

ersonal use only

MARCH 2021



# 3D METAL FORGE | INVESTOR PRESENTATION








# PIONEERS OF INTELLIGENT ADDITIVE MANUFACTURING (AM)

EVERY 8 MINUTES

A PART IS PRINTED  
IN OUR FACILITIES



-  **Leading Additive Manufacturing (AM) company** that supports a growing and multi-national blue-chip client base with their 3D metal printing requirements
-  **Full range of in-house metal printing services** from design and engineering, material advisory, diagnostics and testing to printing and post production
-  **Proprietary novel technology** and processes that produce faster, cheaper, better and more sustainable AM parts and eco-system services



# BENEFITS OF OUR TECHNOLOGY

*Swivel joint printed in Stainless Steel 316L on powder bed printer*



**EXTENDS LIFESPAN OF OLDER EQUIPMENT**

Saves entire systems by reverse engineering and printing obsolete parts

Saves \$000's in replacement costs

*Pump impeller printed in 25% of legacy manufacturing*



**REDUCES STORAGE & INVENTORY COSTS**

Reduces storage costs and delivery times by printing locally on demand

Up to \$5k per part and months faster

*Trim printed in Inconel 625 with intricate internal channels*



**IMPROVES PRODUCTIVITY**

Improves manufacturing productivity by printing complex parts in one piece

~10-20% savings of productivity on suitable parts

*Air filter parts printed in 50% less time at 40% of cost of traditional manufacturing*

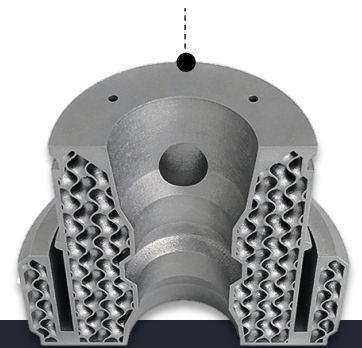


**REDUCES WASTE**

Reduces material waste by building additively not subtractively

Up to 20-30% on high value parts

*Hanger designed with bio mimicry lattice to reduce weight by 30%*



**IMPROVES PART PERFORMANCE**

Improves part performance and longevity by re-designing parts for AM

~15-30% material savings

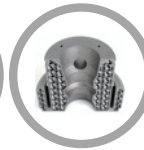
# MORE THAN AN ADDITIVE MANUFACTURER

## CLIENT LAYER

*Custom offerings to drive revenue growth*



Diagnostic inventory analysis



Design services



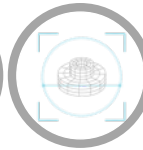
Part production



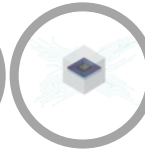
Client facility operation



Education and training



Licensing AM designs



Inventory and cloud IP management

## INTELLIGENCE LAYER

*Produce cheaper, faster, better and more sustainable parts at scale – leveraging data on >20,000 parts designed and printed*

Site diagnostic to identify suitable parts for AM

AM production management

AM quality management system

AM design system

HydroAM

Fast cheap post production

VisioAM

Hybrid printing on DED printers

StoreAM

Huge structured digital library

SecureAM

Cloud IP hash chain security and access

FacilityAM

Setting up and running client AM facilities

DataAM

Production data and analytics

MaterialAM

Machine learning accelerated material development

## INTEGRATION LAYER

*Integrate 3rd party printers, software and materials*

### PRINTERS

Powder bed fusion

Directed energy deposition

Multi-jet fusion

FDM

### SOFTWARE

AM design software

Simulation software

Design software

### MATERIAL

Traditional materials

AM specific material



# OUR MANUFACTURING FACILITIES



## RANGE OF CUTTING-EDGE PROPRIETARY PRINTERS

### SCIENCE PARK AMC



#### Powder Bed Fusion (SLM)

*Highly detailed, small (30cm) metal parts. Wide range of metals*



#### Blown powder Directed Energy Deposition (DED)

*Large format (upto 1.5m) faster printer with resolution of +/- 1mm; machining to net shape*

