AMAERO ADDITIVE MANUFACTURING

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ABOUT US

Amaero was established in 2013, to commercialize additive manufacturing of metals and alloys technologies developed by Monash University. Our combination of patented and proprietary optimized alloy powders are uniquely suited to address defense, aerospace, automotive and industrial tooling requirements.

Amaero's process and parameter acumen leverage the Company's relationships with the largest production equipment and end-part global manufacturers. As the industry continues to mature, Amaero has sharpened its focus to become a leader in advanced materials providing proprietary alloy powder solutions to its clients. Amaero has now qualified more alloy powders for aerospace and defense applications than any other group. Amaero is expanding these technical and manufacturing capabilities to position itself as a global supplier of incumbent and next-generation powders to the broader 3D printing sector.

Amaero has operations in Australia and the USA with projects in the Middle East expected to commence in 2022.



COMPANY TIMELINE

(\$ in AUD)

Amaero was founded as a spin-off of the Monash University Centre for Additive Manufacturing, one of the world's largest AM R&D labs focused on metal AM

2013

Listed on ASX (2019)

Amaero went public on the Australian Stock Exchange in Dec. to separate from the university operationally and enable additional manufacturing opportunities

US Facility Established (2019)

Facility established in El Segundo at the request of one of the world's largest aerospace companies to manufacture satellite parts

2021 2019 2020

Launch of Adelaide Facility (2020)

Facility established in conjunction with Adelaide University to support the Australian defense sector

Completed (2018)

Boeing Project

2018

Project commissioned to manufacture the Apache Helicopter gearbox

First Offshore Production Facility Established in Toulouse, France (2016)

2016

Aerospike Rocket

Completed (2017)

assembled and test fired

2017

Motor Project

Designed, printed,

motor in span of 4

months

Established to manufacture hot turbine engine parts for military aircraft

Construction of Titanium Powder Facility (2022)

Construction has begun on a nextgen titanium powder production facility. Powder will be manufactured at under half the cost of the current benchmark. Installation and initial production expected to begin in Sept. with full production beginning in Dec.



Expansion of Powder Manufacturing Capacity (2023)

Amaero plans to 5x its powder production, providing approx. revenue of \$208M per year. The project is expected to be debt funded due to <6 month ROI on capital equipment

Middle East Facility (2022/23)

2023

Amaero plans to construct the world's most advanced and fully integrated additive manufacturing production center in a project worth \$138M+

Ti Alloy Powder Scale Up Process Proven (2021)

Amaero proved at full scale the ability to optimize its powder atomization at 70% high value particle size yield, more than double the industry benchmark





INTERNATIONAL PRESENCE

UNITED STATES



AUSTRALIA

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New Powder

Facility to be

Completed by

End of 2022

LPBF Printers

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STRONG RELATIONSHIP WITH MONASH UNIVERSITY

MCAM is now the world's largest university research centre for metal additive manufacturing

(\$ in AUD)



KEY RELATIONSHIP DYNAMICS

- + Amaero receives access to leading research and development capabilities at cost
- Monash University is one of Amaero's largest shareholders cementing a strong partnership with aligned long-term objectives. Together they have received approximately \$90M+ in grants and investment funding
- + MCAM is an educator to the world for graduate and postgraduate degrees in additive manufacturing, with 70%+ of their students from countries other than Australia
- + Amaero has the ability to leverage Monash's broad network of partners



EXPERIENCED BOARD AND SENIOR MANAGEMENT



Director of Business Strategy for

Monash University from 2012 -2021, where he lead a team that provided strategic support and financial advice in relation to the University's major investment decisions.

15 y ears in a v ariety of senior management positions in the Victorian Government, focused mainly around economic dev elopment policy, international policy and operations and innov ation policy.

Formerly worked for Commonwealth Government of Australia, including 3 years on the personal staff of then Prime Minister of Australia, the Honorable Bob Hawke.



Executive Director since May 2019, providing strategic and operational advice to management and preparing the Company for capital raisings and scaling its operations in preparation for its anticipated IPO.

Stuart has successfully taken 3 startups through to ASX listing in the past 4 y ears. He implemented a similar strategy for Titomic Limited (ASX:TTT), which was the No. 1 new listed entity of 2017/18 on ASX and it won "Broker Deal of the Year". He is co-founder of Innovyz, Australia's leading commercialization firm that works with universities and research institutes and has assisted more than 80 early -stage innovations to commercialize.



