonisation.

Mini-LEDs and Micro LEDs set to drive next wave of LED growth

75%

PROJECTED ENERGY SAVINGS IN US LIGHT ENERGY CONSUMPTION BY 2035

ANNUAL CO_2 EMISSIONS SAVINGS FROM GLOBAL LED ADOPTION BY 2035

EQUIVALENT TO 200 MILLION CARS

OR 200 NEW COAL FIRED POWER STATIONS

LEDs reduced CO_2e by an est. 570m tons in 2017

Reducing new power stations by 1,250

IN 2017, THE USE OF LEDS TO ILLUMINATE BUILDINGS AND OUTDOOR SPACES REDUCED CO_2 EMISSIONS BY NEARLY **570 MILLION TONNES**

LED lights are 50-70% more efficient than incandescent

A COMPLETE SWITCH TO LED LIGHTING WORLD WIDE, WOULD PREVENT 1,400,000,000 TONNES OF CO_2 EMISSIONS

WE SUPPLY

- HPA for LED sapphire substrates
- HPA for LED phosphors
- Al-precursors for LED phosphors

Alpha HPA

Sources: US Dept of Energy, www.microled-info.com & IHS Markits

Alpha HPA:
Introduction

- We are a technology/industrial chemical company
- We offer exposure to the rapidly growing Li-ion battery and LED lighting markets
- We do this through a suite of ultra-high purity aluminium products which are:
  - Critical raw materials for de-carbonisation
- Our proprietary process delivers us the competitive edge
  - High purity/low CapEx/low OpEx
- Low carbon, sustainable process.

Alpha HPA

- Land contract in place for 10ha site
- Adjacent to Orica Australia to allow for Project Interface
- Definitive Orica Agreements executed – August 2021

HPA First Project: Location

AlphaHPA

Our products:

Ultra High Purity Alumina Powder & Tablets

>99.995% (4N5) purity HPA engineered to suit customers specifications such as bespoke particle sized powders, sintered and un-sintered granules and sintered custom ingots.

Ultra Boehmite

A bespoke engineered >99.995% (4N5) purity Boehmite to suit specific customer requirements, ideal for LiB separator coatings and as a precursor for speciality applications.

Ultra Aluminium Nitrate

Our >99.999% (5N) purity aluminium nitrate is the purest product available at commercial scale. Key applications in particle coating, LED, aluminate scintillators and other specialty products.

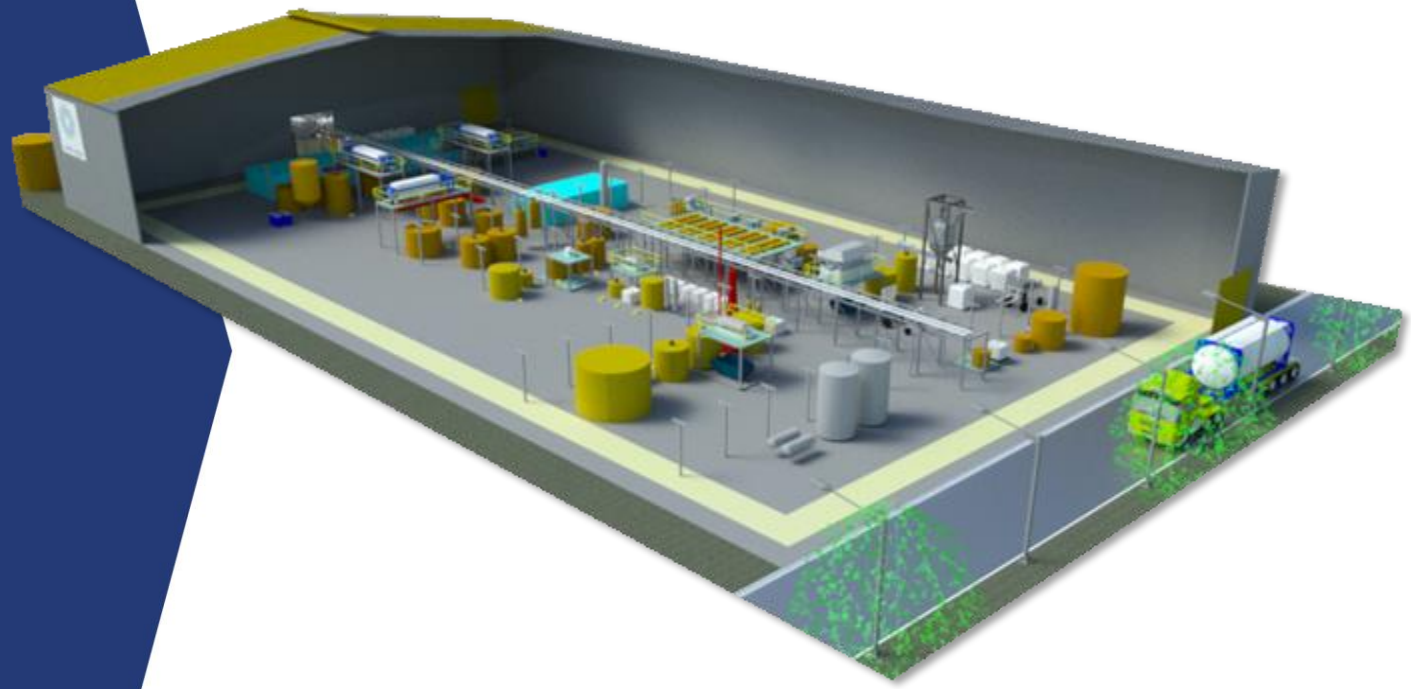
Ultra Aluminium Sulfate

Our >99.999% (5N) aluminium sulfate is the purest product available at commercial scale. A premium product for synthesis of aluminium cathode active materials (CAM) with NCA, NCMA and NFA.

