



**Aurora Labs<sup>®</sup>**

**NEW HORIZONS IN 3D METAL PRINTING**

ASX:A3D

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# OUR VISION

## VISION

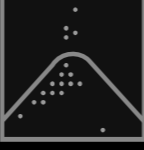
Give people the freedom to build anything.

## MISSION

Empowering industry to revolutionise manufacturing.



**PRINTERS**



**POWDERS**



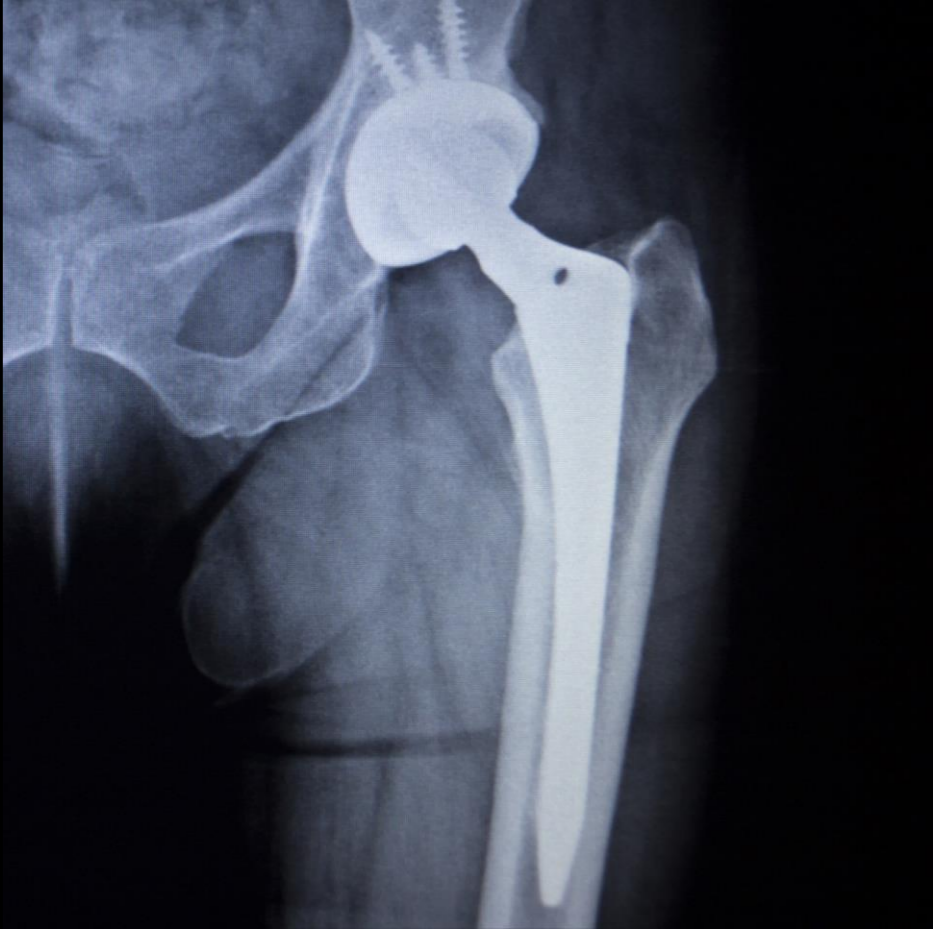
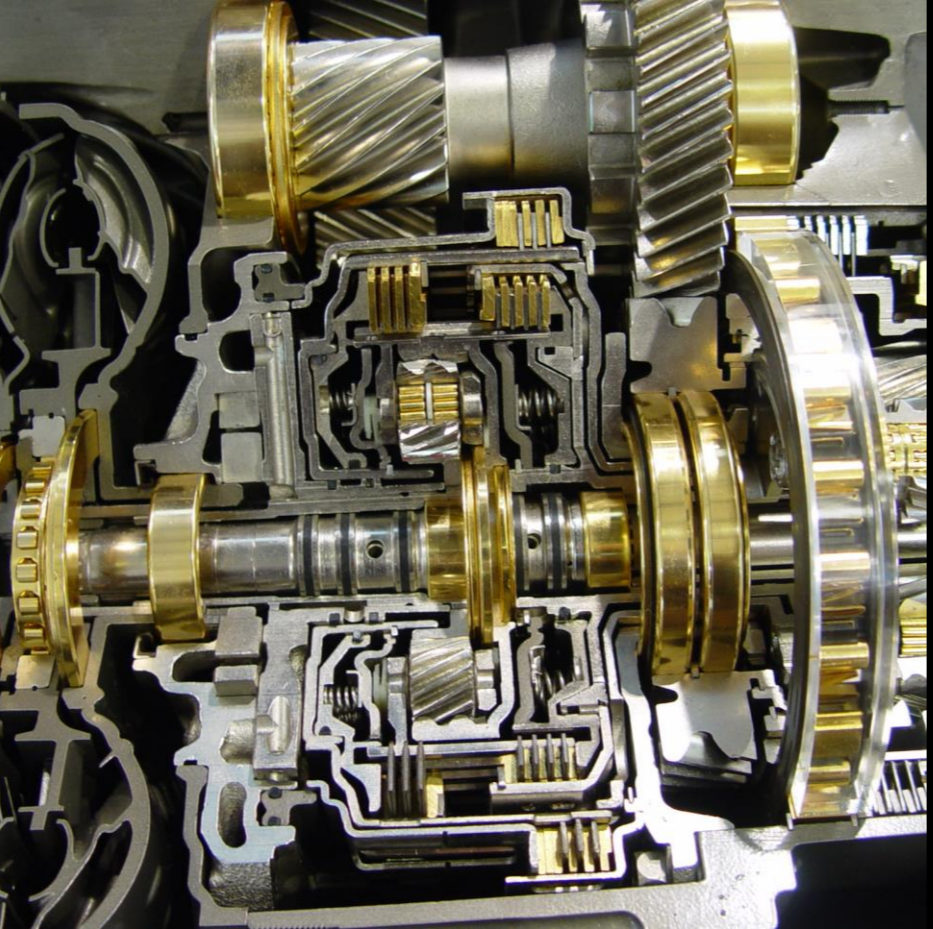
**PARTS STORE**