Kathry n previously served as CFO and Company Secretary for Beach Energy Limited (formerly Beach Petroleum Limited) (ASX:BPT), assisting the company from a junior explorer through numerous capital raisings as the CFO and then scaling for growth to become an ASX100 company. Kathryn is an executive director on various inf luential boards including a large credit union and one of Australia's largest superannuation funds.

She holds extensive experience in gov ernance, risk and financial reporting and management, and she also serves as Chair of the Audit & Risk Committee to oversee the financial elements of the business as well as providing direction to the Company Secretary.



Barrie is an experienced executive who has created a number of spinoff ventures, co-operative research centers and start-ups and has worked in many different roles including CEO, Director and general management.

He has established several greenfield manufacturing facilities from the ground up in Australia, France, USA and Mexico,

He led manuf acturing research for transport and mining at CSIRO (Australia's peak research laboratory with 5,100 staff, of which more than two-thirds were researchers, making it one of the world's largest research laboratories) for more than 12 years and has been involved in the manuf acturing industry for over 25 y ears.





Ken brings to Amaero a deep knowledge of additive manuf acturing and strong relationships with key customers.

Previously Director of Additive Manuf acturing and site leader of mould, the worlds only NADCAP approved site for AM using LPBF & EBPBF.

Ken's knowledge of gualification processes for AM and aluminum powder metallurgy will enable rapid qualification acceptance by BDS.



Jim has had leadership and engineering roles in GE Research, Carpenter Technology Corporation and Lockheed Martin.

He has over 35 years experience in metallurgical engineering and extensive knowledge in metal additive manufacturing and powder production. Jim has designed and built, commissioned and operated more titanium powder manuf acturing facilities than any other person on Earth.

At Amaero, Jim is responsible for the quality systems, powder production development and metal 3D printing processes.



ADVISORY BOARD

ADDITIONAL ADVISORY BOARD MEMBERS

+ Advisor Aviation and Aerospace, Former Boeing Executive

DAVID WOLF COUNTER TRADE AND DEFENSE OFFSETS ADVISER

David isfounder and President of Fremont Group, LLC since 1994. Fremont's business includes private equity advisory, origination and investment in international joint ventures and predominantly defense offset projects, primarily in Europe, India and the Middle East.

David co-founded and is Chief Operating Officer of Biovec, LLC and Biovec Transfusion, LLC, both biotechnology research companies involved in gene therapy and platelet preservation technologies with research activities in the Netherlands, Denmarkand the US.

As a principal or consultant, David has been involved in over \$10 billion of acquisitions, developments and financings. David serves on the Governing Board of the Bulletin of the Atomic Scientists and was an Executive Board Member of the US-India Business Council for over 15 years.



Christopher recently stepped backfrom politics and from hisformer role as the Federal Minister for Defense, where he was responsible for the strategy and delivery of more than \$200 billion of defense capabilities, Australia's largest investment in peace time history.

During his3 years as a Cabinet Minister in the defense portfolio, he created and implemented the Defense Export Strategy, the Defense Industrial Capability Plan and the Naval Shipbuilding Plan. Christopher also delivered the outcomes of the Defense Industry Policy Statement by creating the Defense Cooperative Research Centre, the Centre for Defense Industry Capability, the Defense Innovation Hub and the Next Generation Technology Fund.

He served under 4 Prime Ministers, as a Minister in the Howard, Abbott, Turnbull and Morrison governments; he served as Minister for Ageing, Minister for Education and Training and Minister for Industry Innovation and Science, in addition to his roles in the Defense portfolio.

TUAN TRANPHAM AM MACHINE MARKET ADVISER



Tuan is well-known as an industry expert and leading business development executive within the 3D printing industry. Mr TranPham previously held the position of Chief Revenue Officer at Desktop Metal, a leading US based 3D printing company, where he was responsible for their revenue model and built the pipeline that enabled its transformation from a private company to a NYSE-listed company with the largest market capitalization of any listed 3D printing company globally at the time.

