



**AMAERO**  
ADDITIVE MANUFACTURING  
ASX:3DA

**FY21 Results Presentation**  
**30 August 2021**

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**Amaero International Limited is an emerging global company specialising in metal additive manufacturing (3D printing) for the defence, aerospace, and industrial tooling sectors.**

**With operations in the USA and Australia, we are a leading provider of 3D printing services, machines and metal powders to some of the world's largest manufacturers.**



# Key projects

## Fletcher Building (Tooling project)

Amaero is contracted to produce a 3D printed tool to replace the incumbent technology. This project has significant ongoing revenue potential and production test results are expected during Q1 FY22.

## Boeing (Aerospace Project)

Amaero has been contracted to work on several projects with Boeing, which is the world's largest aerospace company. Our US manufacturing facilities were predominantly established to service this client and its growing requirements.

## Middle East Facility (Defence Project)

Amaero is in the process of negotiating to build the world's largest centre of excellence for metal 3D printing in the Middle East. This project will be funded by one of the world's largest defence companies.

## Titanium alloy powder manufacturing plant (Powder project)

Amaero to build an \$8m facility in Victoria which is expected be the most advanced titanium alloy powder plant in the world. The project will take titanium alloy bar stock inputs and convert the material into powder for 3D printing at approximately half the cost of the current global benchmark.



# FY21 highlights

- **Fletcher Insulation:** Amaero completed the successful build of the recycled Fletcher glass spinner with IN718 alloy and finalised the spinner tooling repair patent, with the full specification filed in early June. Subsequently, the production geometry in the production alloy was successfully built.
- **Boeing Purchase Order:** Delivery of purchase order; Amaero continues to build out its USA facilities to cater for expanded relationships with Boeing's various divisions.
- **Rio Tinto:** Amaero received the first batch of ingots manufactured by Rio Tinto under its collaboration agreement for the development of the supply chain for Amaero's high-performance, High Operating Temperature Aluminium Alloy, "Amaero HOT Al".
- **Middle East Facility:** Draft Heads of Agreement submitted for proposed 3D printing centre in the Middle East; Heads of Agreement expected to be signed and contract negotiations to commence by 2H CY21.
- **Customised and proprietary titanium plant:** New plant to be built in Victoria, Australia. Using a proprietary Amaero developed specification, the facility will enable the production of aerospace grade titanium to the highest standards at approximately half the cost of the nearest competitor. When completed, expected to generate revenues of approximately \$30m per annum.
- **PPK Joint Venture:** Amaero Alloys Pty Ltd and PPK Group Limited established a Joint Venture company called Strategic Alloys Pty Ltd, with ownership being 45% Amaero Alloys Pty Ltd, 45% PPK Aust Pty Ltd, and 10% Deakin University. This JV will focus on the development of new super strength alloys incorporating nano-particles such as Boron Nitride Nanotubes (BNNT) in their formulation, to provide superior grain refining and strengthening, significantly improving mechanical properties.
- **Strengthened Advisory Board and Management team:** Christopher Pyne and Tuan TranPham appointed to Global Advisory Board; Ken Davis appointed VP of North American operations.
- **Placement and SPP raised \$13.825 million; cash balance of approximately \$11.5 million:** provides strong capacity to fund the Company's growth strategy and execute on planned work programs.



Completed build of the Fletcher tool

# Additive Manufacturing

Additive manufacturing, also known as 3D printing, builds a three-dimensional object from a computer-aided design (CAD) model.

Process adds material layer by layer to form the component.

Conventional machining, casting and forging processes see parts made by the removal of material by machining from a bulk item leaving behind the component, or poured into a mould and then machined, or shaped by means of dies, presses and hammers.

The advantages of 3D printing include the ability to produce very complex shapes or geometries and faster product development cycles without tooling.

Amaero uses 3D printers to make components out of various metal alloys for its clients, mainly in the defence, aerospace and tooling industries.

Amaero's expertise is in knowing how to use these materials in the 3D printers to achieve the manufacturing outcomes sought by its clients.