AlphaHPA

Near term production: Precursor Production Facility (PPF)

- Fully funded PPF construction underway to fast-track production of 5N Al-precursors at ~200 tpa
- Also delivering bespoke volumes of HPA and boehmite (1-5 tonnes per annum)
- To be constructed within Alpha's existing HPA First Project site at Gladstone
- Fully vendor quoted CapEx ~A$27.6M
- Targeting August 2022 Production

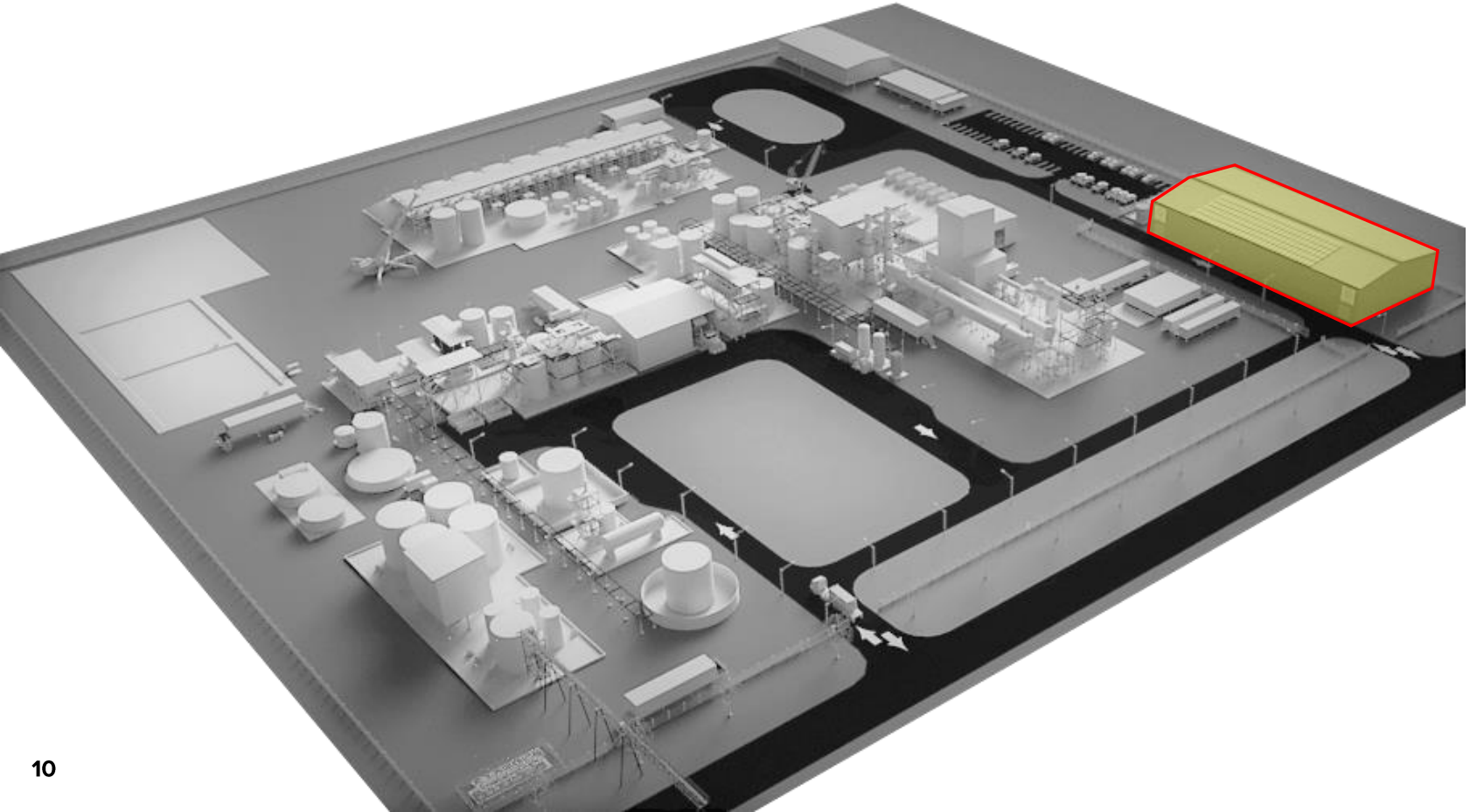


3D Schematic
HPA First Project
Precursor Production Facility

Alpha HPA

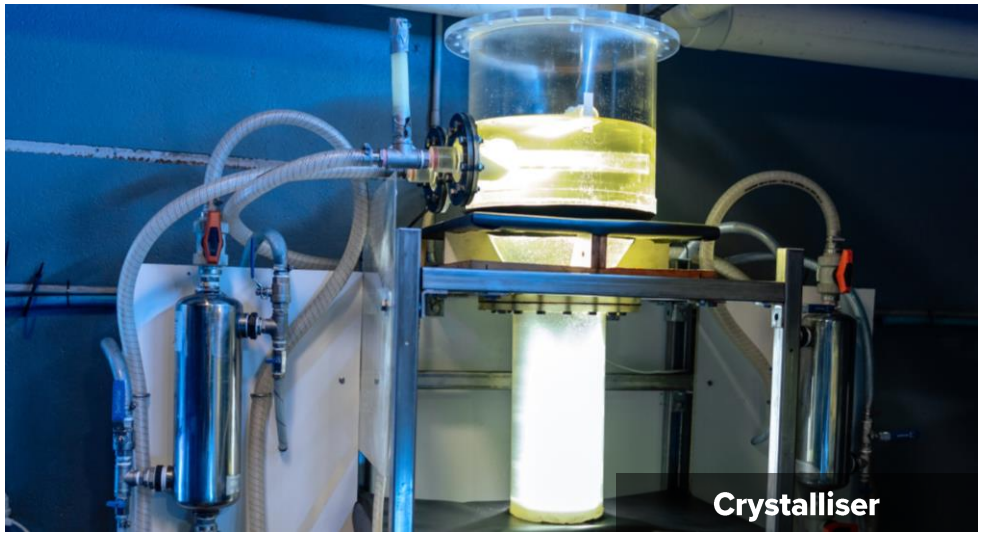
Project Layout:
PPF and Full Scale Facility

- The PPF to be constructed within the HPA First Project Footprint
- To be incorporated into the Full Scale HPA First Plant as a dedicated unit for 5N Al-Sulfate.
- alphahpa.com.au/our-projects



PPF to be constructed within the HPA First Project footprint, and then incorporated into the full-scale commercial plant.

HPA First Project: Brisbane Plant »»


Crystalliser


Pre-Cursor Room


Pelleting Room


Solvent Extraction

- Continuously operating facility, with over 3,000 operating hours
- Servicing specialty sales and continued product test orders