### PORT AMC



#### Hybrid Wire Arc (H-WAAM) DED printer

*Extremely large and fast printer for large lower resolution parts with machining to net shape*



#### Polymer print farm (FDM)

*20 FDM printers for ABS, PVC, Nylon etc*






#### Multijet fusion (MJF)

*Industrial nylon printing*

# FULL SERVICE PROVIDER



## IN-HOUSE DESIGN & ENGINEERING



-  In-house design and engineering
-  Full range of industrial design software
-  Design optimisation and DfAM capability




## EXTENSIVE EXPERIENCE IN DESIGN AND PRODUCTION OF PARTS



## HIGH FOCUS ON QUALITY

-  Production facility ISO 9001 certified
-  One of only 6 manufacturers certified by Lloyds Register to print metallic parts



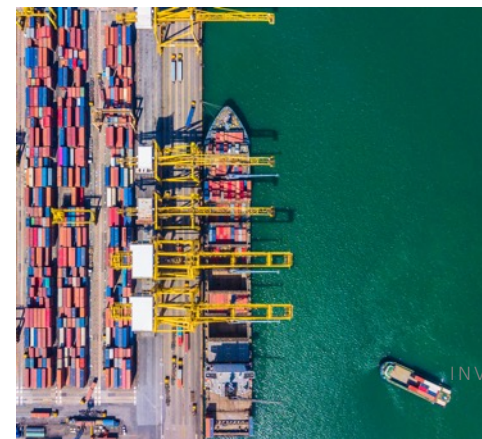
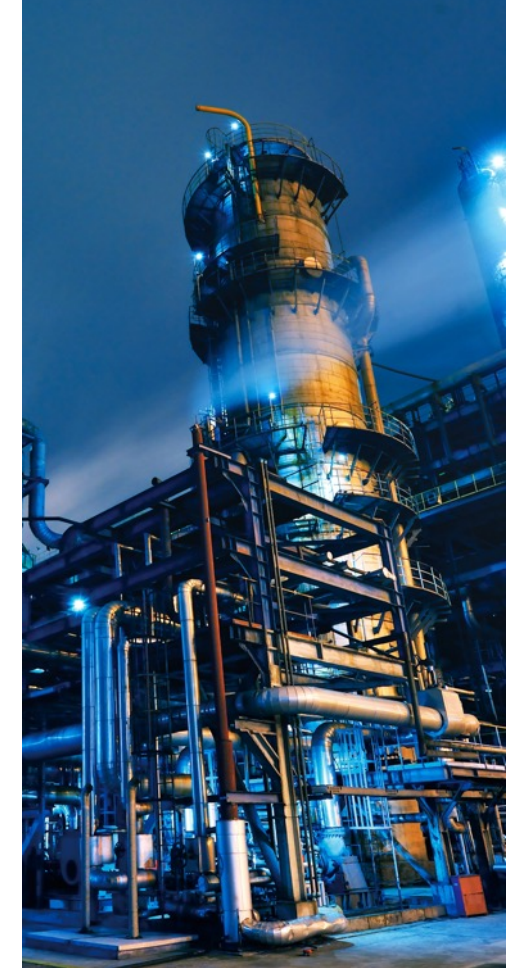
-  On working groups of standard organisation



# SELECT CUSTOMERS






Blue-chip client base including multi-national companies and government entities across a variety of sectors including the oil and gas, defense and marine services industries





# 3D METALFORGE'S PARTNERSHIP WITH PSA

-  Partnership with the world's 2<sup>nd</sup> largest port operator with 29 ports in 16 countries
-  2 year project to build an AM centre in the port to digitalise and move key spare parts supply to additive manufacturing
-  PSA will supply the facility set up and demand, 3MF will supply the printers and operations team



## STATUS

Parts are identified  
and digitised

New facility  
is set up

Global first Hybrid Wire Arc  
printer supplied by 3MF is set  
up, currently in testing and  
commissioning pending  
commencement of  
production