# Structural trends in additive manufacturing

Adoption of additive manufacturing is increasingly driven by:

- Reduced costs associated with 3D printing equipment,
  - Accuracy of construction of advanced designs,
  - Parts consolidation, weight reduction and component optimisation, and
  - Improved performance and safety of 3D printed components.
- AM market approximately A\$15bn in 2020<sup>1</sup>.
  - Less than 20% of companies were using AM in their manufacturing process<sup>2</sup>.
  - 3D printing set to revolutionise manufacturing, growing at an annual rate of roughly 60% from US\$12 billion last year to US\$120 billion in 2025, making it the fastest growing sector on earth<sup>3</sup>.
  - According to IBIS World in 2020, the fastest growing industry was the manufacture of Respiratory / Ventilators, with a growth rate of 54.8%. Additive manufacturing (3D Printing) has now surpassed that rate<sup>3</sup>.
  - Growing utilisation of AM is forecast to see the market grow 10x or at +28% CAGR this decade to reach US\$146bn<sup>4</sup>.

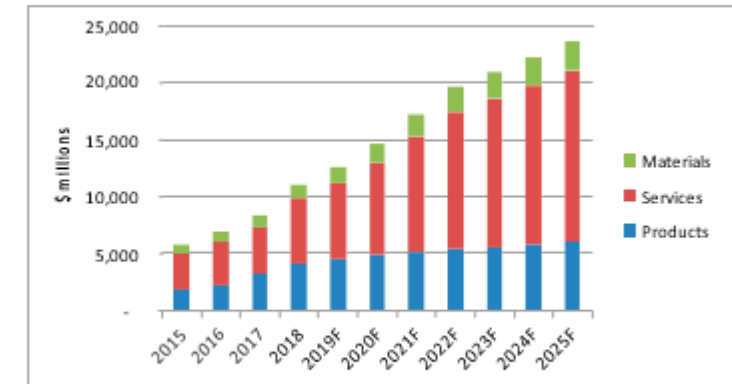
1. AMFG 2020 Report

2. "3D printing: Hype of game changer" Ernst & Young 2019

3. Ark Invest, Big Ideas Report 2021

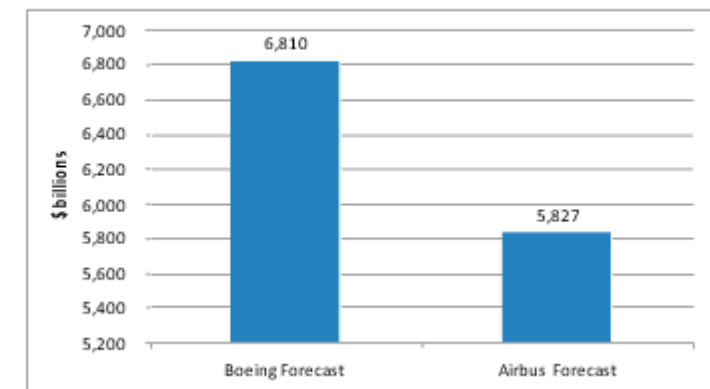
4: Wohlers report 2020

Figure 4: AM Market Size by Segment, 2015 to 2025F



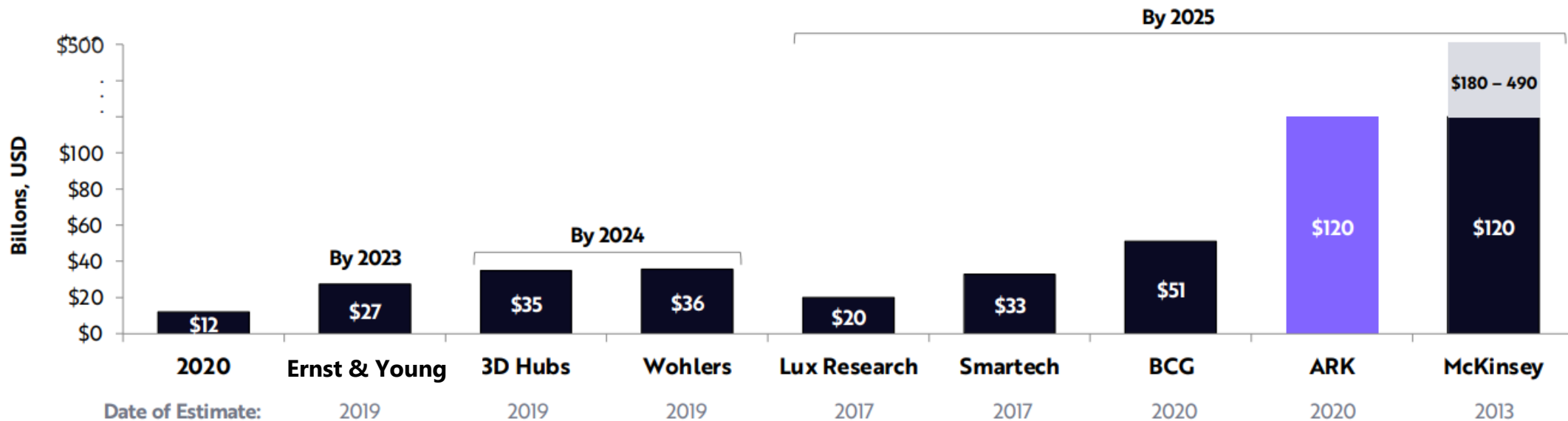
Source: Frost & Sullivan

Figure 7: Forecast Value of Aircraft Deliveries, 20 years



**ARK believes that the global 3D printing market will scale at a compound annual rate of 60% during the next five years, from \$12 billion to roughly \$120 billion by 2025.**

### Global Estimates for 3D Printing Market 2020 to 2025



Forecasts are inherently limited and cannot be relied upon. For informational purposes only and should not be considered investment advice, or a recommendation to buy, sell or hold any particular security. Source: ARK Investment Management LLC, 2020 based on data sourced from 3D Printing Trends 2020: Industry Highlights and Market Trends. 