**CERTIFICATION**



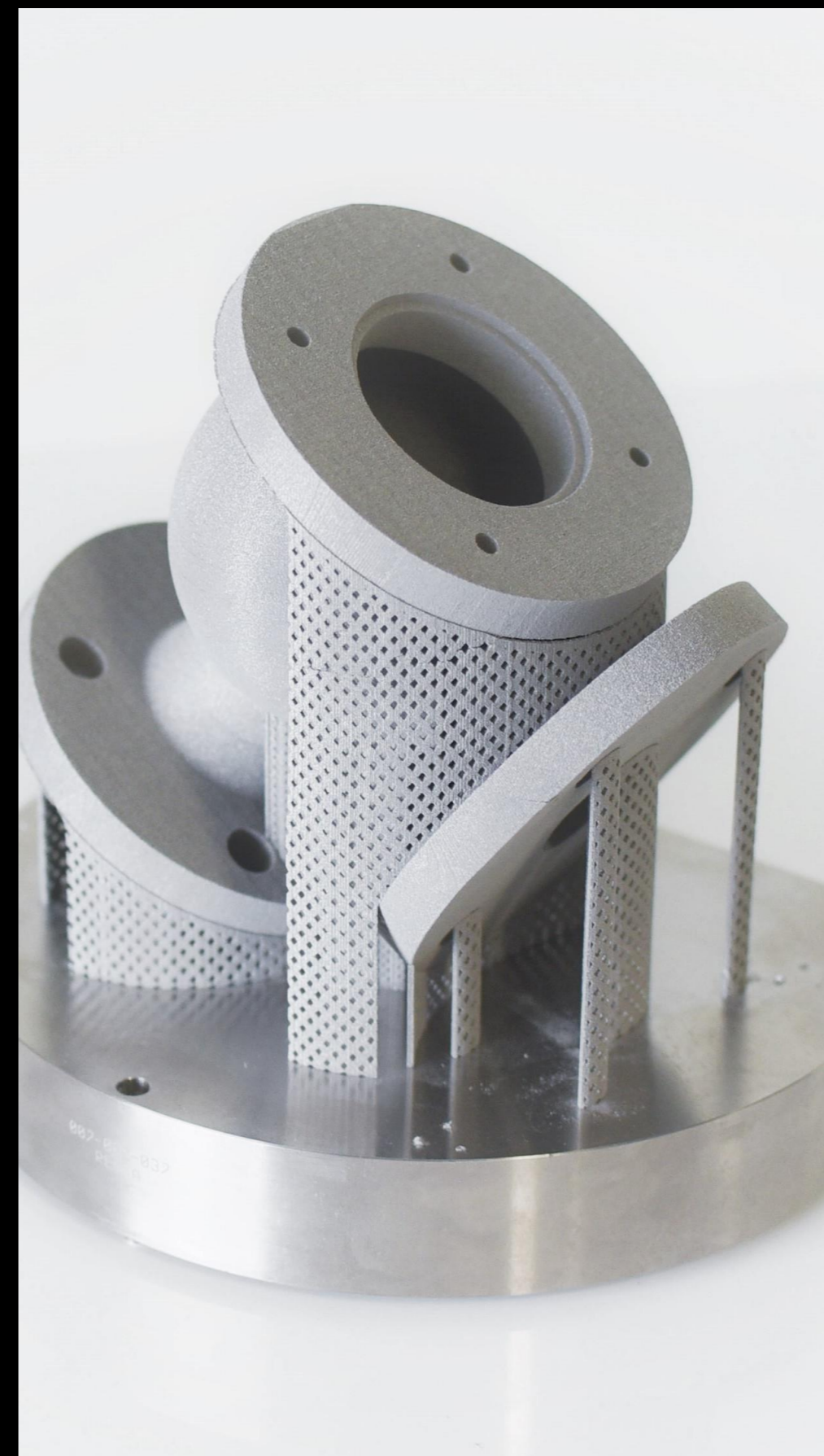
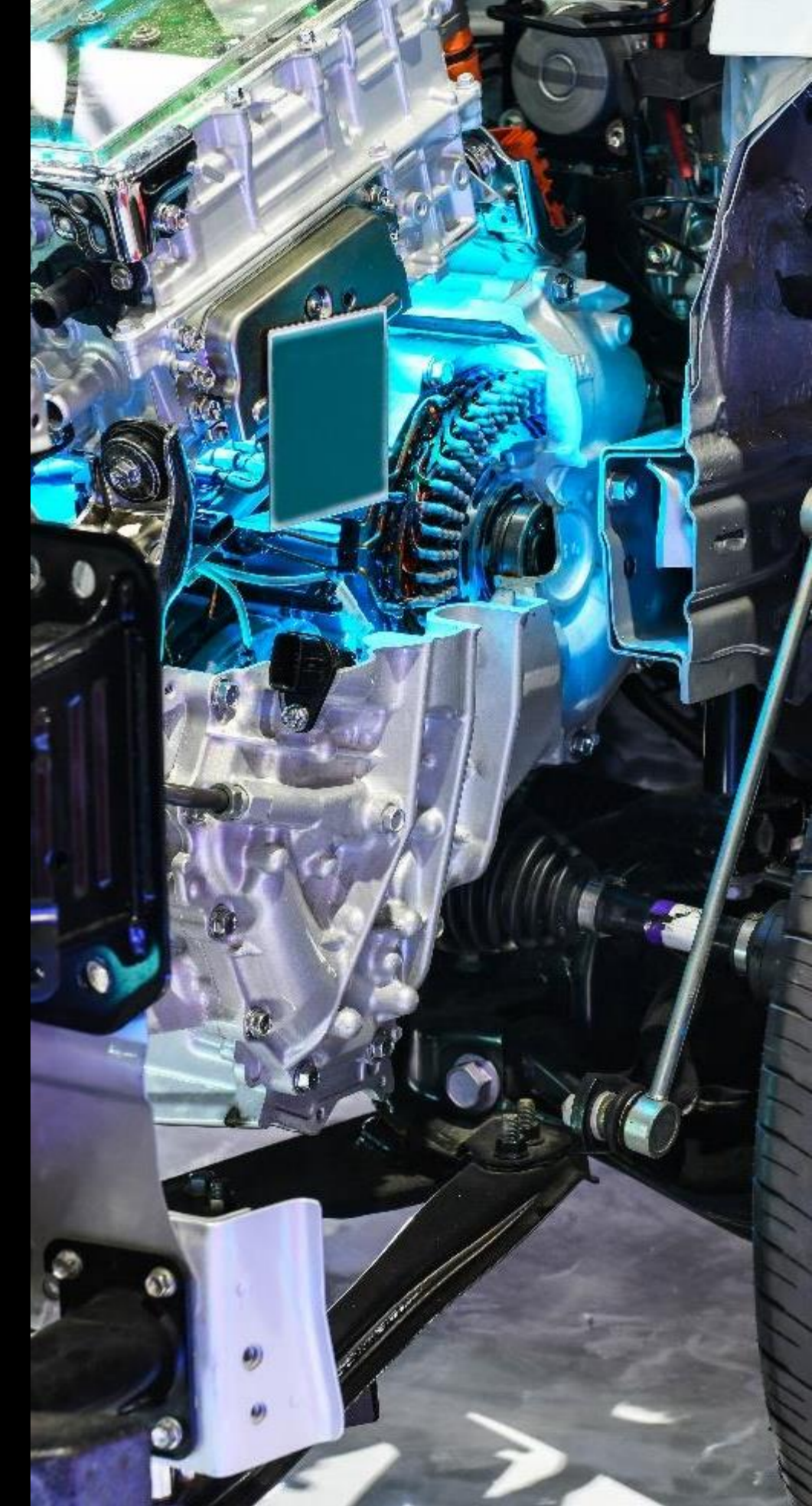
**ADDITIVENOW**