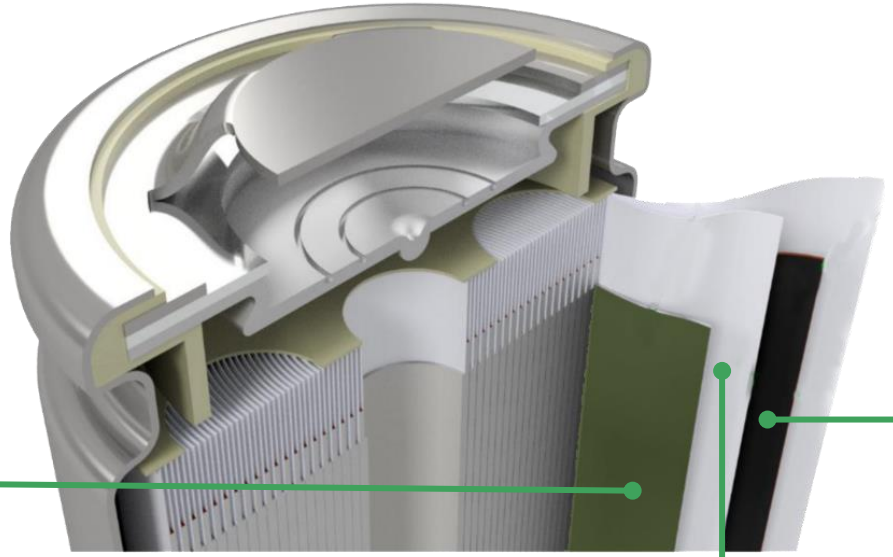
Alpha HPA

Our products inside the lithium-ion cell

CATHODE

Cathode pre-cursors for NCA & NCMA and alumina coating

5N Al-Nitrate
+
5N Al-Sulfate



ANODE

Pre-cursors for coating graphite and silicon anode

5N Al-Nitrate

SEPARATOR

Ceramic coating for thermal management

HPA
&
High Purity Boehmite

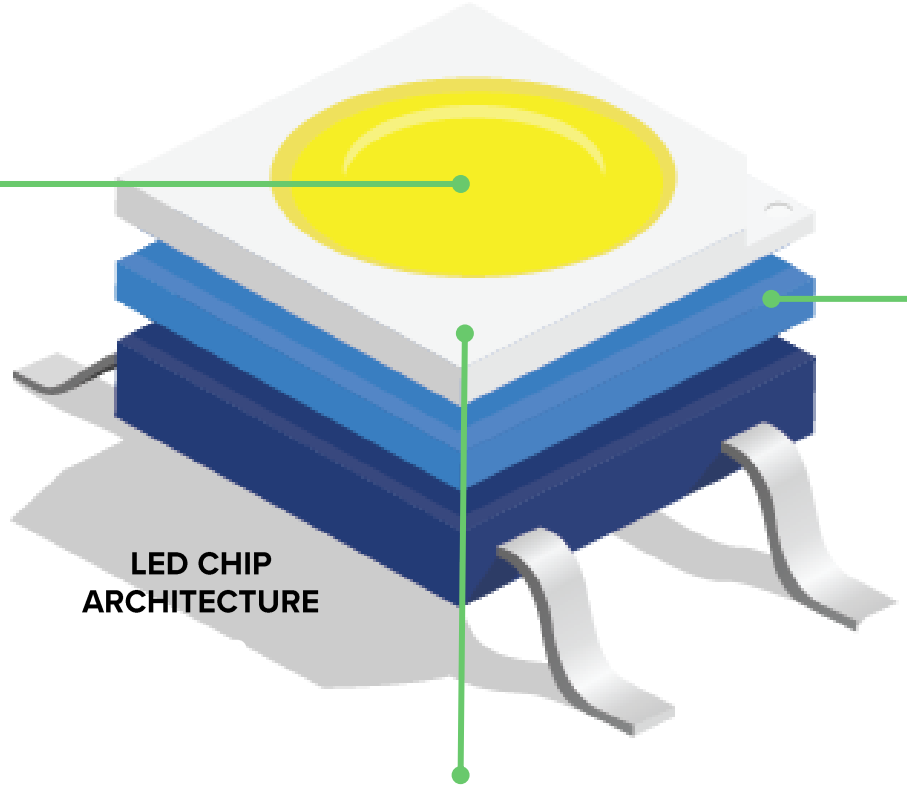
AlphaHPA

Our products inside LED lights

LED PHOSPHORS

Synthesis of Aluminate (YAG) Phosphors for white LEDS

HPA
+
5N Al-Nitrate



Ga-N circuit & Active Layers

SAPPHIRE GLASS WAFERS

Sapphire crystal growth cut to sapphire wafer

HPA Pellets

AlphaHPA

ALOX Technology:
Sapphire Glass Manufacture

- Alpha HPA is qualified for single crystal sapphire boule production grown by premium sapphire glass manufacturer ALOX Technology
- Alpha HPA now in discussions with ALOX on commercial supply

Alpha HPA's sintered pellets

Crucible stacking

Single crystal boule

Alpha HPA

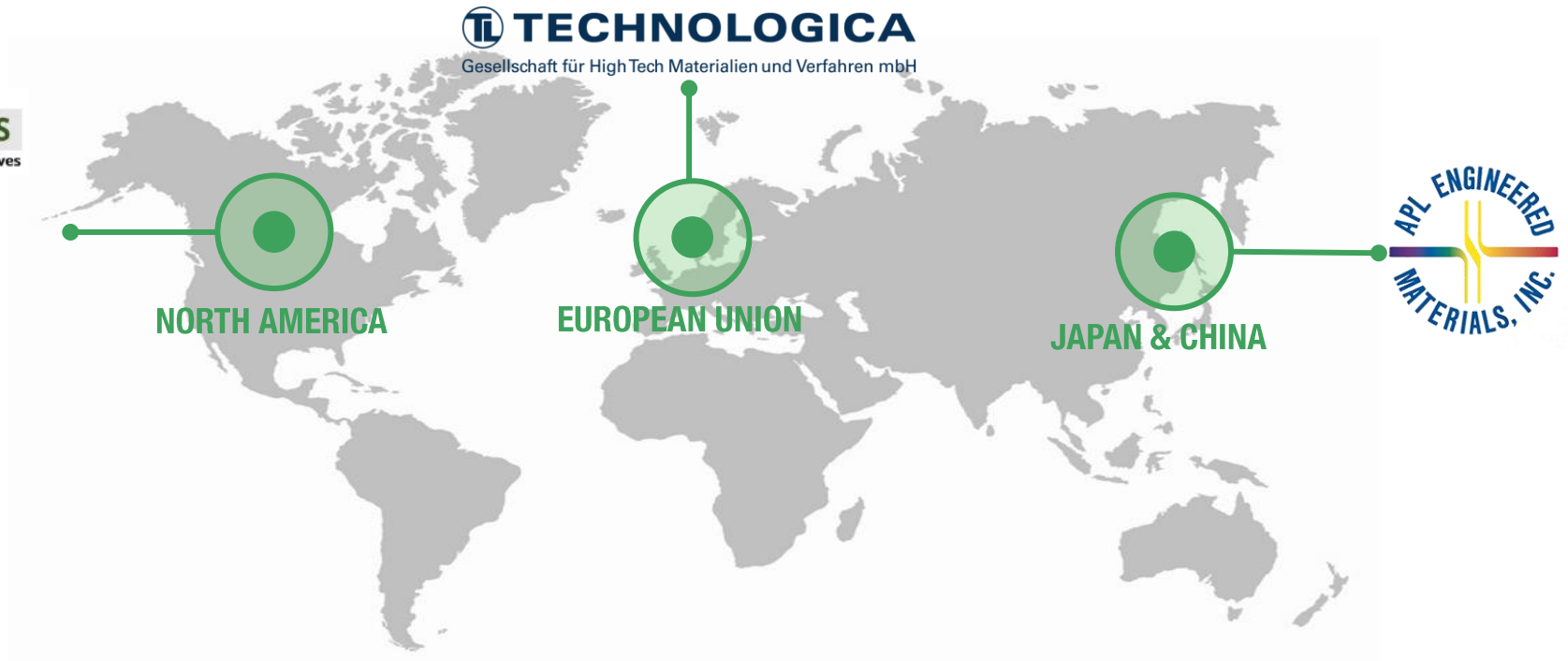
HPA First Project: Global Product Marketing