He has many years of experience amongst cutting edge 3D printing companies, across key roles including National Sales & Marketing Director for GE Additive (formerly Arcam Ab), National Sales Manager for Stratasys, and National Sales Manager for 3D Systems. Together these three companies, as well as Desktop Metal, make up 4 of the top 5 3D printing companies worldwide.

Tuan brings significant relationships, partnerships and expertise to Amaero's machine sales and service team.

EMBARGOED ADVISOR GLOBAL DEFENSE INDUSTRY AND GEOPOLITICS

Former US Secretary of Defense. Long history in the US defense space. Provides advice on geopolitical issues.



DASHBOARD ADVANCED MATERIALS SCIENCE / CONSUMABLES + Our portfolio of proprietary alloys and alloys that have been qualified for a variety of customer-specific applications WE SERVE COMPANIES AT THE + Ti6AI4V + Inconel 625 + MS1 Maraging Tool Steel + AlSi10Mg + Inconel 718 **FOREFRONT OF THEIR** + AlSi7Mg + Hastelloy X + H-13 Tool Steel **INDUSTRIES** + CoCr Alloys + 316L Stainless Steel + Invar 36 FENSE **IP LEADERSHIP** 2 astralian Governmen **BAE SYSTEMS** Apartment of Defence ence and Technology **OUR MISSION** + Our depth of expertise enables us to support our customers across an ELLIOTT GROUP DE BOEING array of manufacturing processes and needs + Our suite of Laser Power Bed Fusion systems can meet a broad ecosystem ంర + We offer full-NEXT of additive manufacturing needs **AEROSPACE** service bundled Sau mour space + Allov Development + Powders for AM solutions to our + LPBF Machines + Tooling Cores and Inserts + Metallurgical Testing clients across + LPBF, DED, BinderJet Raytheon SAFRAN THALES parameters + Modelling and Simulation Design for AM +. three key areas australia PLATFORM AGNOSTIC CAPABILITIES 3 **INDUSTRIALS** Fletcher + Our platform agnostic approach enables our customers to scale their AUTOMOTIVE additive capabilities thereby creating additional opportunities in consumables and systems TRUMPF Woodside ≁ RENISHAW 🛃 CONCEPTLASER scientific apply innovation[™]



AMAERO'S SUPERIOR PORTFOLIO OF QUALIFIED MATERIALS ARE UNIQUELY SUITED TO OUTPERFORM IN A&D VERTICAL APPLICATIONS

(\$ in AUD)





AMAERO'S MATERIALS PORTFOLIO SERVES MULTIPLE NEEDS IN A&D

<u>Titanium</u>	<u>Aluminum</u>	<u>Steel</u>	<u>Other</u>
Ti6Al4V	+ AlSi10Mg + AlSi7Mg	 + 316L Stainless Steel + MS1 Maraging Tool Steel + H-13 Tool Steel 	 Inconel 623 Inconel 713 Hastelloy X Invar 36 CoCr Alloy

LARGE & GROWING 3D PRINTING MARKET OPPORTUNITY

ESTIMATED ADDITIVE MANUFACTURING TAM

(\$AUD in billions)





GLOBAL EVENTS SHAPE AMAERO'S MARKET OPPORTUNITIES

Boeing's Big Bet on Russian Titanium Includes Ties to Sanctioned Oligarch

"Plane maker has suspended buying the metal from Russia... Boeing has been getting about a third of its titanium from Russia."

- March 7, 2022

Germany to Increase Defense Spending in Response to "Putin's War' – Scholz

"Chancellor Olaf Scholz said on Sunday Germany would sharply increase its spending on defense to more than 2% of its economic output in one of a series of policy shifts prompted by Russia's invasion of Ukraine... Scholz said the government had decided to supply 100 billion euros for military investments from its 2022 budget."



WSJ

Denmark to Increase Defense Spending and Phase Out **Russian Natural Gas**

"Denmark will significantly increase its defense budget and aim to become independent of Russian natural gas in response to Moscow's war on Ukraine, Danish Prime Minister Mette Frederiksen said in a press conference Sunday evening... Under an agreement between Denmark's main parliamentary parties, the country will gradually increase its defense budget until it reaches 2% of GDP by 2033."

- March 7, 2022 POLITICO

3D Printing Included in White House's Updated List of **Critical and Emerging Technologies**

"The White House has included additive manufacturing within its updated list of critical and emerging technologies that are important to US national security."