3D Hubs Manufacturing LLC, 2020, [www.3dhubs.com](http://www.3dhubs.com). "EY's Global 3D Printing Report 2019." Ey.com/De, Ernst & Young GmbH, Oct. 2019. McCue, TJ. "Significant 3D Printing Forecast Surges To \$35.6 Billion." Forbes, Forbes Magazine, 3 Apr. 2019, [www.forbes.com/sites/tjmccue/2019/03/27/wohlers-report-2019-forecasts-35-6-billion-in-3d-printing-industry-growth-by-2024/#121d7a9d7d8a](http://www.forbes.com/sites/tjmccue/2019/03/27/wohlers-report-2019-forecasts-35-6-billion-in-3d-printing-industry-growth-by-2024/#121d7a9d7d8a). The 3D printing market will quadruple to US\$12 billion by 2025. "3D Printing Market to Quadruple to \$12 Billion in 2025" [press release], Lux Research, April 29, 2014, <http://www.luxresearchinc.com/news-and-events/press-releases/read/3d-printing-market-quadruple-12-billion-2025> "SmarTech Analysis Annual Additive Manufacturing Market Summary Report Says AM Market Grew to Over \$10B Worldwide in 2019." Attachment, [www.globenewswire.com/NewsRoom/AttachmentNg/2bfad03b-3edd-4c69-b0a5-e83ca835ea6e/en](http://www.globenewswire.com/NewsRoom/AttachmentNg/2bfad03b-3edd-4c69-b0a5-e83ca835ea6e/en). Küpper, Daniel, et al. "Get Ready for Industrialized Additive Manufacturing." BCG Global, BCG Global, 8 Jan. 2021, [www.bcg.com/publications/2017/lean-manufacturing-industry-4.0-get-ready-for-industrialized-additive-manufacturing](http://www.bcg.com/publications/2017/lean-manufacturing-industry-4.0-get-ready-for-industrialized-additive-manufacturing). Manyika, James, et al. "Disruptive Technologies: Advances That Will Transform Life, Business, and the Global Economy." McKinsey & Company, McKinsey & Company, 1 Mar. 2013, [www.mckinsey.com/insights/business\\_technology/disruptive\\_technologies](http://www.mckinsey.com/insights/business_technology/disruptive_technologies).