- Global Marketing Network established
- >70 product samples now distributed globally to >30 end users
- Products qualified for sapphire glass, LED phosphors and separator coatings
- Al-nitrate and HPA sales commenced
- **Sept 2021**: Multiple (6) bids submitted for high value supply contracts

RHINELAND SPECIALTIES
Specialty intermediates and additives

SAINT-GOBAIN

TRAXYS



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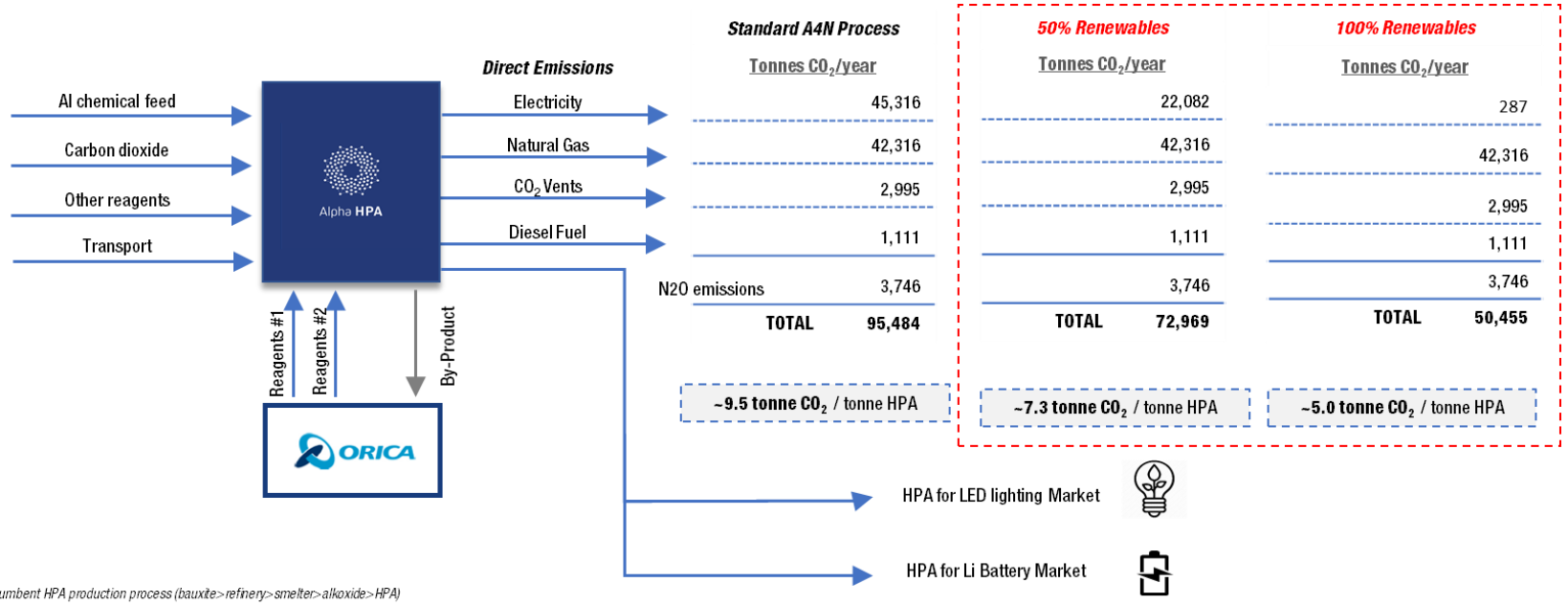
HPA First Project: Low Carbon Footprint

- Alpha HPA has a MOU with CleanCo (QLQ) for up to 100% renewable energy supply
- 100% renewable energy supply represents a 59% reduction in Co2 emissions vs the incumbent (alkoxide) HPA process

Item	Tonnes CO_2 per tonne HPA	
Incumbent alkoxide process	12.44	
		CO_2 Reduction
HPA First Project - process baseline	9.5	22.4%
HPA First Project - 50% renewable electricity purchase	7.3	41%
HPA First Project - 100% renewable electricity purchase	5.04	59%