# RECENT LANDMARK ADDITIVE MANUFACTURING PROJECT



ABS, Sembcorp Marine, 3D Metalforge and ConocoPhillips Polar Tankers Inc. (Polar) have successfully fabricated, tested, and installed functional additive manufactured parts on board the oil tanker Endeavor






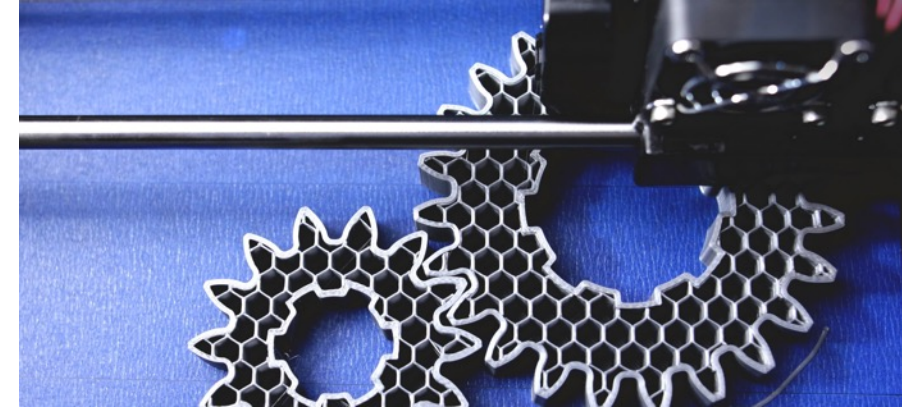
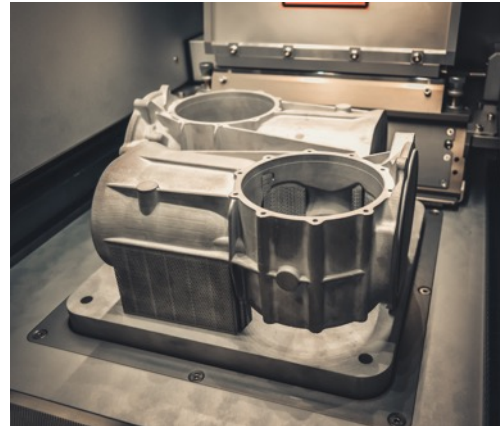
Traditionally, parts used in shipbuilding and repair are manufactured via casting or forging techniques. For this project, the consortium aimed to utilize Additive Manufacturing to fabricate three types of parts that surpass conventionally manufactured products in terms of quality

*"The collaboration with ABS and 3D Metalforge is a continuation of Sembcorp Marine's drive to innovate and improve our production capacities and capabilities. This development enables Sembcorp Marine to further refine our products and deliver customized solutions safely and more efficiently."*

Sembcorp Marine Head of Research & Development - Mr. Simon Kuik

# WHAT IS ADDITIVE MANUFACTURING (AM)?





-  Transformative approach to industrial production that enables the creation of lighter, stronger parts and systems
-  AM uses a computer controlled process that creates three dimensional objects by **depositing materials in layers**
-  AM applications are almost limitless. The technology can be used to fabricate **end-use products on-demand** across multiple industries



AM is helping industries reduce development and manufacturing costs, increase production speed and produce new structures and shapes.



# AM IS GROWING RAPIDLY, DRIVEN BY STRONG INDUSTRY TAILWINDS

-  Revival of domestic manufacturing near end use and greater sourcing of local components
-  Focus on autonomous high value manufacturing and a reduction in low value offshored production
-  Deep focus on cost cutting and profitability including cuts in waste and storage costs
-  Increased digitalisation of supply chain with increased flexibility

Source: Wohler's Report 2016, 2017, 2018, 2019; UPS "3D Printing: The Next Revolution in Industrial Manufacturing"

\$7.34 BN  
2017

\$15.8 BN  
2020

\$23.9 BN  
2022

\$35.6 BN  
2024

(USD \$Bn AM  
products and  
services market)

# AM TO REDUCE ENERGY USAGE & CO2 EMISSIONS

## AM CAN USE LESS ENERGY AND MATERIAL...

**90% less material**

Building objects up layer by layer, instead of using traditional machine processes which can reduce material needs and costs by up to 90%