# Engaging with the world's most advanced industries...

... through world-leading research and technology



## Aerospace

- Amaero's world-class enterprise in metal 3D printing is leveraged by its aerospace customers to accelerate project delivery and simultaneously improve safety, performance and enabling component weight reduction.
- The Company's commitment to providing aerospace customers with quality focused on safety, reliability and meeting regulatory compliance backed by AS 9100D certification.



## Defence

- Six of the world's top ten defence primes (companies) have worked with Amaero on R&D and manufacturing projects focused on improving performance, weight reduction, reduced part count and increased durability.



## Tooling

- Amaero's team of specialists have extensive experience in tooling design and manufacturing solutions, prototypes and metal die casting.
- Specialising in high-quality manufacture of precision tooling using metal 3D printing, including plastic injection moulding and metal die casting moulds for high-volume manufacturing.

# Working with the world's foremost manufacturers

Amaero is proud to have provided 3D printing services to some of the world's largest companies, leading the way in developing a more efficient manufacturing process.



**BAE SYSTEMS**



**GILMOUR SPACE**



Australian Government  
Department of Defence  
Science and Technology

**THALES**

Fletcher  
Insulation



# Business model

Designed to generate transactional and recurring revenue

## 1 Design and Prototyping

Cost-plus basis

- Initial design and prototyping
- Qualification and design freeze
- Cost-plus basis

## Contract Manufacturing

Price per unit

- Manufacturing components to customer specifications

## Tooling

Price per unit

- Tools for plastic moulding / metal die casting / extrusion

## 2 Equipment sales

Cost plus mark up

- Sale of proprietary 3D printers (best in class)
- Turnkey facility solutions

## Training, service and maintenance

Fee for service

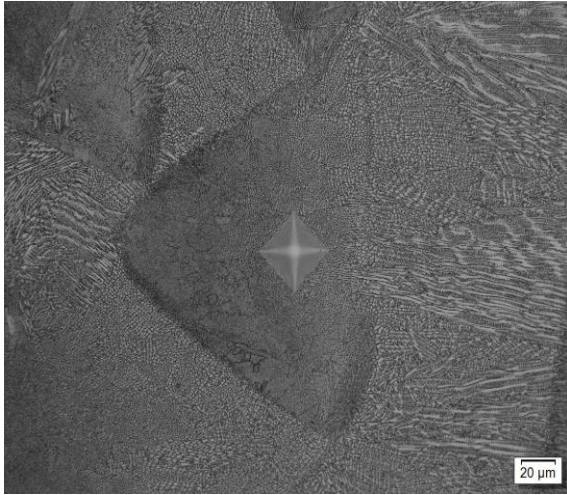
- Post-sales support and maintenance
- Training plus university certification

## 3 Commercialising metal alloys

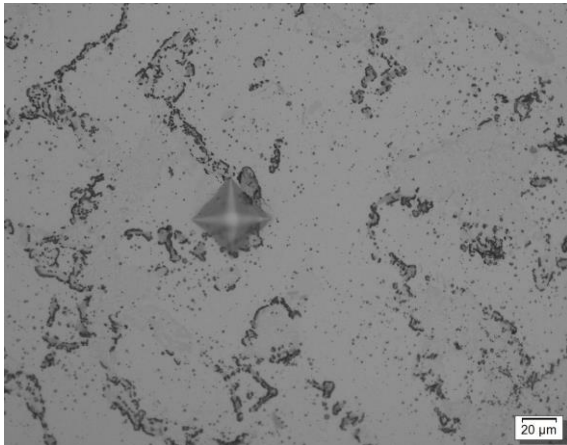
Price per unit

- Rights to commercialise patented proprietary alloys developed by Monash University
- Strategic Alloys JV with PPK commercialising breakthrough high-tech materials
- Intends to offer metals powders as consumables to 3D printer customers
- Commissioning of proprietary powder plant