# THE OPPORTUNITY

The world's industrial base maintains parts inventories that tie up hundreds of billions of dollars of capital.

Rapid, on demand manufacturing of parts – displacing casting and metal fabrication processes – will release that capital and will disrupt the requirement for massive manufacturing infrastructure.





Gland Follower 3D printed by Aurora Labs. A common component in many pumping systems.

# THE SOLUTION

Metal additive manufacturing (AM) has long been identified as a potential solution...

...but slow production rates and small output capability have limited its acceptance...

**...until now.**

A3D is designing and manufacturing rapid 3D metal printers to overcome these limitations. Current print speeds are clocked at 350kg per day.

# THE TARGET MARKET



## GLOBAL METAL MANUFACTURING

Our ultimate market is the global metal manufacturing market which is expected to reach 4 Trillion dollars by 2020<sup>1</sup>



## OIL & GAS

Major projects of \$147b by 2019<sup>2</sup>



## AUTOMATIVE MARKET

"The profit of the 17 most important (manufacturers) rose in 2017 to a total of around 106 billion euros (\$121 billion)"<sup>3</sup>



## POWER GENERATION TURBINES

Sales of power generation gas turbines is projected to be \$112.11 billion from 2017-2026<sup>4</sup>



## HEAVY EQUIPMENT

Agricultural machinery (sized at about \$126 billion in 2013<sup>6</sup>), construction equipment (valued at \$138.5 billion in 2012<sup>7</sup>) and mining equipment (valued at \$71 billion in 2012<sup>8</sup>)



## AVIATION

Requiring some 37,400 new passenger and dedicated freighter aircraft at a value of US\$5.8 trillion over the next 20 years<sup>5</sup>

1. Research and Markets, Global Metal Manufacturing Market Briefing 2018 – ResearchAndMarkets.com, February 21, 2018, <https://www.businesswire.com/news/home/20180221005897/en/Global-Metal%20Manufacturing-Market-Briefing-2018>

2. Source: Goldman Sachs, Top Projects 2018, April 9 2018

3. <https://www.forbes.com/sites/neilwinton/2019/01/03/healthy-global-auto-sales-growth-looks-doomed-in-2019/>

4. <https://www.turbomachinerymag.com/electrical-generation-gas-turbines-will-see-sales-increase-but-overcapacity-looms/>

5. <https://www.airbus.com/aircraft/market/global-market-forecast.html>

6. Global Agricultural Machinery Industry, [http://en.wikipedia.org/wiki/Agricultural\\_machinery\\_industry](http://en.wikipedia.org/wiki/Agricultural_machinery_industry).

7. "Construction Equipment Market Analysis by Product And Segment Forecasts to 2020," Grand View Research, September 2015, <http://www.grandviewresearch.com/industry-analysis/construction-equipment-market-analysis>.

8. "Mining Equipment Market Will Reach USD 117.0 Billion by 2018: Transparency Market Research," PR Newswire, Oct. 22, 2014, <http://www.prnewswire.com/news-releases/mining-equipment-market-will-reach-usd-1170-billion-by-2018-transparency-market-research-280051182.html>.



Parts printed by Aurora Labs for use in RMP-1 printer

## WHY 3D METAL PRINTING?

### LIGHTER, STRONGER, CHEAPER:

- Step change in design flexibility
- Choice of materials
- Viable manufacturing options for bespoke or high and low volume parts

