



Innovation Centre for Additive Manufacturing

S I N G A P O R E P O L Y T E C H N I C

Driving innovations in Additive
Manufacturing through
collaborations

SINGAPORE
POLYTECHNIC

SP



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.

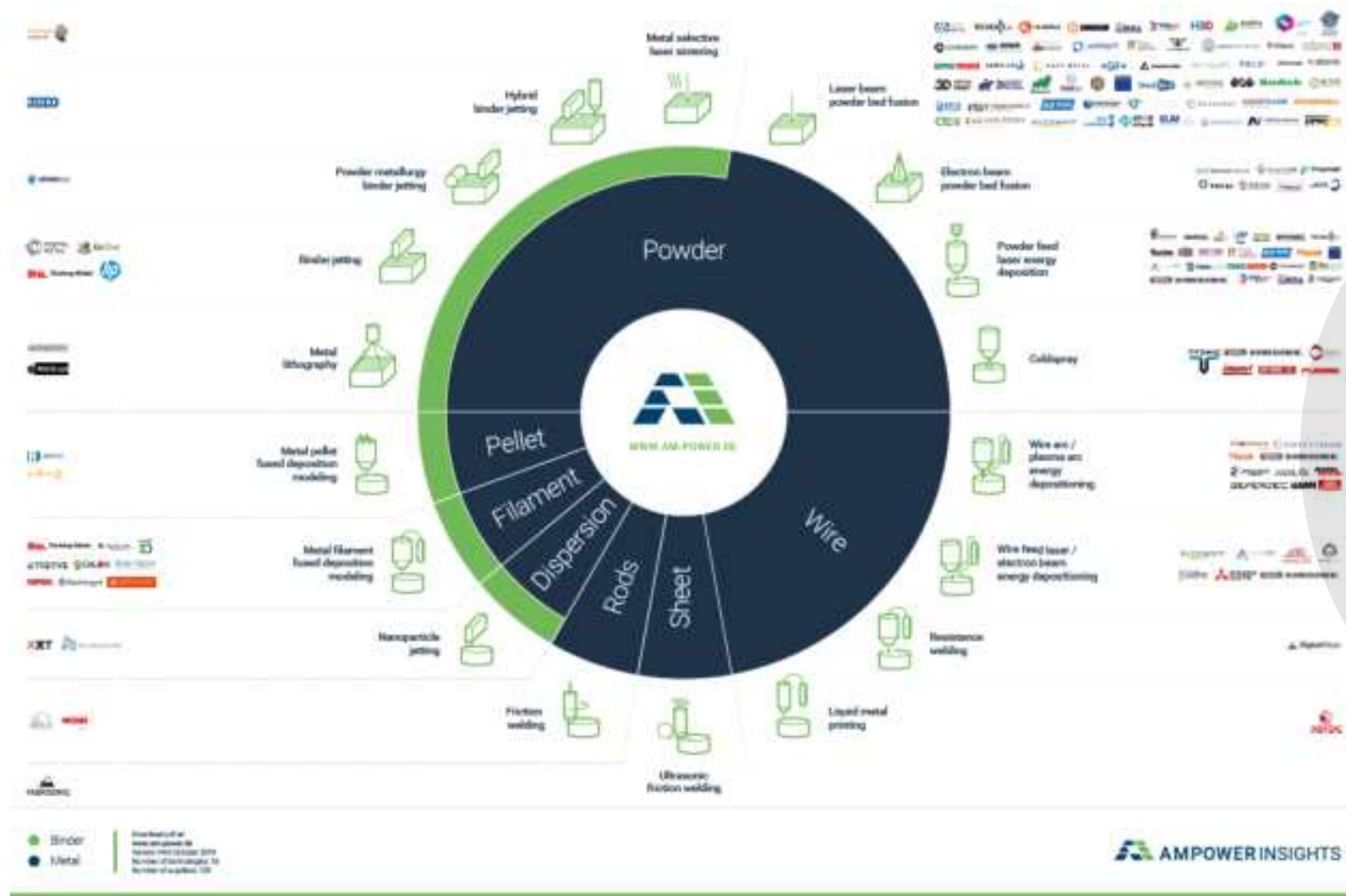


Our Solution

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:



and many more

Our Add Mfg Capabilities



Powder Bed Fusion Processes

Systems: EOS M100 &
Renishaw AM400

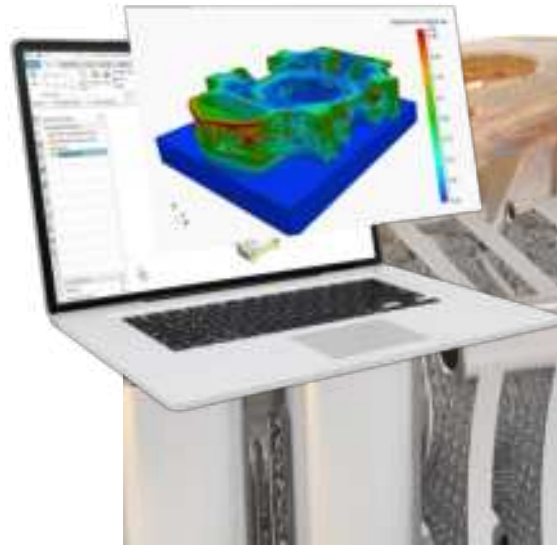


Directed Energy Deposition
Process

System: DMG Mori Lasertec 65
3D Hybrid

*TBC

Our Add Mfg Capabilities (cont.)