# 3D printed tooling for glass fibre technical results

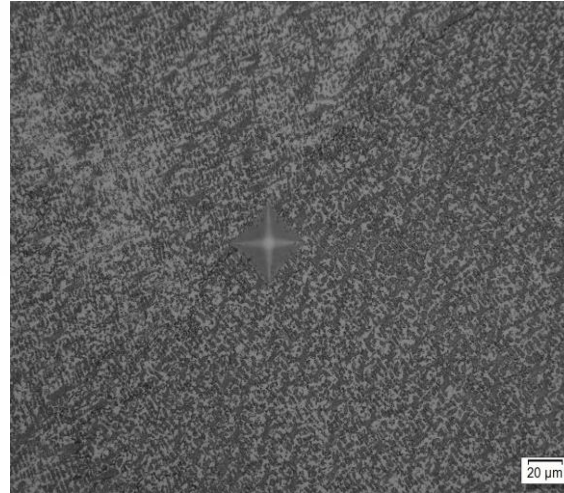


Amaero HOT Co 3D printed



Fletcher Alloy Baseplate

Optical images showing hardness indents



Interface metal

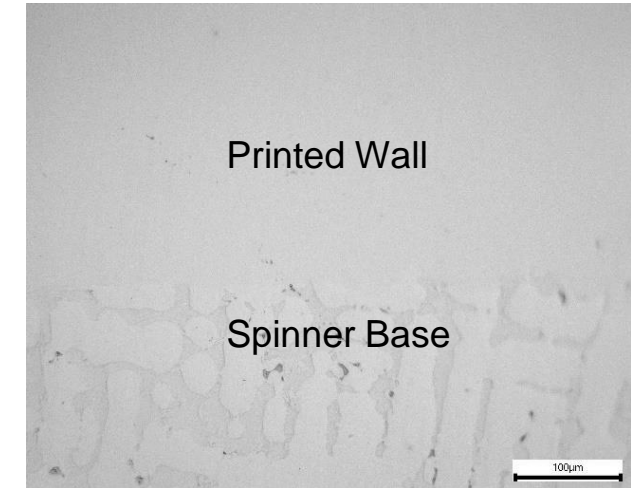
Hardness Traverse

502 HV0.5

445 HV0.5

381 HV0.5

Average hardness values are given in each separate region



Interface of 3D printed repair build

- Shows good bonding between base and the wall
- Micro shows no cracks or pores



# Separating people and powder

Printing and metal powder handling solutions under inert atmosphere



## Powder Preparation

- Powder Dryer
- Powder Decanter
- Powder Sieve
- Powder Vacuum
- Powder Silo

## SLM Printing Machines

- 3D Metal Printing
- Open Parameter Control
- Multiple Build Sizes and Laser Configurations
- Cartridge Configuration For Rapid Changeover and Safety

## Powder Handling & Recovery

- Powder Removal Glove Boxes
- Safe, Inert Powder Handling

# Amaero equipment



Amaero SP800:  
world's largest  
laser powder  
bed machine  
expected to be  
launched Q4  
2021



Safe powder handling equipment



SP100



SP260



SP400



SP500



SP800

# Growth strategy

Our growth strategy is to focus on immediately addressable commercial opportunities (such as the tooling market) whilst still providing growth optionality through long-term R&D with the global defence and aerospace industries.

- **Short-term (1-2 years):** Focus on development and manufacture of consumables, tooling and services (e.g., Fletcher Insulation) and sale of 3D printing machines and metal powders.
- **Medium-term (3-5 years):** Demonstrate our technology and solutions expertise by engagement in qualification periods and pre-production investment for large projects in the defense and aerospace sector (e.g., defence prime contracts).
- **Longer Term (5+ years):** R&D projects that lead to us participating in the development of future platforms and technology predominately in collaboration with our customers (e.g., Hot AI partnership with Rio Tinto).

Key areas of growth focus are:

- **USA defence partnerships:** Through our USA operation in El Segundo California, we are strategically located near a number of large aviation customers, with many current and prospective customers which will allow us to improve competitiveness and efficiencies in winning and delivering contracts with USA-based clients.
- **Tooling market:** Expand our presence in the tooling market (especially in the USA) and in plastic injection tools and die casting moulds.
- **3D printer and powder sales:** Sale of SP series 3D printers and related equipment and the sale of consumable metal powders for the SP series machines allowing to generate ongoing revenue along with service and maintenance.