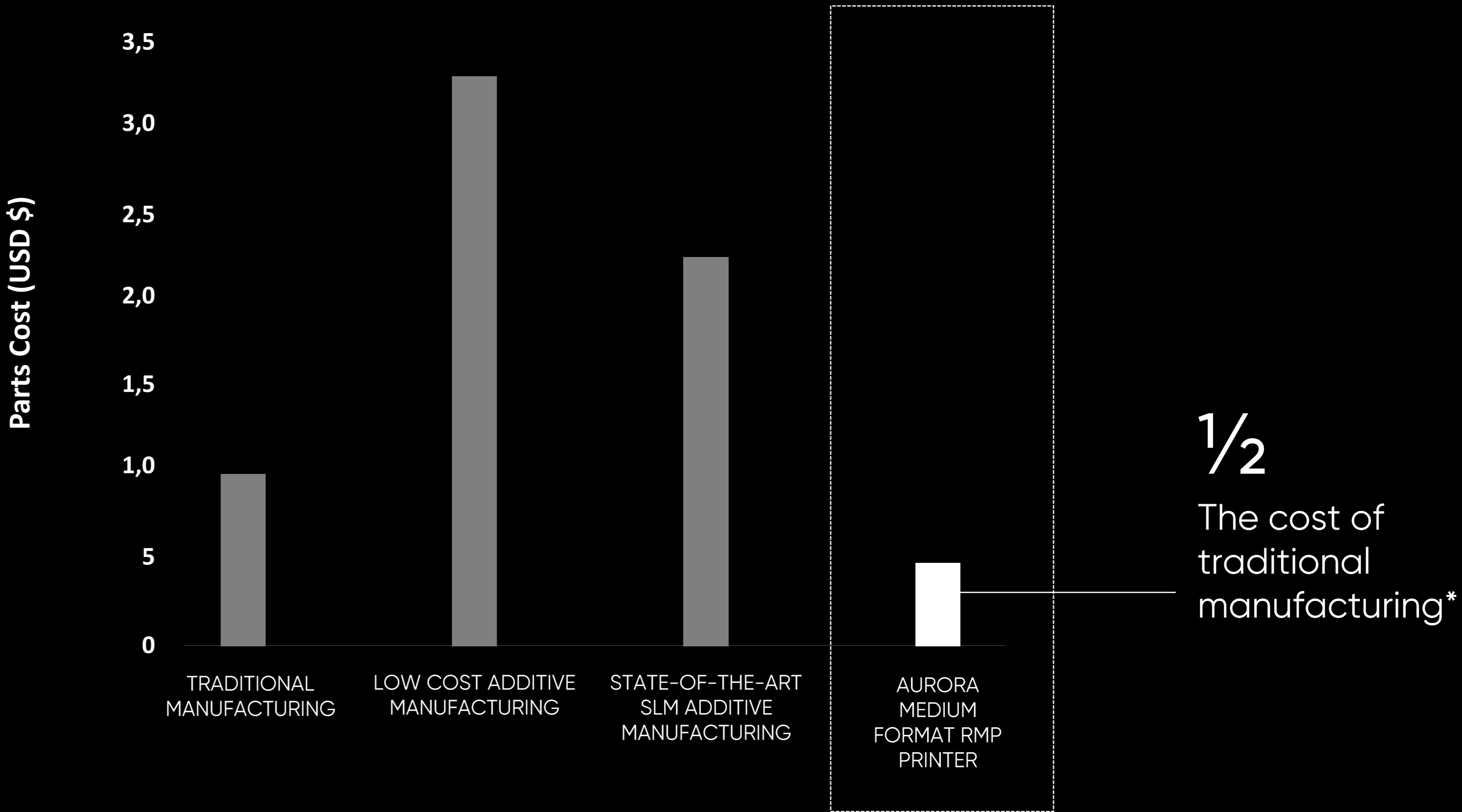
### A SUPPLY CHAIN REVOLUTION:

- Anywhere, anytime production
- "Print-on-demand" inventory
- Logistically efficient

# THE COST EQUATION



- Order of magnitude increase in production speed
- Leads to an order of magnitude drop in cost of printed parts



## PARTS PRODUCTION COST

\*Based on manufacturing a Worthington 4LR or 6LR impeller ring



# UNRIVALLED PRINTERS

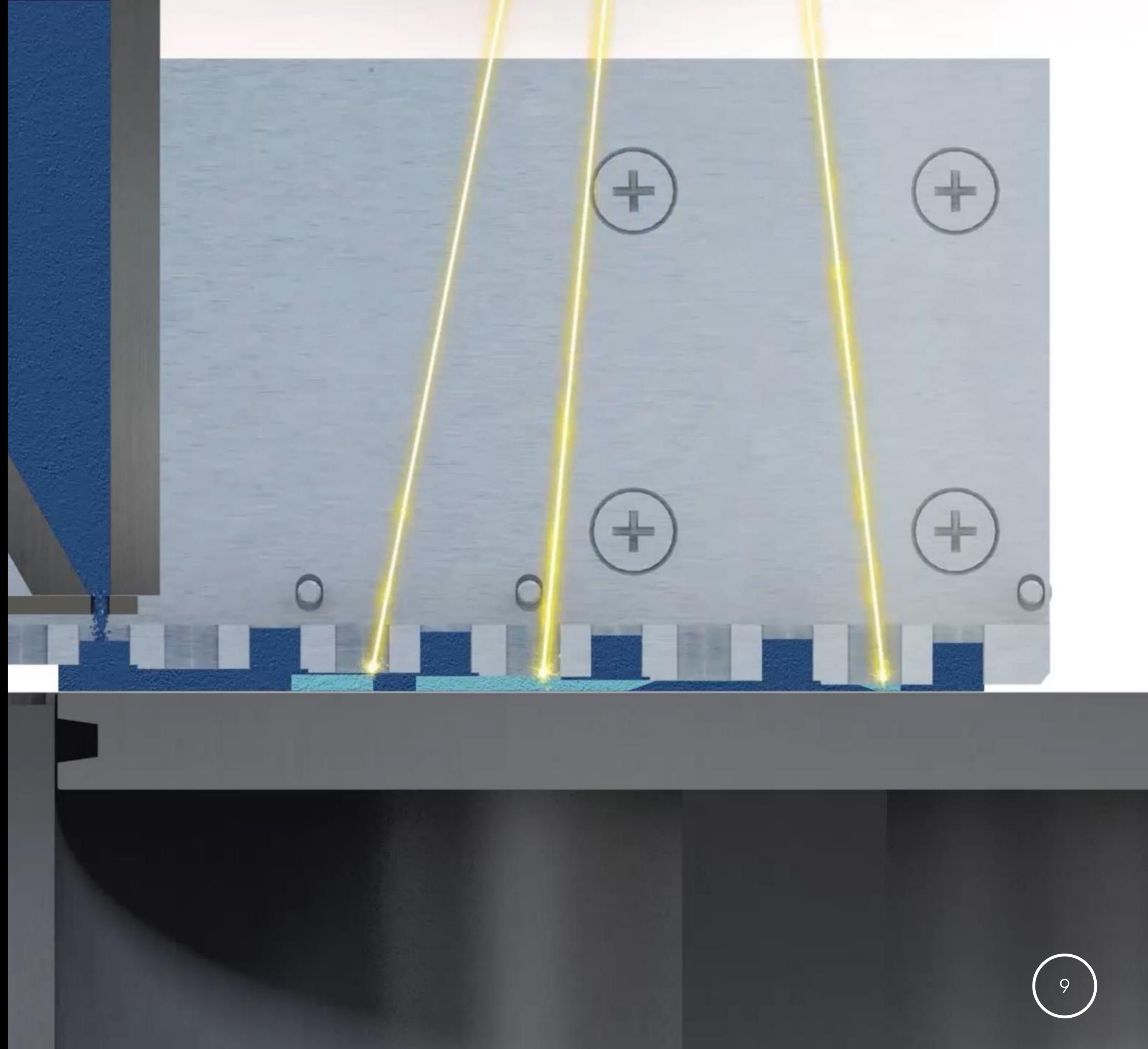
Aurora Labs' RMP printers use patent pending multilayer concurrent printing (MCP™) technology to build multiple metal layers in a single pass.

