Innovation Centre for Additive Manufacturing

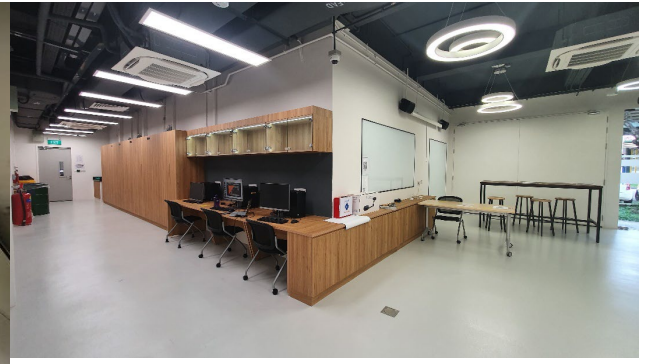
SINGAPORE POLYTECHNIC

Driving innovations in Additive Manufacturing through collaborations

The aims of ICAM are to advance the:

- ✓technology adoption
- ✓capability development

of Add Mfg for manufacturing industries by leveraging on Singapore Polytechnic's strength in engineering.



About Us

Innovation Centre for Additive Manufacturing (ICAM)

The Opportunity

Additive Manufacturing

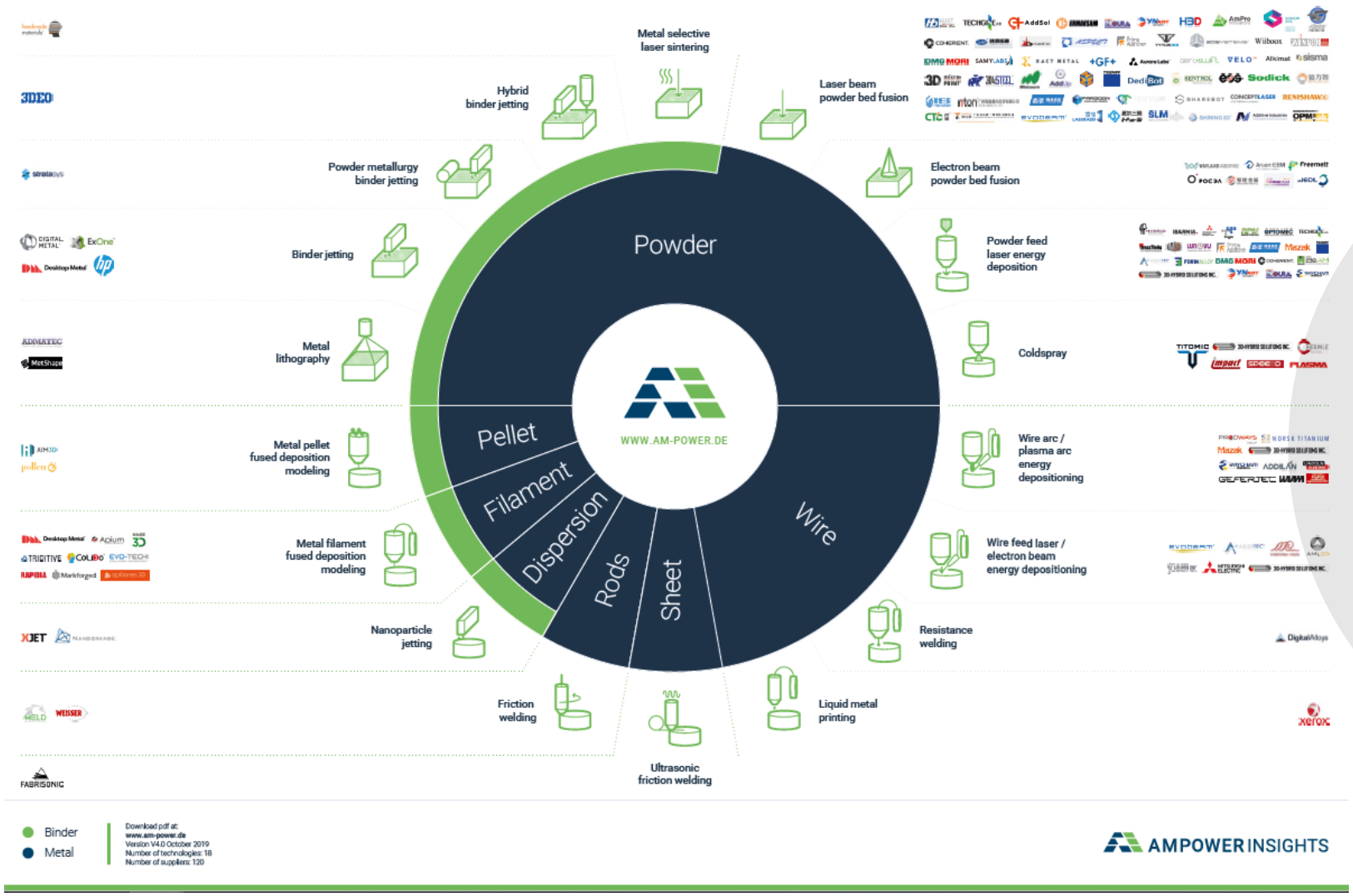
- Additive Manufacturing (Add Mfg) is a rapidly evolving technology.
- It is reaching a wider range of manufacturing sectors with potential benefits to various applications.
- Thus, companies are exploring Add Mfg to complement their businesses.