# Financial Results for the year ended 30 June 2021

	FY21	FY20	% increase
<b>Revenues</b>	\$504k	\$117k	332%
<b>Other income</b>	\$839k	\$209k	302%
<b>Loss</b>	\$6.990 million	\$5.778 million	21%
<b>Cash and cash equivalents</b>	\$11.467 million	\$4.019 million	185%

- Revenues increased by 332% on the previous corresponding period due to increased sales of evaluation parts.
- Other income increased by 302% due to significant increase in R&D tax refunds.
- Company loss increased by 21% due to ongoing expansion and commitment to growth operations, drive to commercial operations at scale, and preliminary steps towards commercialisation of a variety of technologies.
- Cash and cash equivalents increased by 185% as a result of capital raising in December-January.



# Amaero 3D investment highlights

1

## Rapidly growing global market

- Market expected to grow by 28% CAGR through to 2030
- Potential to be a \$146bn market
- ARK's 2021 Big Ideas Report says 3D printing will revolutionise manufacturing, growing at an annual rate of roughly 60% from \$12bn last year to \$120 bn in 2025 making it the world's fastest growing sector

2

## Leading technology and product footprint

- Strong IP protection
- Emerging manufacturer of 3D printing machines
- Developing leading alloy and materials technology

3

## Strong customer, research partnerships and advisory board

- Engaged with a range of world-class companies such as Boeing, Rio Tinto, Raytheon
- Continuing to develop our cutting-edge technology with research partners such as Monash Uni, CSIRO and the University of Adelaide
- Advisory board with global experts, position Amaero for strategic projects

4

## Rapidly growing towards profitable contracts

- Growing number of commercial relations 35+
- Finalising expansion project with world's largest aerospace company
- Finalising product delivery for one of world's largest tooling contracts
- Preparing to build world's largest metal 3D printing centre
- Construction of world-class Ti powder plant facility



**AMAEKO**  
**ADDITIVE MANUFACTURING**

**Thank you. Questions?**





**AMAEKO**  
**ADDITIVE MANUFACTURING**

## Appendix

# Company snapshot

**Amaero International Limited (ASX:3DA) is an Australian company specialising in metal additive manufacturing (3D printing) for the defence, aerospace, and automotive sectors.**

Amaero was established through the Monash University Centre for Additive Manufacturing, the world's leading institute for metals additive manufacturing for the aviation and defense sectors.

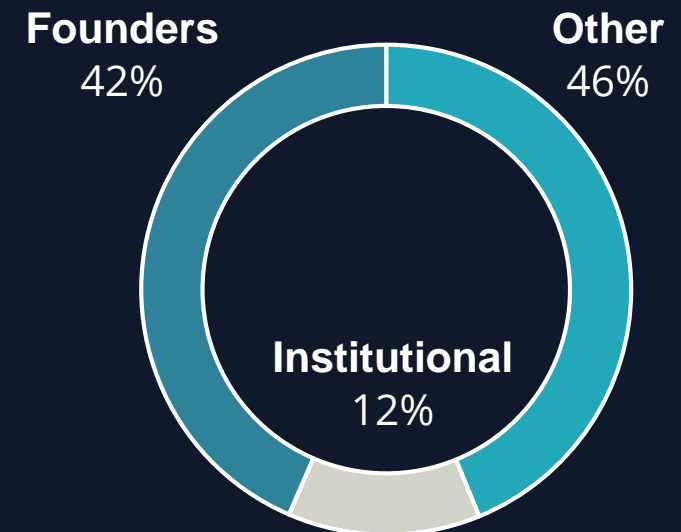
The Company has grown to become a leading provider of 3D printing services, machines & metal powders to some of the world's largest manufacturers in these sectors.

Amaero is currently Australia's largest metal 3D printing company (by volume of machines), with facilities in Melbourne, Adelaide and Los Angeles.