**Up to 25% of the energy**

Remanufacturing parts through advanced additive manufacturing can also return end-of-life products to as-new condition using only 2–25% of the energy required to make new parts

## DESIGN-EFFICIENT TECHNOLOGY

**4-7% weight reduction in aircraft parts**

A topologically optimised and 3D-printed part can accomplish the same task as the original part using less material

## AND REDUCE CO2 EMISSIONS

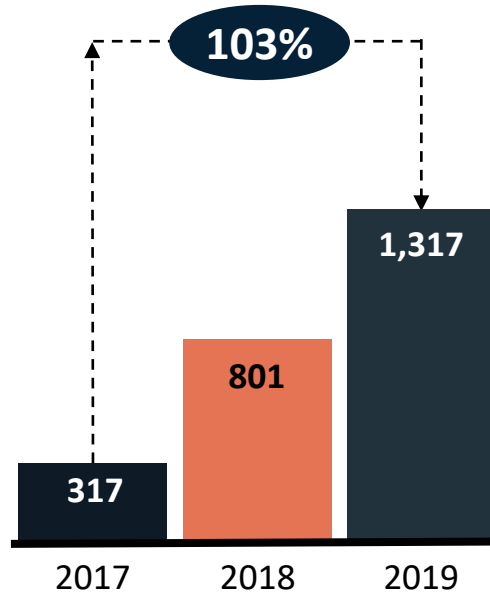
**2M Tonnes CO2e saved**

A major environmental benefit of 3D printing could be the reduction of 2 million tonnes in CO2 emissions between 2016-2025 in oil & gas industry alone, thanks to the reduced need to transport spare parts to and from remote areas

# GROWING REVENUE BASE

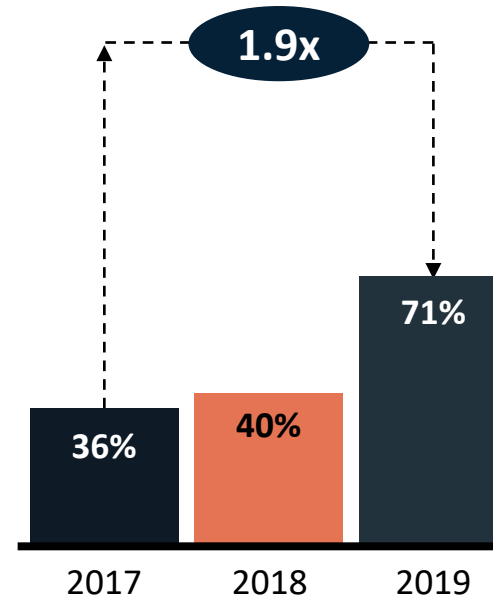
## Revenue 103% CAGR

Revenue 2017-19 (S\$'000)



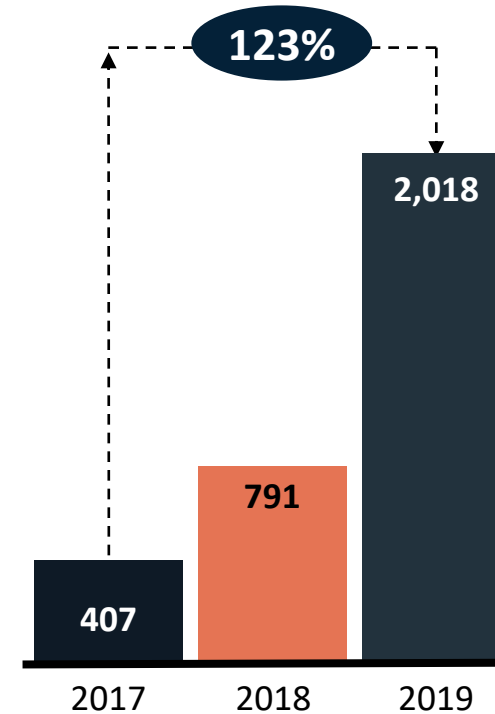
## GM% doubling

Gross margin % 2017-19 (%)