This increases production speed, and allows high accuracy at high speed which is unachievable in single layer printers.

Our process is complete as printed.

Click below to:

- [Watch explanatory MCP™ animation](#)
- [Watch printing video](#)



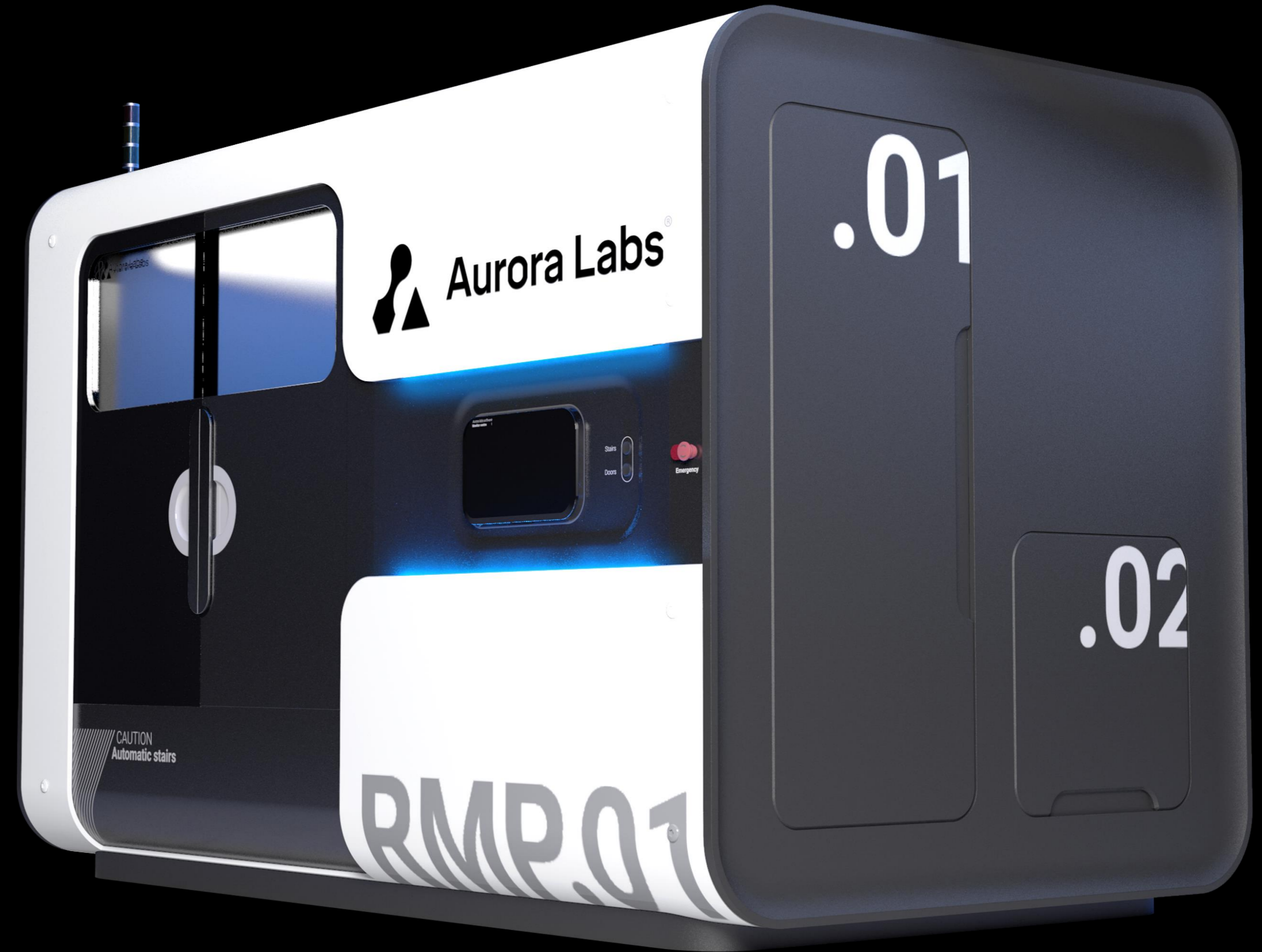
# OUR CURRENT MODEL

## RMP-1: Medium format 3D printer

- Now accepting pre-orders
- Revolutionary speed
- Build volume  $\varnothing$ 450mm by 400mm

In discussions with potential industry partners around pre-orders operating in the following industries:

- Medical & Dental
- Automotive
- Aerospace
- Oil and Gas
- Turbines
- Mining
- Marine



# THE FUTURE

## RMP-2: Large format 3D printer

- Ongoing Research and Development Project
- Revolutionary speed goal of 1 tonne per day
- Build volume target in excess of 1.5 cubic metres

Targeted to deliver the previously unattainable goal of printing with *speed, accuracy and low cost*, on a scale that challenges conventional metal manufacturing.