Softwares

Autodesk Netfabb

Materialise Magic

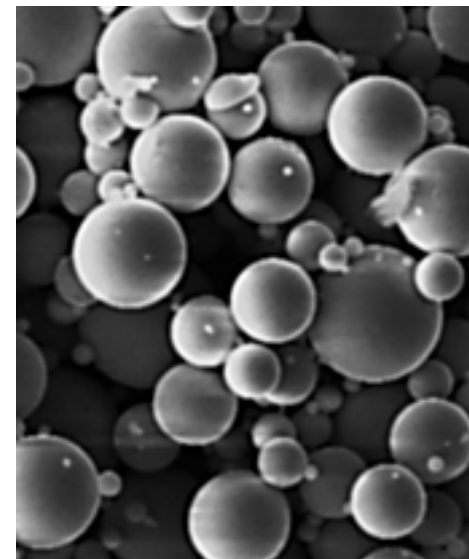
Siemens NX



Metal Powder Production

High Pressure Inert Gas
Atomisation

(Metal Powders for Add Mfg)



Material Characterisation

Particle Size & Shape Analysis

Chemical & Composition
Analysis

Mechanical Testing



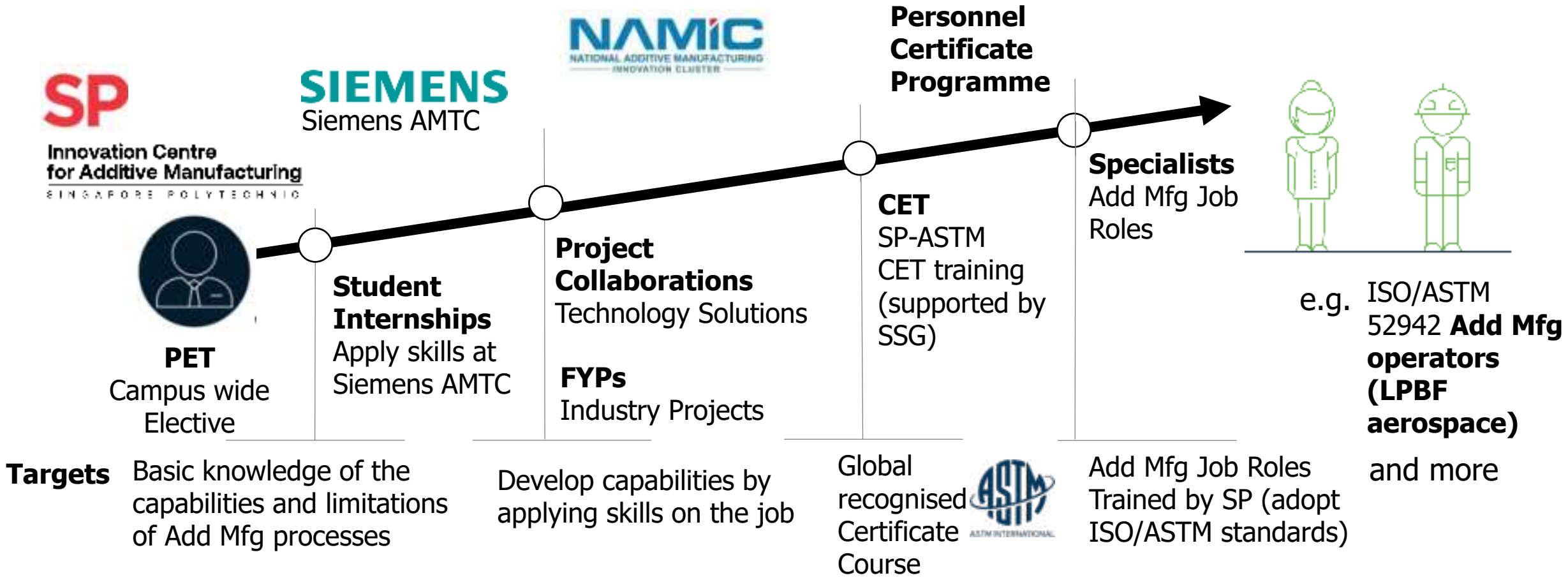
Machining Capabilities

CNC Machining

Metrology



ADD MFG EDUCATION AND WORKFORCE DEVELOPMENT



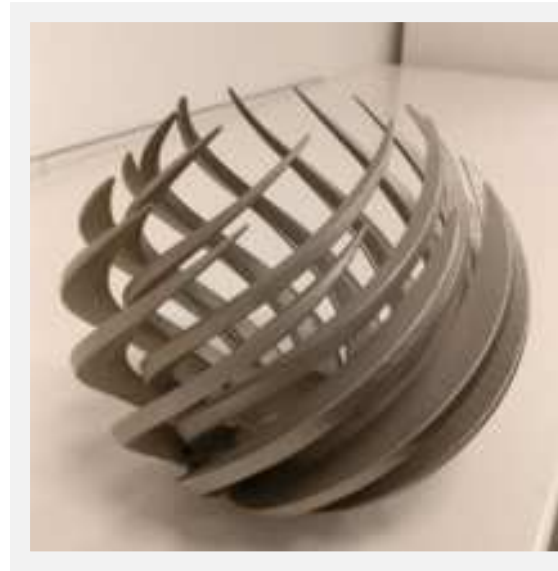
Powder Bed Fusion Process



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

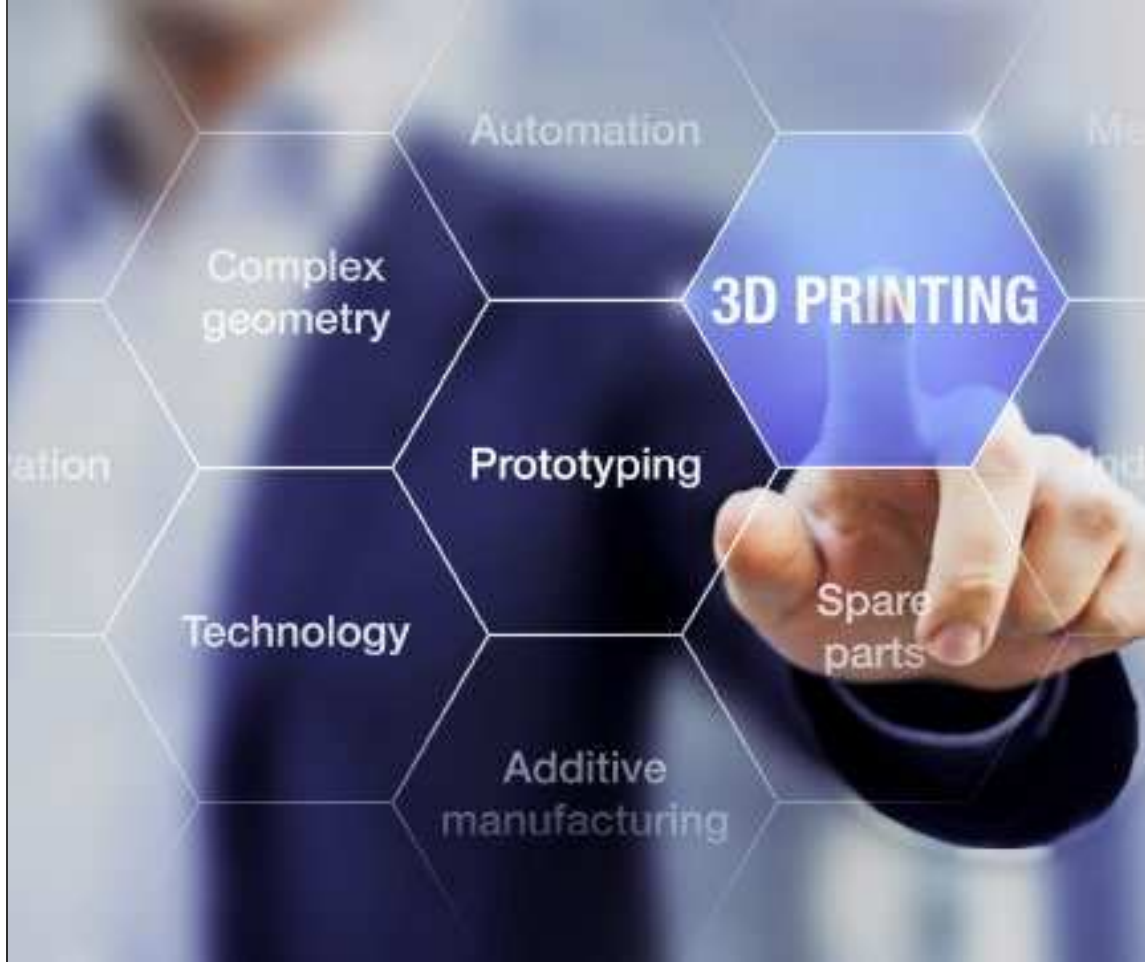


Drill Bit

Made by: Lasertec 65 3D

Material: 316L + Inc 626

Cycle time: 18 Hrs



Project Collaboration



Training Programmes



Industry Consultancy



Student Internship

What We Do

Innovation Centre for Additive Manufacturing



Project Collaboration & Industry Consultancy

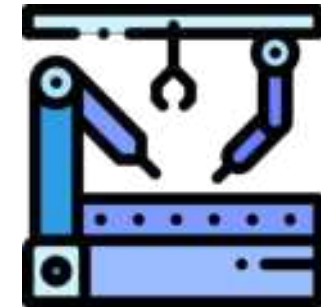
Industry-Orientated Projects



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:



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

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Thank You !

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