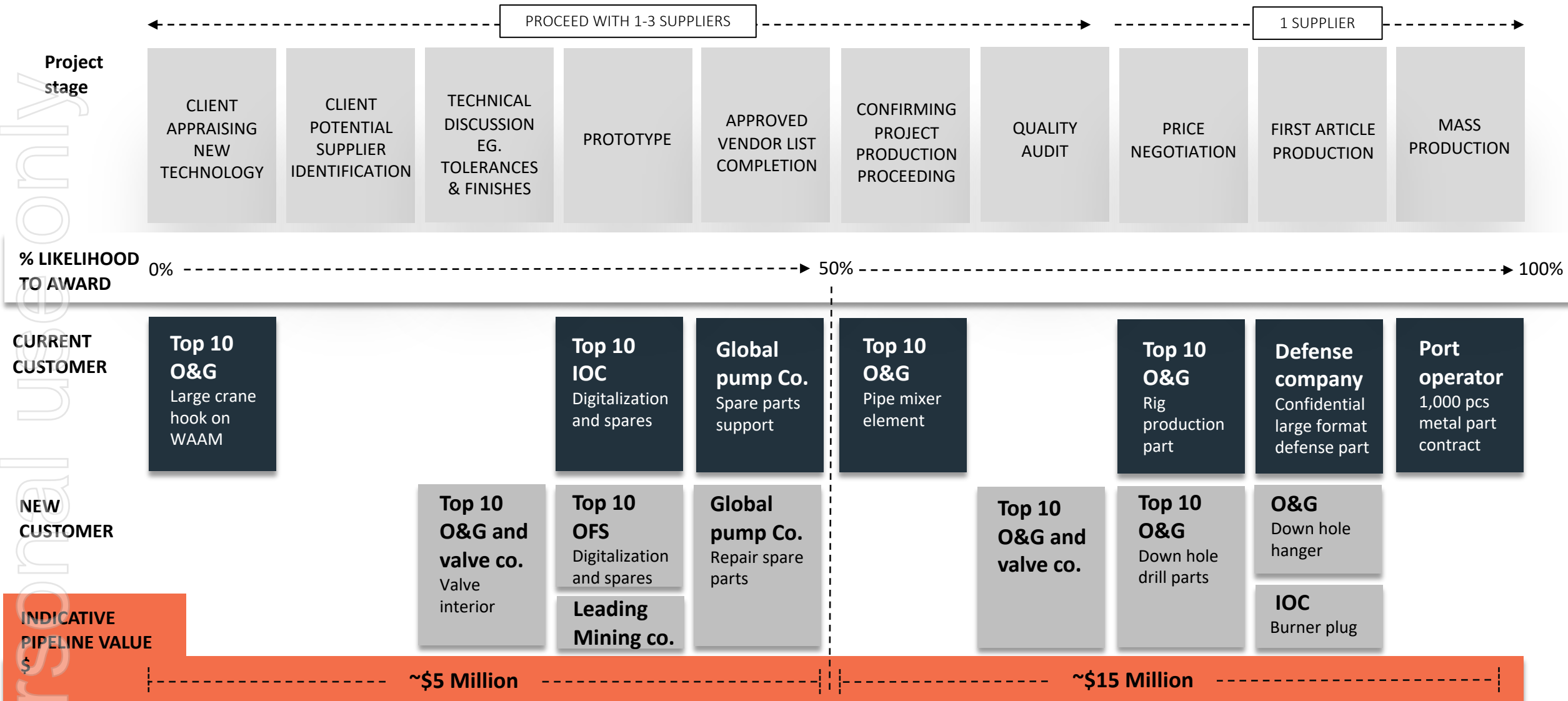
## Orders 123% CAGR

New orders 2017-19 (S\$'000)





# EXPANDING SALES PIPELINE



# STRATEGIC GROWTH PRIORITIES







## BUILD GLOBAL FOOTPRINT

-  Expand production capacity to accommodate market growth
-  4 Additive Manufacturing Centres (AMC's) in global centres for marine and oil & gas (Houston, Rotterdam, Dubai, Singapore)
-  Develop local key markets including Australia with focus on resource sector





