



Vortrag

# Marktentwicklung und Trends in der Additiven Fertigung 2021 bis 2026

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A photograph of three men standing side-by-side in an office environment. The man on the left is wearing glasses and a dark blue blazer over a light blue shirt. The man in the center is balding and wearing a grey blazer over a light blue shirt. The man on the right is wearing glasses and a dark blue blazer over a light blue shirt. They are all smiling slightly. The background is a blurred office interior with large windows.

# AMPOWER Consulting for Additive Manufacturing

Strong industrial focus with management and hands-on AM experience.

Addressing investors, AM suppliers and end users.

Providing market intelligence, strategy, technology assessment,  
machine qualification and operational excellence in Additive Manufacturing.

# AMPOWER in a nutshell

Based in **Hamburg**, Germany,  
operating **globally**

**15+ fortune 500** companies  
trust in AMPOWER advice

Core team unites more than  
**85 years of experience** in  
Additive Manufacturing

## Consultancy for Additive Manufacturing

**Global network** of Additive  
Manufacturing experts and  
thought leaders

More than **100** international  
**Projects** in Additive Manufacturing

Founded in **2017**, owned  
and operated **by founders**

**Publications with 60.000+**  
**readers** set reference in Additive  
Manufacturing community

# AMPOWER Consultancy Services

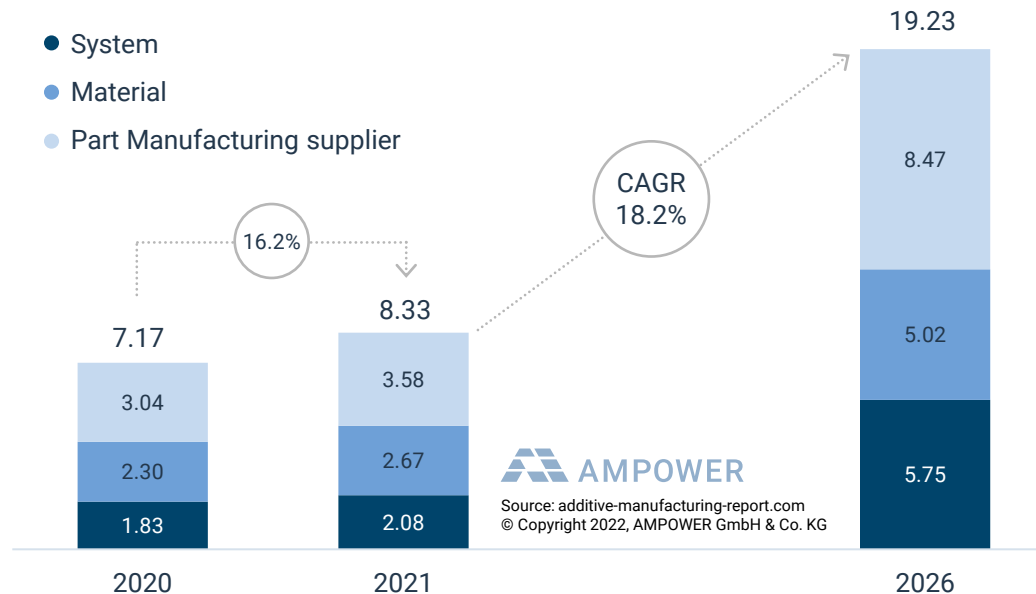
Specialized on Additive Manufacturing

Our customers	Investor & Venture Capital	Supplier	User
How do we create value?	Market intelligence Target and partner identification Due diligence	Market positioning Go-to-market strategy User and application identification	Sustainability analysis Make-or-buy analysis Training solutions Qualification Operational excellence
Our USPs	Unique Additive Manufacturing market and technology knowledge		

# Additive Manufacturing market

## AM market regains strong growth after pandemic shock in 2020

Global metal and polymer Additive Manufacturing market  
2020 to 2021 and supplier forecast 2026 [EUR billion]