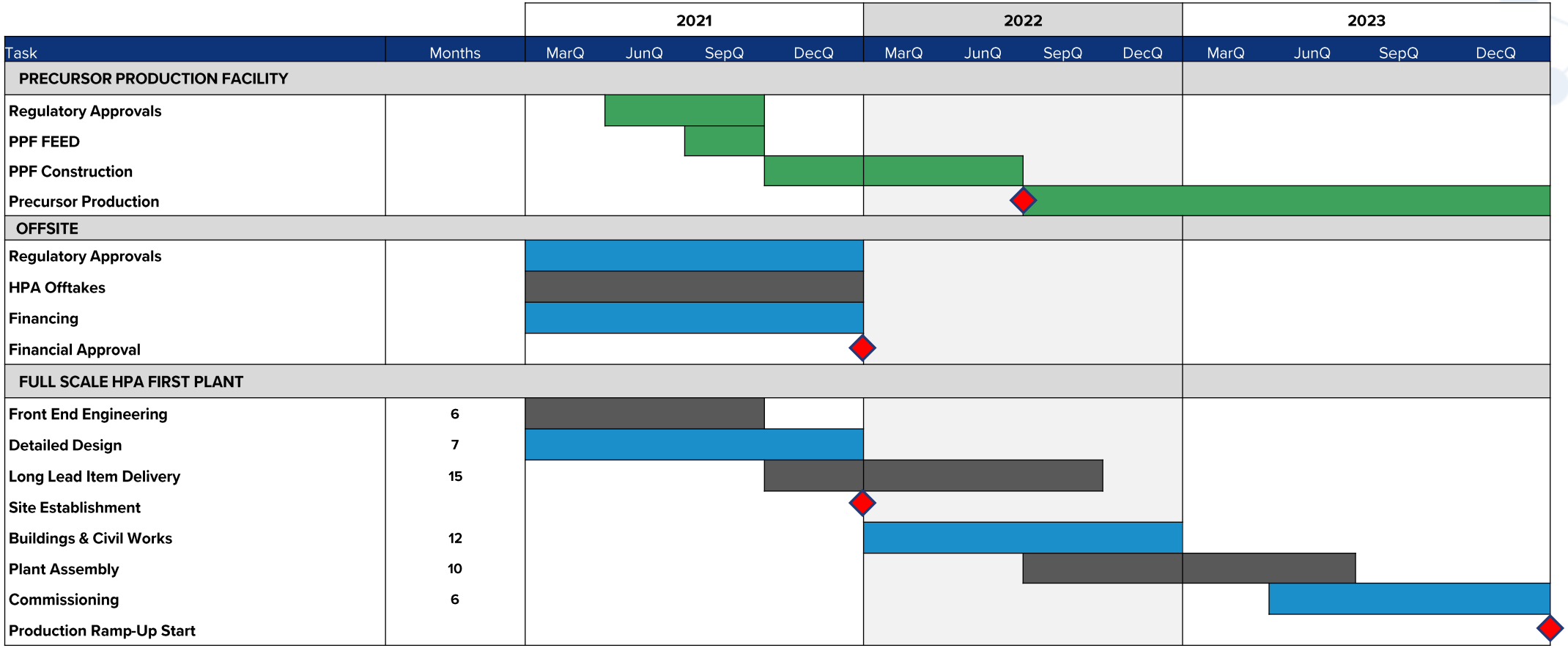


***Incumbent HPA production process (bauxite>refinery>smelter>alkoxide>HPA) estimated to have a 77GJ per tonne HPA energy profile = 12.3 tonnes CO_2 per tonne HPA*

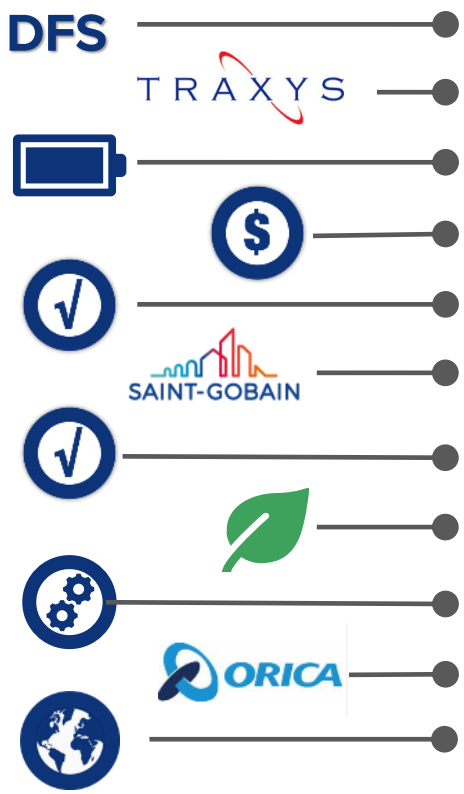
Alpha HPA

HPA First Project: Schedule

- Commercial Precursor from the PPF – **August 2022**
- Commercial HPA Production, full scale facility – **late CY2023**



HPA First Project: Status



Mar '20 Definitive Feasibility Study – completed March 2020

Aug '20: Offtake, marketing & financing MOU with Traxys

Sept '20: 2 x High-purity Li-B Pre-Cursor manufacture confirmed

Feb '21: Major Project Permitting Approval (MCU)

Feb '21: HPA Pellets qualifies for sapphire glass manufacture

Apr '21: MOU with Saint Gobain – all products

May '21: HPA powder qualifies for LED phosphor manufacture

May '21: MOU with CleanCo QLD to provide up to 100% Renewable Energy

May '21: Lenders Engineers (ITE) appointed – Final bank technical DD

Aug '21: Orica Definitive Agreements

Current: Global Outreach >70 end-user test products shipped, multiple products under Devt.

Pending: Large Volume Product Offtakes

Pending: Final Product Mix and DFS Update

Pending: Project Financing and FID

Aug '22: COMMERCIAL PRODUCTION OF 5N AI-PRECURSORS - PPF

Alpha HPA

HPA First Project: DFS (March 2020)

- Comprehensive technical and financial validation of the Company's HPA First Project
  - Production rate of 10,000tpa HPA
  - Annual free cashflow increased to A$280M**
  - Strong Project cashflows under all modelled price scenarios (US$15/20/25kg HPA)
  - Unit cash costs of A$8,730 **(US$5,940/t or US$5.94/kg)** HPA after by-product credits
  - Project CapEx of A$308M (**US$209M**)
  - Capital intensity of A$30,800 (US$20,900)/tpa HPA
  - Financially robust project with high profitability at HPA prices as low as US$10,000/t

	HPA Pricing Scenarios					
Key Project Parameters	USD $25/kg		USD $20/kg		USD $15/kg	
	AUD	**USD**	**AUD**	**USD**	**AUD**	**USD**
Annual Revenue @ 10,000tpa	$368 million	$250 million	$294 million	$200 million	$221 million	$150 million
Annual Pre-Tax Cashflow	$280 million	$191 million	$207 million	$141 million	$133 million	$91 million
Payback	< 2 years		<3 years		<4 years	