## CUSTOMER ACCELERATION

-  Embed AMCs in client supply chain to help key clients obtain benefits of AM
-  Qualified leads / sales pipeline continues to grow
-  PSA first roll out
-  Strategic Partner channels being developed to accelerate revenue growth



## EXPAND OUR TECHNOLOGY

-  Continue to develop our intelligence layer
  - Faster more accurate printing
  - Faster process modelling
  - Feedback & monitoring
  - MaterialAM for new AM materials
  - DataAM to utilise print data
-  Complete operational development of Hybrid WAAM printer

# EXPERIENCED BOARD & MANAGEMENT



**Matthew Waterhouse**  
*CEO, Founder*

Matthew has over 20 years of Senior Management Experience in MNCs, including 7 yrs as Associate Principal at McKinsey & Co and COO for Keppel Integrated Engineering responsible for building \$1Bn+ infrastructure projects.



**Michael Spence**  
*Chairman*

Michael is an angel investor with a portfolio of eight companies in Australia & SEA. He retired from full-time work in 2019 as a Senior Director of Partners in Performance, an operations improvement consultancy. He has 33 years' experience split between consulting (PIP & McKinsey & Company) and line management (Ford, ITT, Valeo, Ayala Corp).



**Geoffrey A. Piggott,**  
*Non-Executive Director*

Geoff has over 50 years in infrastructure engineering in Sydney Water, Black & Veatch, Keppel Infra and Deep Tunnel Sewerage System.



**Samantha Tough**  
*Non-Executive Director*

Distinguished career in the energy, resources and engineering industries as both a director and senior executive. Chair of Horizon Power, Chair of the National Energy Selection Panel, Director of Clean Energy Finance Corporation, Director of Buru Energy Limited (ASX: BRU), UWA PVC Engagement and former Director of Saracen Mineral Holdings Ltd (ASX:SAR)/Northern Star Resources and others.



**David Buckley**  
*Advisor*

David is Chairman of Royal Bank of Canada (Europe) and formerly European CFO for Morgan Stanley and Intl Treasurer for Goldman Sachs.





## NUMBER OF SECURITIES

EXISTING SHARES ON ISSUE

**190,119,285**

EXISTING OPTIONS ON ISSUE

**1,300,000**

% OF SHARES UNDER ESCROW

**49.7% \***

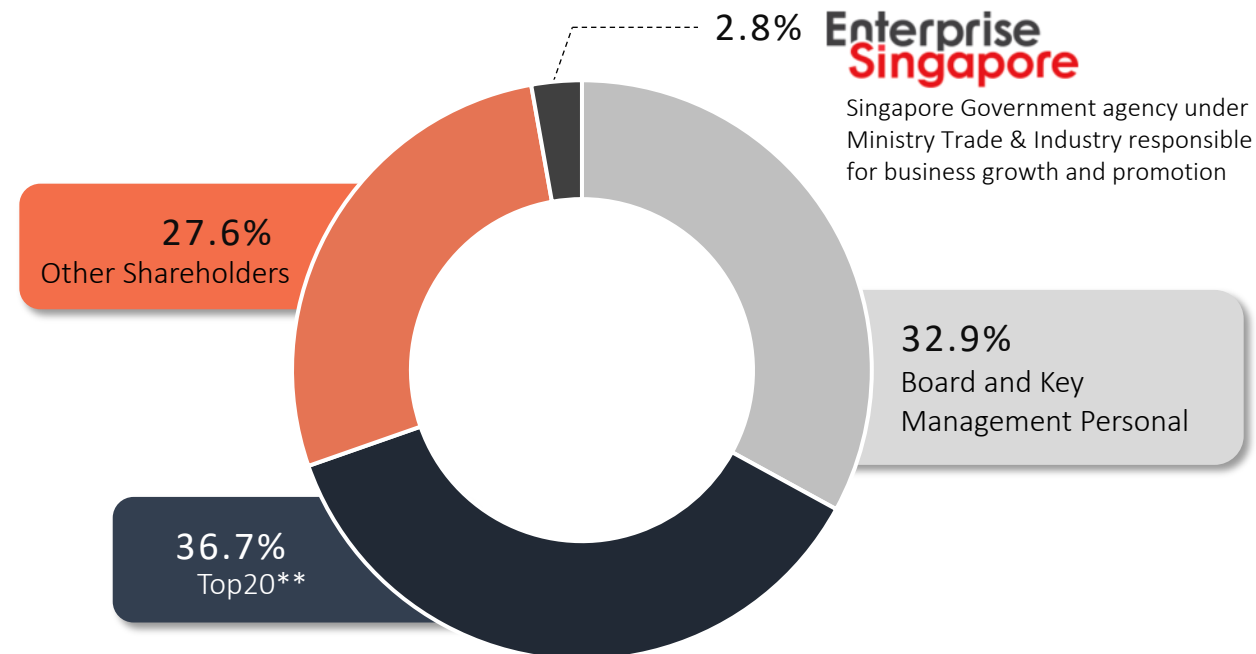
SHARE PRICE (8.3.21)