Our Solution

Industry-Orientated Projects

- A collaboration between SP and industries is beneficial to enterprises to drive innovations in Add Mfg.
- Bringing Add Mfg solutions to meet the critical specifications of the industrial applications.
- Bridging the gap in talent development to meet the requirement of the Add Mfg skilled workforce.

Metal Additive Manufacturing Technology Landscape



50%

of the known Add Mfg processes are based on Metal Powder

SP ICAM End-to-End Add Mfg Technology Deployment

Partners: SIEMENS AMTC, Lloyd's Register, RENISHAW apply innovation™, DMG MORI, NAMIC National Additive Manufacturing Innovation Cluster, ASTM International, and many more

Our Add Mfg Capabilities

Powder Bed Fusion Processes

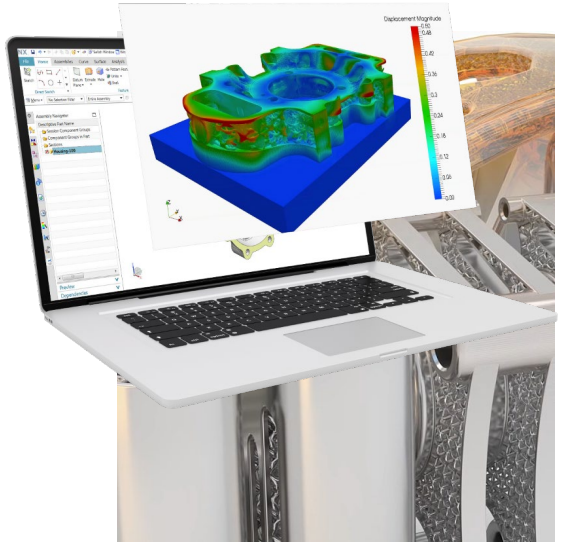
Systems: EOS M100 &
Renishaw AM400

Directed Energy Deposition Process

System: DMG Mori Lasertec 65
3D Hybrid

*TBC

Our Add Mfg Capabilities (cont.)



Softwares

Autodesk Netfabb

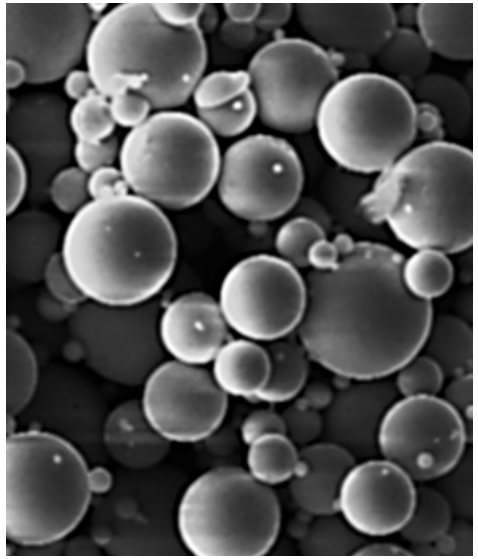
Materialise Magic

Siemens NX

Metal Powder Production

High Pressure Inert Gas Atomisation

(Metal Powders for Add Mfg)