**HPA price of US$25/kg and USD/AUD = 0.68*
***Relative to March 2019 PFS = A$265M*

AlphaHPA

Corporate Snapshot

TRADING INFORMATION

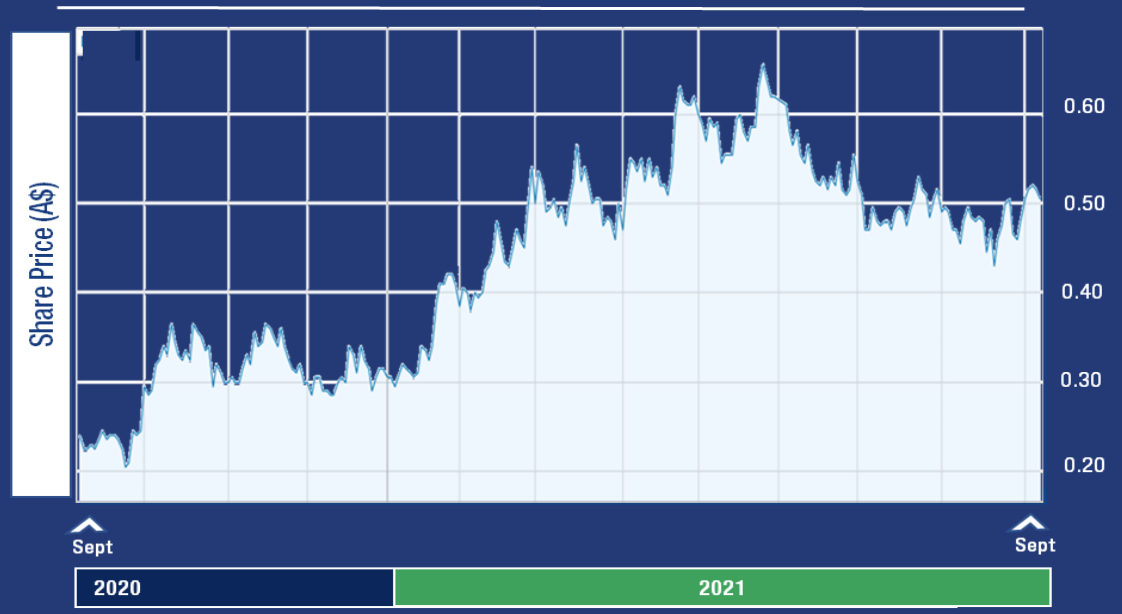
ASX CODE	A4N
Share Price (06/09/2021)	~50c
52-week trading range	14c – 67.5c
Issued Shares	792.3M

CAPITAL STRUCTURE

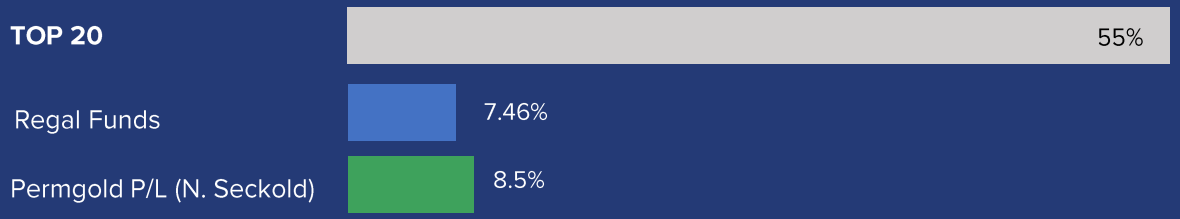
Issued Shares	792.3M
Unlisted options (@20c)*	10.0M (expire 31 July 2022)
Unlisted options (@30c)	35.0M (expire 31 July 2022)
Unlisted options (@35c)*	5.0M (expire 30 Sept 2023)
Unlisted options (@35c)	26.0M (expire 31 July 2023)
Market Cap	$396M
Est Cash (31-08-2021)	~$48M – No Debt
Enterprise Value	$348.5M

* Licensor Options

SHARE PRICE PERFORMANCE – 12 MONTHS



SHAREHOLDERS



Board & Management

Norman Seckold
Chairman

40+ years in the full time management of natural resource companies. Past Chairman and Director of listed companies including Bolnisi Gold NL, Timberline Minerals Inc., Perseverance Corporation Limited, Valdora Minerals NL, Palmarejo Silver and Gold Corp.
Currently Chairman of Santana Minerals Limited and Sky Metals Limited and Deputy Chairman of Nickel Mines Limited.

Rimas Kairaitis
Managing Director

20+ years experience in minerals exploration and project development in gold, base metals and industrial minerals. Led the geological field teams to the discovery of the Tomingley and McPhillamy's gold deposits in NSW and steered the Hera gold-lead-zinc Project from discovery through commercial production. Previously founding Managing Director and CEO of ASX-listed Aurelia Metals. Currently a Director of Sky Metals.

Peter Nightingale
Director and CFO

30+ years as a Director or Company Secretary for a range of resource companies including Pangea Resources Limited, Timberline Minerals Inc., Perseverance Corporation Limited, Valdora Minerals NL, Mogul Mining NL and Bolnisi Gold NL.
Currently a Director of Nickel Mines Limited and Prospech Limited.

Justin Werner
Non-Exec. Director

20+ years' mining and management experience. Previously consulted to a number of blue chip mining companies including BHP, Rio Tinto and Freeport McMoran.

Successful track record of mine discovery and development.
Currently Managing Director of Nickel Mines Limited.

Tony Sgro
Non-Exec. Director

Chemical Engineer with 45+ years' senior management experience in the supply of specialised equipment to the process industries with an emphasis on mining and oil & gas.

Co-founder, Director and General Manager of Kelair Pumps for 36 years

Cameron Peacock
Non-Exec. Director

Mr Peacock is an finance and equity market professional. Over the last 20+ years he has worked in numerous finance focused roles across banking, private equity and equity capital markets. Cameron also covers the Investor Relations and Business Development functions with Alpha HPA and Nickel Mines Ltd.

Rob Williamson
C.O.O.

Rob is a mechanical engineer and joins the company having recently rebuilt and started up a new 155ktpa SX zinc refinery in the USA in the capacity of Vice President and GM of the facility and ideally placed to bring 20 years of experience in large facility operations to Alpha HPA. Rob is based in Brisbane and responsible for building a the team for our HPA project in Gladstone.