**\$0.25**

IMPLIED MARKET CAPITALISATION

**A\$47.5M**

# CORPORATE & CAPITAL STRUCTURE



\* A total of 94,650,594 shares is subject to various escrow terms

\*\* Excludes Board and KMPs in Top20

# ASX PEERS SHOW POTENTIAL VALUE RE-RATING



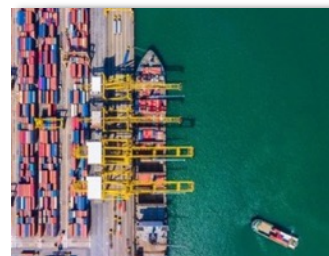
# INVESTMENT HIGHLIGHTS



**Established presence in**  
Singapore and Houston  
(USA) and significant  
market opportunity



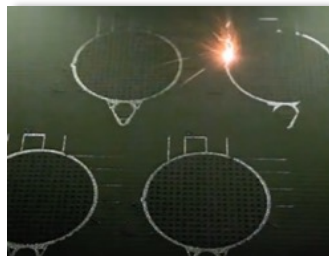
**One of only 6**  
**manufacturers** certified by  
LR to print metallic parts



**Partnering with Global Clients**  
to digitalise spare parts and  
produce parts on demand



**High Caliber Team**  
supported by world class  
Board and investors



**Established Revenue Generating**  
business with >SGD\$1m in  
revenue FY19 with blue chip  
customer clients



**Extensive Range of IP**  
protected by patents  
and trade secrets

ersonal use only

# APPENDIX





# EXTENSIVE RANGE OF IP

## SIGNIFICANT R&D AND TECHNOLOGY DEVELOPMENT

Led R&D and technology development programs valued at over \$3M with our direct spend being almost \$1.5M

Worked with multiple institutes of higher learning and Govt organisations including NAMIC, SUTD, A\*Star

### PATENTS

- VisioAM (hybrid print strategy)
- SecureAM (Metadata, hash chain data security)
- HydroAM (support structure removal)
- MaterialAM (parameters for new materials)

- Patent pending
- Patent pending
- Patent pending
- Patent being developed

### TRADE SECRETS

- Build parameters and strategy for maraging steel
- Manufacturing process operations
- Additive QMS processes
- FacilityAM - setting up AM facility
- Detailed pricing strategies and cost sheet tool
- Extensive AM supplier list
- >250 industry NDA in place
- Multiple Approved Vendor List agreements in place
- Customer contact list (>3k)
- SOPs for complex AM equipment
- DataAM - Print log data for >3 years production
- Build parameters for PVC and Nylon (in development)

- Confidentiality
- Confidentiality
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### LICENSES

- Directed Energy Deposition H-WAAM printer
- Directed Energy Deposition Blown powder printer

- Exclusive license
- License

### COPYRIGHT

- StoreAM - Print file library of >2,000 parts

- Confidential copyright

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