> Printing - February 14, 2022

France to Increase Defense Spending in Response to **Russian Invasion**

"French President Emmanuel Macron pledged to increase France's defense spending and called for a more sovereign and independent Europe to counter what he said is a new era signaled by Russia's invasion of Ukraine."

- March 2, 2022

Department of Defense Unveils Additive Manufacturing Strategy

"The US Department of Defense has released its first-ever comprehensive additive manufacturing strategy... Unveiled in January, the strategy outlines the key ways in which additive manufacturing is supporting the US' economic and defense activities, the first of which involves using equipment designed via 3D printing to modernize its national defense systems and subsequently improve their performance." Printing

- February 4, 2021



IN MEETING THE PERFORMANCE DEMANDS OF HIGHLY ENGINEERED MATERIALS, AMAERO IS WELL-POSITIONED TO SERVE THE ENTIRE MARKET



METAL AM MATURITY INDEX 2021⁽²⁾



AMAERO ADDITIVE MANUFACTURING 13

IP LEADERSHIP

PROPRIETARY PROCESS KNOWLEDGE

Amaero has over 160 individual items in their IP register covering patents, proprietary know-how, parameter development, etc.

- + Powder Manufacture and Optimization for AM
- + Metal AM Processes and Optimization
- + Alloy Development
- + SLM, DED Technologies
- + First Article Qualification
- + Serial Production
- + Machine Sales and Service
- + Prototype Development
- + Metallurgical Testing

- Modelling and Simulation
- + Heat Treatment
- + Multi-Material Structures
- + Tooling Cores and Inserts
- + Design for AM
- + Post-Processing and Finishing
- + Non-Destructive Testing
- Repair (Laser Cladding)
- + Laser Joining

PRODUCTION-FOCUSED SYSTEMS TECHNOLOGY



500 x 250 x 260mm

build volume

PS20 / PS60

Pow der Storage





100 Ø x 80mm build volume

DU40

Decanting Unit

250 x 250 x 400mm build volume



PS20 / PS60

Pow der Storage

400 x 400 x 400mm build volume



800 x 600 x 600mm build volume









VC40 Vacuum Unit





3 PLATFORM AGNOSTIC CAPABILITIES

PROPRIETARY DOMAIN EXPERTISE ACROSS PRODUCTION SYSTEMS



PROCESS KNOWLEDGE IS ESSENTIAL FOR SUPERIOR OUTCOMES



Source: LinkedIn.

Additive manufacturing using the same powder, similar laser spot size and the same recoater but different process parameters

Domain knowledge and operating expertise (e.g., parameter optimization) are essential



SUMMARY BUSINESS UPDATE

(\$ in AUD)

Project	Overview	Consumables	Services	Systems
Titanium Powder Plant	+ Amaero is currently constructing their proven and proprietary titanium alloy powder manufacturing plant in Victoria, Australia. The first module (Module 1) will provide revenues of ~\$42M per year with the highest margins in the industry. Once fully operational (Dec. 22) a further 4 modules are planned for purchase via debt funding. These modules have a capex ROI of under 6 months. Once all 5 modules are in place they will produce ~\$208M per year revenues	\checkmark		
Middle East	 Amaero to establish newsfacilities for 3D printing and titanium powder manufacturing Project expected to be worth more than \$138M and will be the largest metal 3D printing facility of its type globally Heads of Agreement (HoA) expected to be signed and contract negotiations to commence by Q2 CY22 	\checkmark	\checkmark	\checkmark
Boeing	 Purchase order for evaluation parts Further purchase orders expected on multiple projects Amaero building out its US facilities to cater for expanded relationships with Boeing's various divisions at their request 		\checkmark	
Fletcher Insulation	 Testing and developing an additive manufacturing tooling application for Fletcher's Glass "pinkbatts" insulation systems HoA expected to be signed Q2 CY22 Project potential for 3D printed tools for this application is up to \$415M per year 		\checkmark	\checkmark
Rio Tinto	 Collaboration for the development of the supply chain for Amaero's high performance, High Operating Temperature Aluminium Alloy, "Amaero HOT AI" Rio Tinto providing alloy billets to Amaero for processing into powder for 3D printing Companies aim to scale out production of Amaero HOT AI in Australia and internationally and via Rio Tinto distribution channels 	\checkmark	\checkmark	
Gilmour Space	 + HoA secured in Q2 FY21 + Expected to lead to a long-term supply agreement for the manufacture of rocket components + Production of the components for the supply agreement commenced in Q4 CY21 		\checkmark	
Next-Gen Alloy Development	 New titanium with 5-7 times the fatigue life of the incumbent. ~\$4.7B⁽¹⁾ per year opportunity in next5-7 years New aluminum with double the operating temperature and 30% stronger than the incumbent Next-gen super alloys incorporating nano particles for ultra strength, ballistics and radiation shielding New cobalt alloy with 22% increased tensile strength at elevated temperatures and 30% + harder 			
Processing Capabilities	 New scrap to wire & rod technology proprietary technology to produce wire for welding, WAM and rod for fastener market A new direct ore to metal powder processing capability - multiple metals, negating the need for smelting and off-shore processing Scrap to billet processing - recycling scrap/swarf to reduce cost of titanium billet (cost reduction of 65%+) 			
Systems Development	 New SLM (Selective Laser Melting 3D printers) machines that are 2-5 times faster, cheaper and currently in trial phase Debinding and sintering ovens that are industry leading and can scale to meet industry need 			