Alpha HPA

Contact

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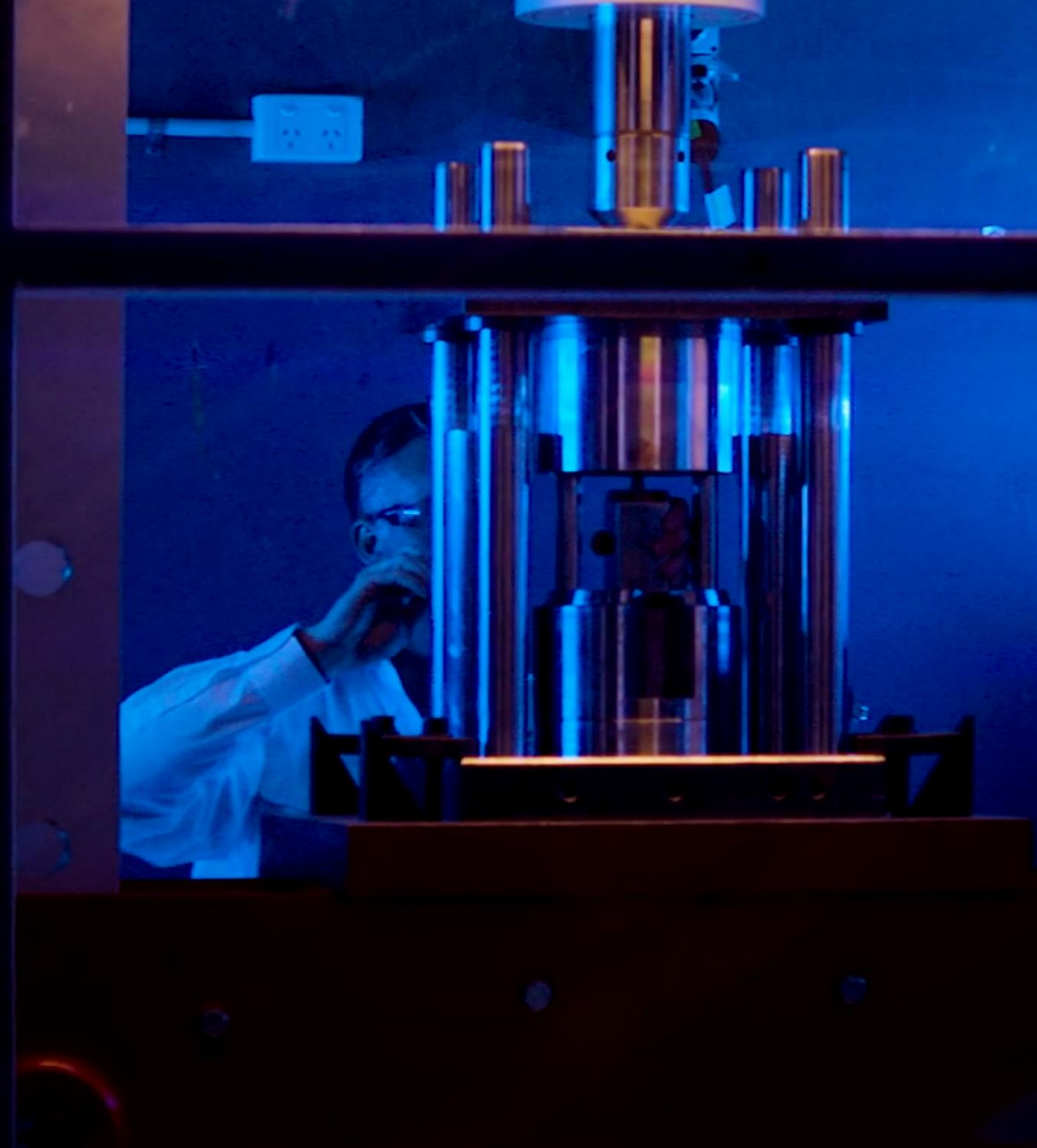

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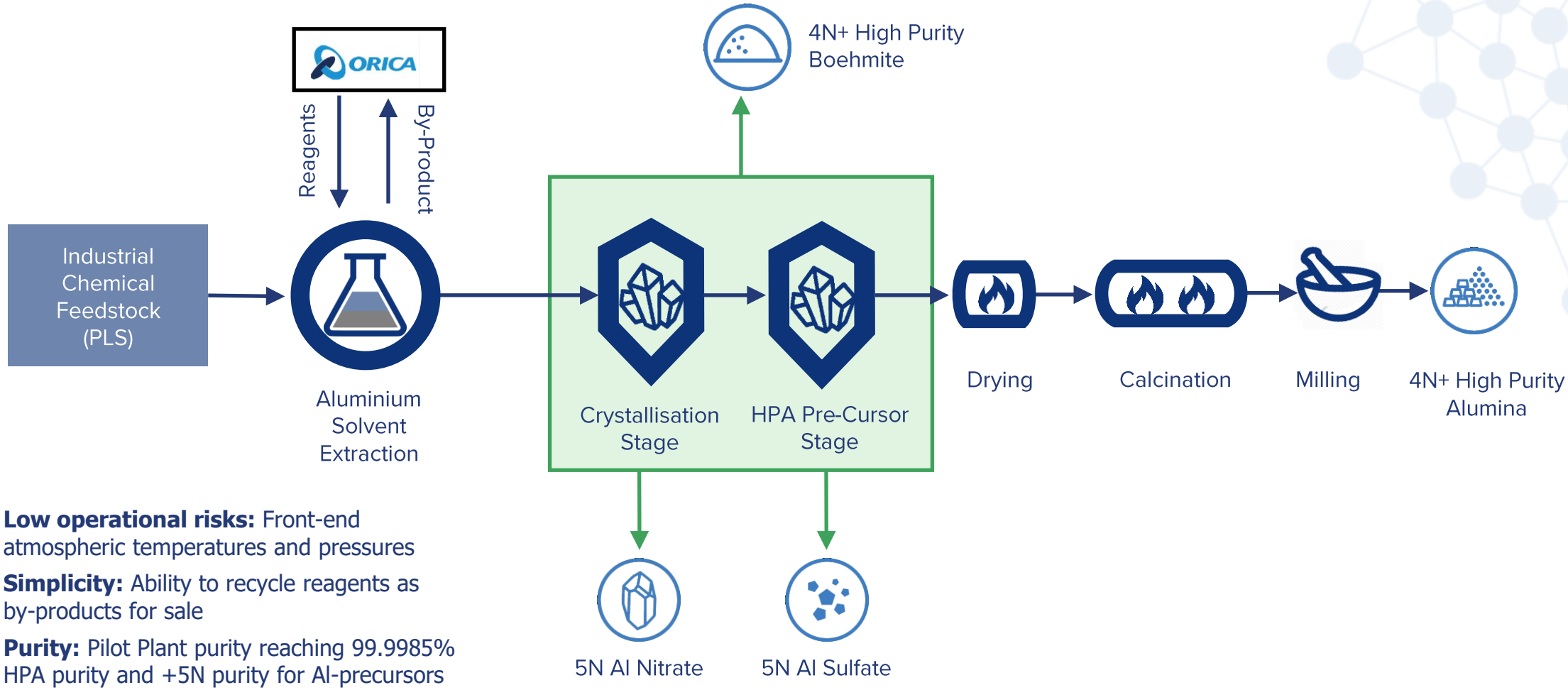
APPENDICES

Alpha **HPA**

Process Flow Sheet: Disruptive and Flexible



- **Low operational risks:** Front-end atmospheric temperatures and pressures
- **Simplicity:** Ability to recycle reagents as by-products for sale
- **Purity:** Pilot Plant purity reaching 99.9985% HPA purity and +5N purity for Al-precursors
- **Flexibility:** High Purity aluminium stream can be diverted into a full range of products

AlphaHPA

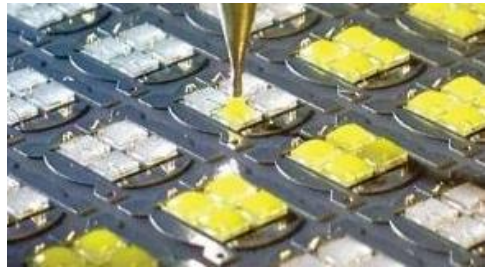
5N Al-Nitrate (Precursor #1): Key Markets & Applications