# THE COMPLETE SOLUTION

Our complete printing solution (Printing Ecosystem) is currently under development and will potentially deliver:



## PRINTERS

Fastest printers in the world



## POWDERS

Low cost powders



## PARTS STORE

Digitally certified parts available anywhere in the world  
Aurora's printers are available



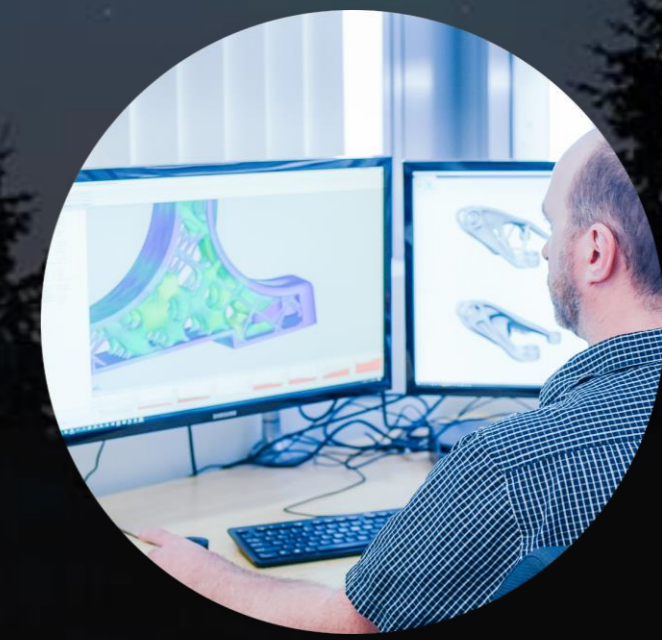
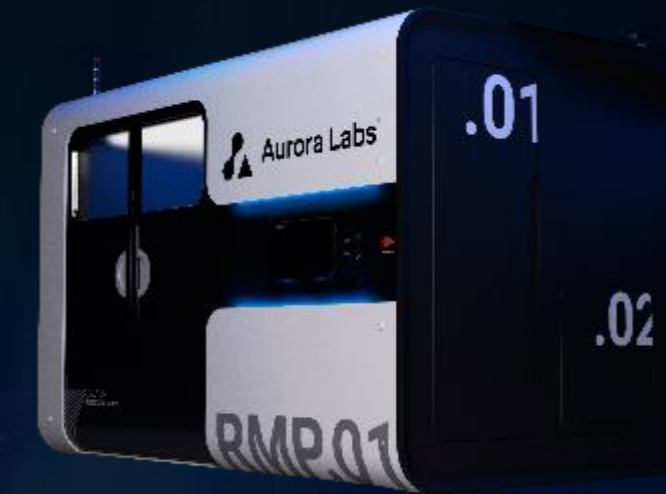
## CERTIFICATION

Provide control of production and certification of parts being fit for purpose



## ADDITIVENOW<sup>1</sup>

World class consultancy, advisory, design, qualification printing and one-off/short run production printing.



<sup>1</sup>"AdditiveNow Pty Ltd (ACN 630 628 134) is a company established as an incorporated joint venture between Aurora Labs Limited and Advisian Digital, a division of the WorleyParsons Group of Companies."

# BUSINESS MODEL

THE COMPLETE SOLUTION

## PARTS FEASIBILITY & DESIGN

ADDITIVENOW DIGITAL DESIGN & ENGINEERING

R & D PROJECTS

CERTIFICATION

## PRODUCTS & SERVICES

RMP SALE

RMP PRINT BUREAU

RMP LICENCE

## RECURRING REVENUE

POWDER SUPPLY

DIGITAL PARTS STORE

RMP SERVICING

# RMP-1 SALES PROCESS

- Leads generated through Aurora Labs' digital marketing activities, tradeshow attendances and Industry Partners
- Leads also generated through AdditiveNow
- Currently taking pre-orders with numerous discussions ongoing
- Currently in advanced discussions with 19 organisations
- Accepting deposits to fund production.



# PRE-ORDERS - PIPELINE TO SALES

- Aurora labs is in discussions with a over a 100 clients from various industries ranging from the Automotive industry to Oil & Gas
- Marketing has generated hundreds of leads, over 50 are in continuing discussions behind comprehensive MNDAs
- Currently in advanced pre-purchase discussions with the 19 organisations represented to the right. (Additive Now Clients not included)



**4** Automotive / Transport



**2** Marine



**3** Aviation / Aerospace



**1** Medical



**7** Industrial



**1** Mining



**1** Oil & Gas

# PARTNERSHIP: Gränges

Gränges AB is a leading global supplier of rolled aluminium products for heat exchanger applications and other niche markets. Every second car produced in the world today contains material manufactured by Gränges.

The Memorandum of Understanding provides a framework for potential future transactions in relation to:

- pre-order of an Aurora RMP-1 Rapid Manufacturing Printer
- supply of Gränges' proprietary aluminium powder
- engaging Aurora in R&D and market research projects regarding the use of aluminium in additive manufacturing; and
- market research into opportunities for the use of aluminium in additive manufacturing.

[www.granges.com](http://www.granges.com)



(left to right) Carl Rodling (Gränges), David Budge (Aurora Labs), Richard Westergård (Gränges) credit: Taya Reid



# ADDITIVENOW J.V.

AdditiveNow uses Aurora Labs' rapid manufacturing metal 3D printing technology along with engineering expertise from Advisian Digital to design, produce and deploy complex components for energy and resources operators.