ASX Code	3DA
Shares on issue	201m
Share price (27 <sup>th</sup> August 2021)	\$0.50
Market Capitalisation	\$102.1m

## Shareholder breakdown





# Amaero today

## Growing scale

- Australia's largest metal 3D printing company (by volume of 3D printers)
- World's largest metal AM R&D team provided by research partner Monash University
- Several industry world firsts including the first 3D printed jet engine and aerospike rocket engine
- World's most capital efficient Selective Laser Melting (SLM) 3D printers
- World's safest metal 3D printing machines
- Soon to have the largest range of various sized 3D metal printers globally (Q4 2021)
- Six of the top 10 defence companies in the world are Amaero clients
- Amaero facilities in Melbourne, Adelaide, and Los Angeles



# Corporate structure

## Board of Directors



**David Hanna**  
Chairman



**Stuart Douglas**  
Executive Director



**Kathryn Presser**  
Non-Executive Director



**Barrie Finnin**  
Chief Executive Officer

## Advisory Board

**Christopher Pyne**  
Advisory Board  
Defence and  
Geopolitics

**Tuan TranPham**  
Advisory Board  
3D Printing

**David Wolf**  
Advisory Board  
Global Defence Offsets

**Amaero International  
Ltd**

**Board of Directors**

**Management Team**

*Shared Group  
Services*

Financial  
Controller

Exec. Director  
Strategy &  
Growth

Legal

**AM Aero, Inc**

**Amaero Engineering Pty Ltd**



# Experienced Board and senior management



**David Hanna**

Chairman

- Director of Business Strategy for Monash University since 2012, where he leads a small team that provides strategic support and financial advice in relation to the University's major investment decisions.
- 15 years in a variety of senior management positions in the Victorian Government, focused mainly around economic development policy, international policy and operations and innovation policy.
- Formerly worked for Commonwealth Government, including three years on the personal staff of then Prime Minister, Bob Hawke.



**Stuart Douglas**

Executive Director

- 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 3 years. He implemented a similar strategy for Titomic Limited (ASX:TTT), which was the No. 1 new listed entity of 2017/18 on ASX and one broker deal of the year. He is co-founder of Innovyz, one of Australia's leading commercialisation firms which has assisted more than 70 early stage innovations to commercialise.



**Kathryn Presser**

Non-Executive Director

- Kathryn has 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.
- She holds extensive experience in governance, 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 Finnin**

Chief Executive Officer

- Barrie is an experienced executive who has created a number of spin-off ventures, co-operative research centres and start-ups and has worked in many different roles including CEO, Director and General Management.
- Senior management level for the CSIRO for more than 12 years and has been involved in the manufacturing industry for over 25 years.

# Amaero USA senior management



## **Ken Davis, VP North American Operations**

- Ken brings to Amaero a deep knowledge of additive manufacturing and strong relationships with key customers
- Previously Director of Additive Manufacturing and site leader of mould, the worlds only NADCAP approved site for AM using LPBF & EBPBF.
- Ken's knowledge of qualification processes for AM and Aluminium powder metallurgy will enable rapid qualification acceptance by BDS



## **Darryl Cummins, Manager – Digital Manufacturing**

- Over 20 years' experience in 3D printing systems and additive manufacturing, working with various materials from plastics to metals.
- Worked with a variety of companies including Intel, Facebook and Stratasys and has been exposed to automotive applications of AM at BMW, Sauber Racing and Faraday Future.
- Received Underwriters Laboratories "UL" certification for additive manufacturing in 2017.
- Prior to joining Amaero, Darryl worked with Additive Industries, he installed, commissioned and upgraded AM systems at SpaceX.



## **Shon Dionne, Sales Engineer, AM Machines & Tooling**

- Over 20 years' experience in the automotive component manufacturing sector working for a number of manufacturers of automotive components including MVP Plastics, Blue Water Automotive Systems, Blackhawk Automotive Plastics, Progressive moulded Products, A. Raymond and Huron Plastics.
- During his career, Shon has engaged many of the OEMs and tier 1's in the automotive sector including Takata, Magna, Ford, Chrysler, General Motors, Lear and Tesla.
- His expertise includes business development, design of injection moulding manufacturing processes, project management and tooling design for injection moulding



## **Dr. James Sears, Technology Fellow, Quality Systems & Additive Manufacturing**

- Jim has had leadership and engineering roles in GE Research, Carpenter Technology Corporation and Lockheed Martin.
- He has over 30 years experience in Titanium Atomization and AM fabrication
- At Amaero, Jim is responsible for the quality systems, powder production development and metal 3D printing processes



# Contact

**For further information, please contact:**

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