Multiple applications including:

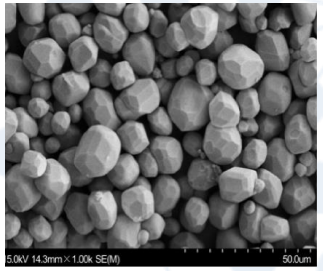
- Particle coatings: - including Li-B electrode particles
- LED-phosphor synthesis – focus on mini & micro LEDS's
- Scintillators – optical laser crystals (YAG)

- Other applications including
  - Photonics/Optics
  - Dielectrics
  - Photovoltaics
  - Nanomaterials
  - Functional coatings

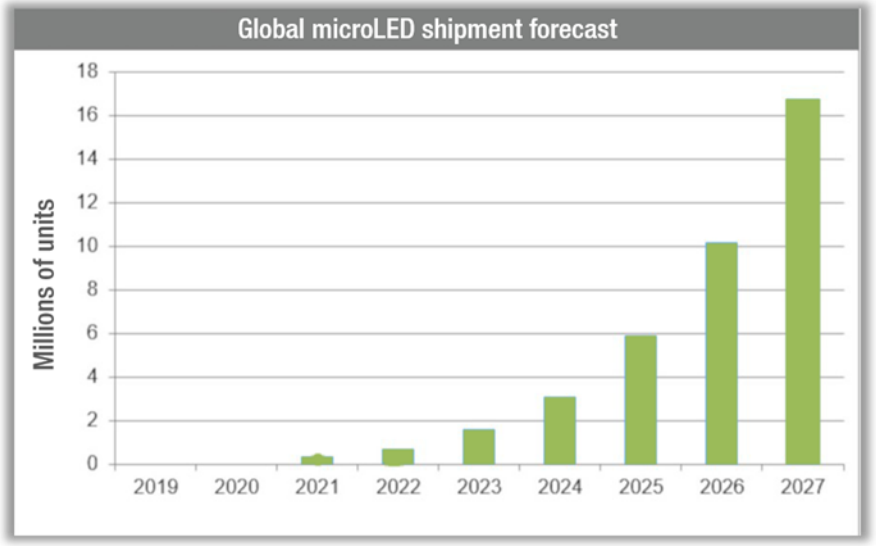
- End-user recognition as the highest purity Al-nitrate available



Addition of YAG phosphors to LED lighting circuits



SEM of YAG (Yttrium-Aluminate-Garnet)

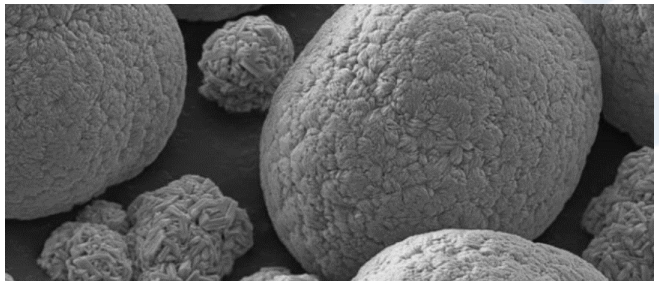


Graphic: Forecast growth in micro-LEDs to 2027
Source (www.microled-info.com)

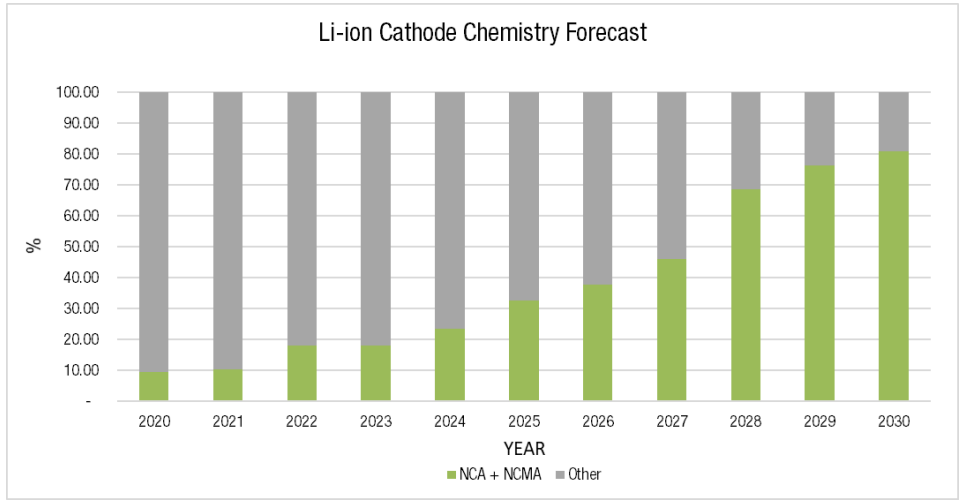
AlphaHPA

5N Al-Sulfate (Al-Precursor #2):
Key Markets & Applications

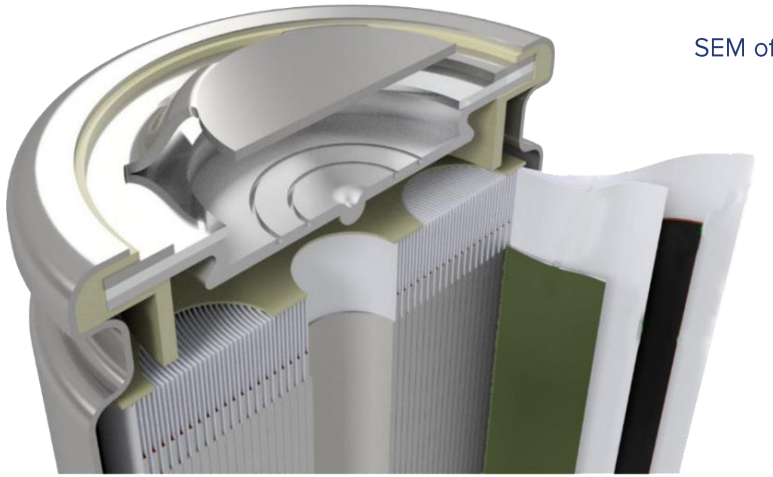
- For synthesis of aluminium-bearing, lithium-ion battery cathode active materials (CAM)
- Used in aluminium bearing cathode chemistries, ie:
- NCA (eg: Tesla)
- NCMA (eg: GM)
- NCA + NCMA chemistries forecast ~80% of all Li-B cathode by 2030 (UBS)
- Alpha HPA's precursor considered the highest purity globally



SEM of NCA Cathode Active Materials (CAM)



NCA + NCMA Cathode Chemistries ~80% by 2030
Source: UBS – Dec 2020



Lithium-ion battery breakaway