[www.additivenow.com](http://www.additivenow.com)



Consultation

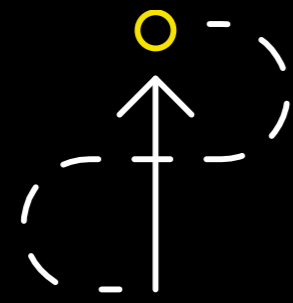


Engineering



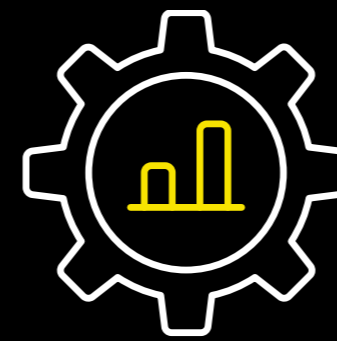
Short Run Production

# ADDITIVE NOW'S REVENUE GENERATING ACTIVITIES



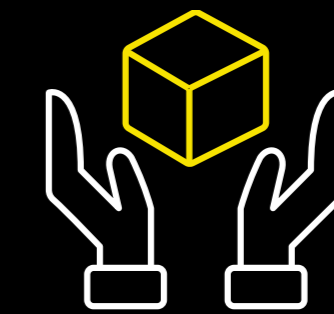
## Consultation

- Advise clients on benefits of additive manufacturing
- Review of inventory



## Engineering

- Reverse engineering of ageing parts
- Optimising parts for additive manufacture



## Short Run Production

- Use of Aurora Lab's printers
- Printing of high value-added parts at reduced cost
- Customer become familiar with the technology and its clear benefits
- Use of Aurora's metal powders

# AURORA LABS / ADDITIVE NOW RELATIONSHIP

- 50/50 JV between Aurora and a listed engineering giant with a market cap of circa \$4 billion
- Pathway to market for Aurora product with option for AdditiveNow to sell machines to their existing client base
- New clients have commissioned AdditiveNow to have parts printed and are willing to pay for the service
- Ongoing sales of parts are usually a precursor to sales of machines. This is a well understood process in the Print Bureau Industry



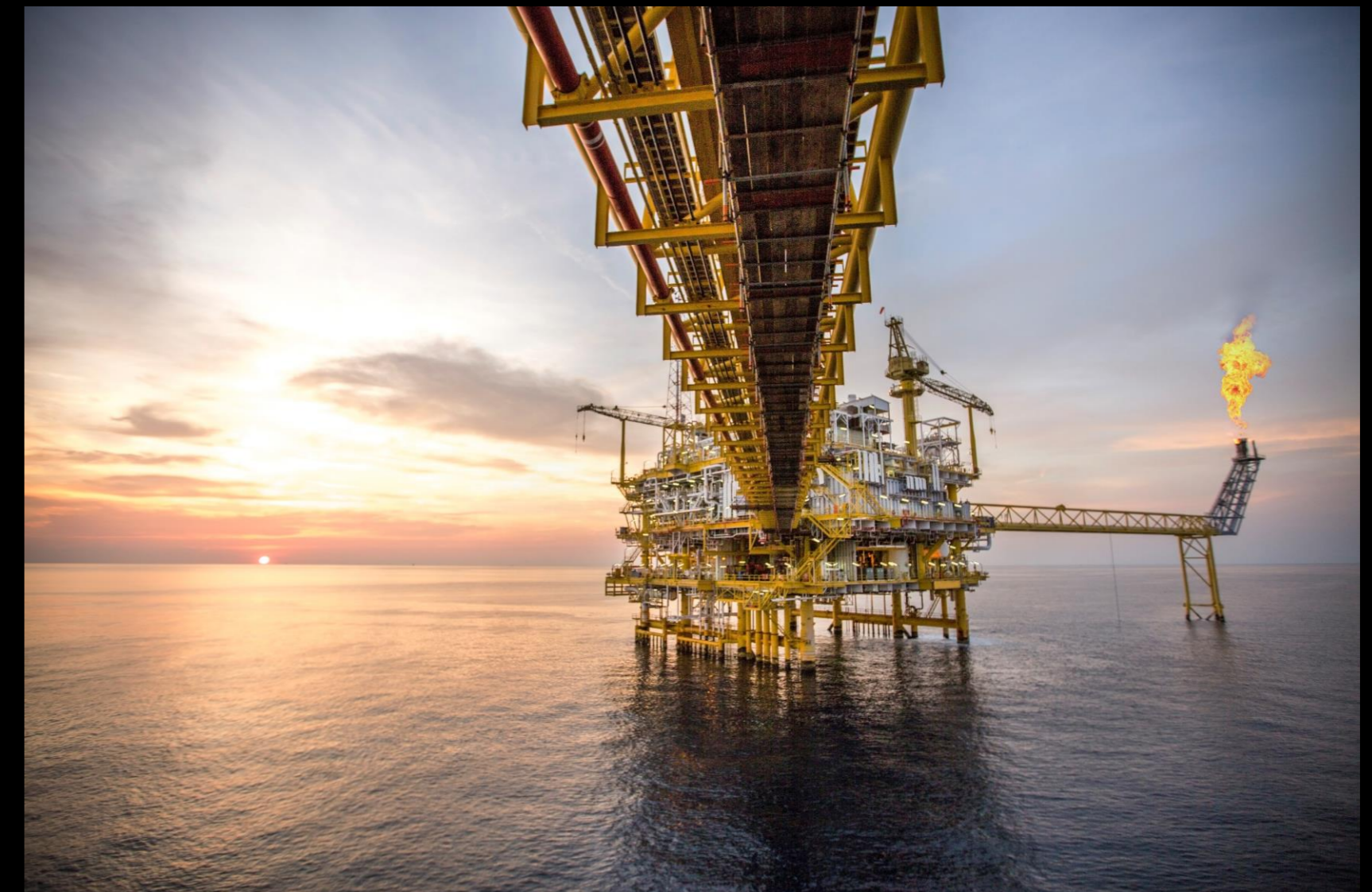
"AdditiveNow™ is an incorporated joint venture between A3D Holdings Pty Ltd (a member of the Aurora Labs group of companies) and WorleyParsons Services Pty Ltd (a member of the WorleyParsons group of companies)."