1H22 HIGHLIGHTS

(\$ in AUD)

Highlight	Commentary
Titanium Powder Plant	 + Amaero secured a 10-year lease for a 3,857 sq. meters facility in the Monash Precinct in Melbourne in Jan. 2022 + Additional works commenced in Jan. 2022 to prepare for the installation of the facility, including the construction of a 600 sq. meters warehouse extension high bay to accommodate Amaero's first gas atomizer for the plant + The project management plan for the manufacture of equipment is on time and within budget + Expected to finalize construction and commencement of commissioning in 3Q CY22 + A 5-fold ramp up of additional gas atomizers with commensurate revenues is expected by CY25
Middle East	 Virtual meetings progressed on the project agreement for the proposed Middle East center for additive manufacturing In person meetings are being conducted in Mar. 2022
Boeing	 New purchase order totaling \$50K from Boeing for a defense aircraft Independent Research and Development (IRAD) project This is in addition to the ongoing projects that Amaero continues to develop with Boeing
Fletcher Insulation	 Positive test results for its spinner tools for the Fletcher Insulation project during the first 6 months of FY22, with the spinner tools performing well within Fletcher's required performance standards One of Amaero's SP400 3D printing machines was built for the project with commissioning beginning in Jan. 2022
Rio Tinto	 + The first batch of Rio Tinto's alloy billets was atomized into powder and testing has commenced + The second shipment of Amaero H.O.T. Al was dispatched from Rio Tinto in 4Q CY21
Gilmour Space	 + HoA secured in Q2 FY21 + Expected to lead to a long-term supply agreement for the manufacture of rocket components
Financials	 80% increase in revenues in 1H FY22 due to income from increased research and development work undertaken with key clients \$4.97M in cash and cash equivalents as at Dec. 31 2021, with the cash burn reflecting the Company's continued investments in its key projects and commercial agreements to generate future revenue growth but allowing for future forthcoming growth



TITANIUM POWDER PLANT

(\$ in AUD)

Positioning Amaero as a reliable source of strategically important titanium alloy powder

- + Titanium alloy powder is a key input in aerospace, defense and critical manufacturing
- Supply (mainly for the US) has been largely dependent on Russia and China
- + Amaero will be able to produce aerospace-grade titanium alloy to the highest standards at approximately half the cost of the nearest competitor

- Strong revenue and profit stream Stage 1 revenues expected to be ~\$41.5M per year
- Capital equipment expected to be paid back within 6 months of commencing full-scale operations
- Once established, Amaero expects to grow capacity in terms of range of alloys and volume of output 5-10 fold in the first 3 years of operations



CONTACT

BARRIE FINNIN

Chief Executive Officer Amaero International Ltd. info@amaero.com.au

RONN BECHLER

Investor and Media Relations Advisor Market Eye Pty. Ltd. +61 400 009 774 ronn.bechler@marketeye.com





AMAERO ADDITIVE MANUFACTURING

+ + + + + + ANY QUESTIONS?