Material Characterisation

Particle Size & Shape Analysis

Chemical & Composition Analysis

Mechanical Testing

Machining Capabilities

CNC Machining

Metrology

ADD MFG EDUCATION AND WORKFORCE DEVELOPMENT

SP Innovation Centre for Additive Manufacturing
SINGAPORE POLYTECHNIC

SIEMENS
Siemens AMTC

NAMIC
NATIONAL ADDITIVE MANUFACTURING INNOVATION CLUSTER

PET
Campus wide Elective

Student Internships
Apply skills at Siemens AMTC

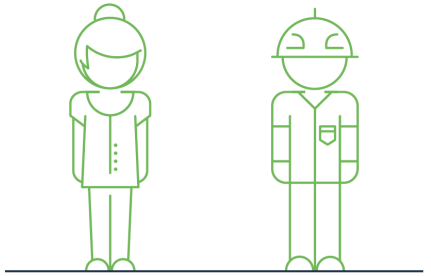
Project Collaborations
Technology Solutions

FYPs
Industry Projects

Personnel Certificate Programme

CET
SP-ASTM CET training (supported by SSG)

Specialists
Add Mfg Job Roles



e.g. ISO/ASTM 52942 **Add Mfg operators (LPBF aerospace)**

and more

Targets

Basic knowledge of the capabilities and limitations of Add Mfg processes

Develop capabilities by applying skills on the job

Global recognised Certificate Course

ASTM INTERNATIONAL

Add Mfg Job Roles Trained by SP (adopt ISO/ASTM standards)

SINGAPORE POLYTECHNIC SP

Powder Bed Fusion Process

RENISHAW
apply innovation™

Galvo Housing

Material: AlSi10Mg

Cycle time: 19 Hrs

Lampshade

Material: Stainless Steel

Cycle time: 4 Hrs 45 Mins

Directed Energy Deposition Process

DMG MORI

Turbine Housing

Made by: Lasertec 65 3D

Material: 316L (1.4404)

Cycle time: 5 Hrs 50 Mins

Turbine Shell

Made by: Lasertec 65 3D

Material: 316L (1.4404)

Cycle time: 6 Hrs 30 Mins

Drill Bit

Made by: Lasertec 65 3D

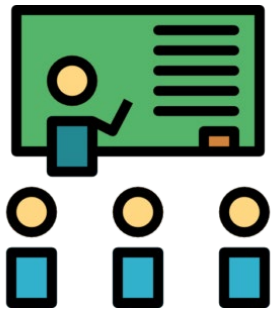
Material: 316L + Inc 626

Cycle time: 18 Hrs

What We Do

Innovation Centre for Additive Manufacturing

Project Collaboration



Training Programmes

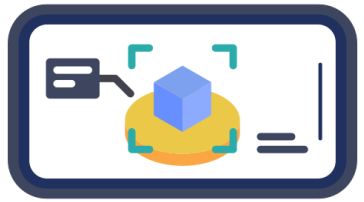
Industry Consultancy

Student Internship

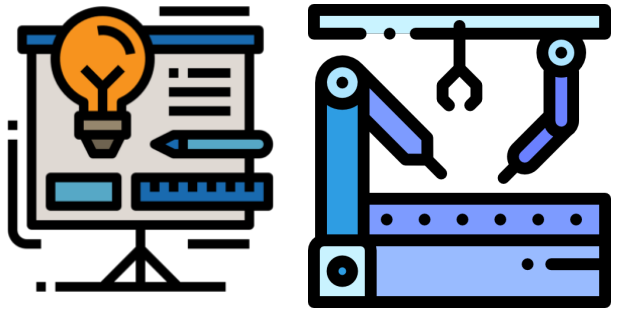
Project Collaboration & Industry Consultancy

Industry-Orientated Projects

Co-location Scheme



Material & Process Development



Concept Validation and Technology Refinement

SP | PACE ACADEMY

Training Programmes

Related to Additive Manufacturing

Additive Manufacturing Professional Certificate Course (SP – ASTM)

Additive Manufacturing Professional Certificate Course

Provide learners who have working experience in manufacturing to cover all the general concepts of the additive manufacturing process chain

Jointly offered by:

SINGAPORE POLYTECHNIC SP

ASTM INTERNATIONAL

Topics

1. Additive manufacturing process overview and standard terminology
2. Design and simulation
3. Additive manufacturing feedstock
4. Metrology and post-processing
5. Mechanical testing
6. Additive manufacturing safety
7. Non-destructive inspection
8. Qualification and certification

Innovation Centre
for Additive Manufacturing

SINGAPORE POLYTECHNIC

Thank You !

Contact Us:

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