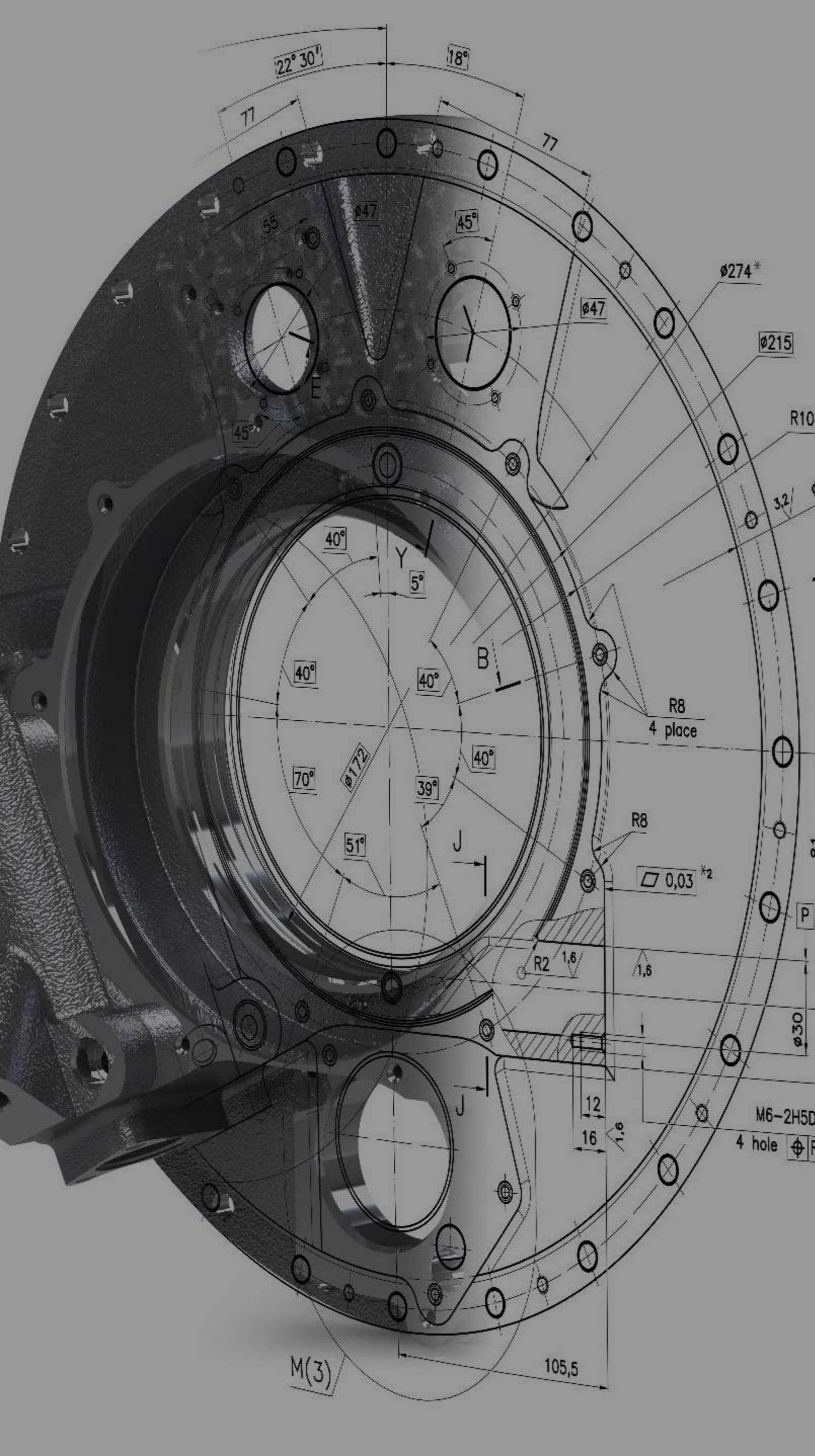
# SUPPLY OF FIRST RMP-1 BETA TO ADDITIVENOW

Aurora has reached a supply agreement with AdditiveNow for a pre-production RMP-1 Beta.

- Aurora will receive payments of approx. \$2.09M
- AdditiveNow has immediate requirement due to significant increasing printing demand from their clients
- Aurora retains rights to use RMP-1 Beta for continued R&D and to print for Industry Partners



[www.additivenow.com](http://www.additivenow.com)



# INVESTMENT HIGHLIGHTS

## INDUSTRY LEADING

Large format printers, fastest print speeds.

## MARKET DISRUPTING

Threaten traditional metal manufacturing processes by lowering production cost and allow anytime, anywhere, on-demand production.

## INNOVATION AT OUR CORE

Our team is built around free thinkers who have successfully taken on extraordinary technical challenges.

## UNIQUE TECHNOLOGY

Patent pending technology behind our Multi-layered Concurrent Printing capability.

## IN DEMAND

Some of the world's leading players in mining, energy, automotive and heavy equipment manufacturing are exploring partnerships with us.

## MARKET-READY

Our first production of large format printers has commenced and we are actively seeking pre-orders.

## VERTICALLY INTEGRATED

Complete service through AdditiveNow, Certification and the supply of printers powders and digital parts.

# CORPORATE SNAPSHOT

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## MARKET CAPITALISATION AND ENTERPRISE VALUE<sup>1</sup>

Total Ordinary Shares on issue	no.	88,635,091
Share price (2 October 19)	A\$/share	0.25
Total Quoted Options on issue <sup>2</sup>	no.	3,686,000
Listed option price (2 October 19)	A\$/option	0.16
Market Capitalisation (2 October 19)	A\$m	22.2
Cash (as at 30 June 19)	A\$m	3.6
Enterprise Value	A\$m	18.6

## SHARE PRICE / VOLUME HISTORY (A\$; MILLIONS)



## TOP SHAREHOLDERS (14 MARCH 2019)

NAME	SHARES HELD	% OF SHARES ON ISSUE
David Budge Managing Director	23,946,785	27.0%
Top 20 Shareholders	42,553,288	48.0%

## KEY PEOPLE

Paul Kristensen	Chairman
David Budge	Managing Director
Nathan Henry	Executive Director, And Marketing And Business Development
Mel Ashton	Non-executive Director
Mathew Whyte	Non-executive Director And Company Secretary
Peter Snowsill	Chief Operating Officer

### Notes

1. Excludes unquoted options and performance shares.

2. Listed options A3DO, Exercise Price \$1.00. Expiring 17/04/2020.

Source: As at 14 March 2019, Company Announcements.



**Aurora Labs<sup>®</sup>**

**NEW HORIZONS IN 3D METAL PRINTING**

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