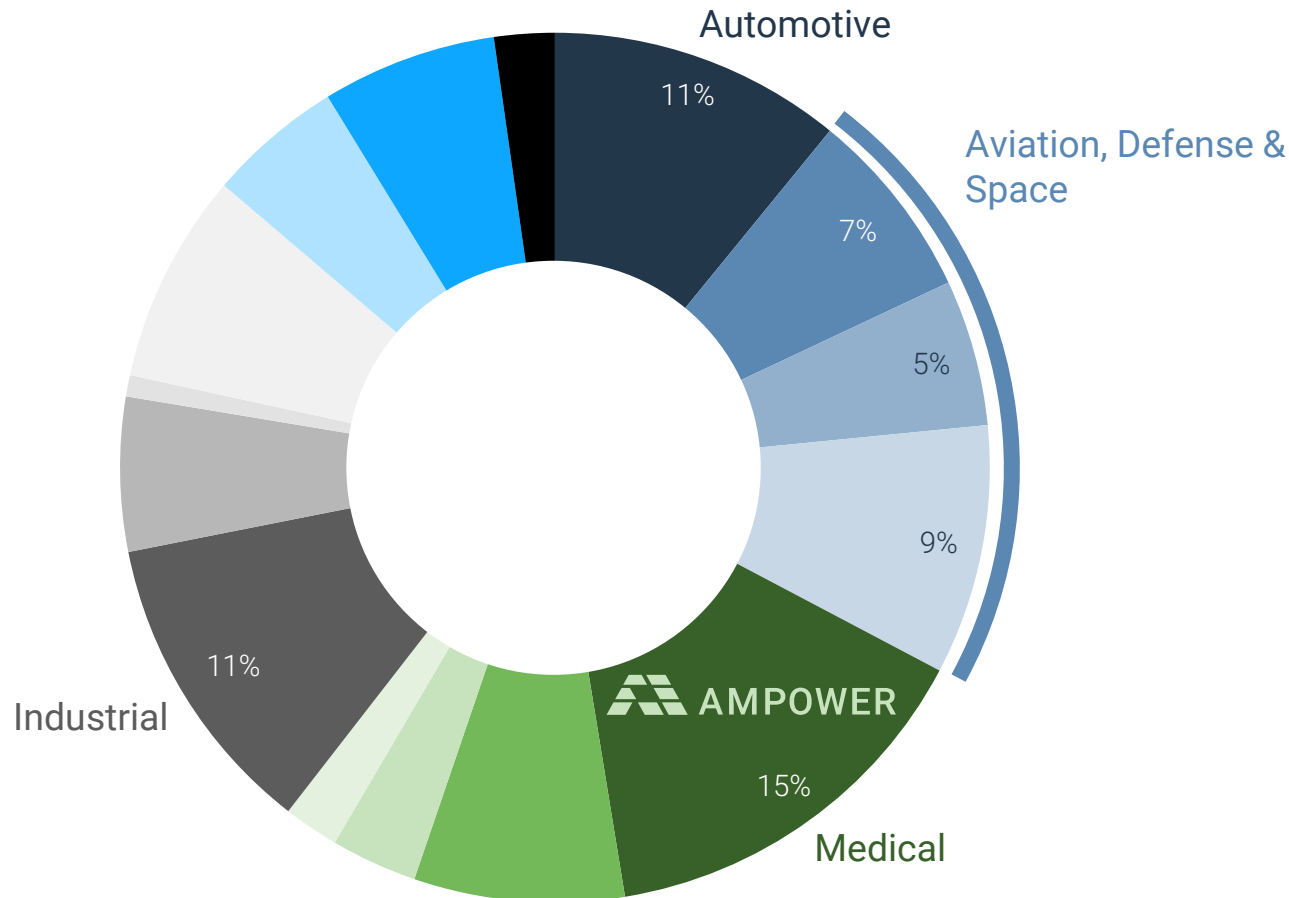


- Overall AM market is projected to reach **19 EUR billion in 2026**, from a value of 8,33 EUR billion in 2021.
- Future growth of **metal AM market** slightly reduced to **~ 25 % CAGR** compared to pre-pandemic rates.
- In metals, supplier and buyer forecast similar developments with a **metal AM market size of ~7,7 EUR billion in 2026**. This forecast includes system & material sales and part manufacturing services.
- Growth of polymer AM market** is projected to be **14,4 %** until 2026.
- Reduced growth rates mirrors the **maturity level of polymer market**.

# Additive Manufacturing market by industry

## Aviation, Defense and Space is strongest industry sector in AM

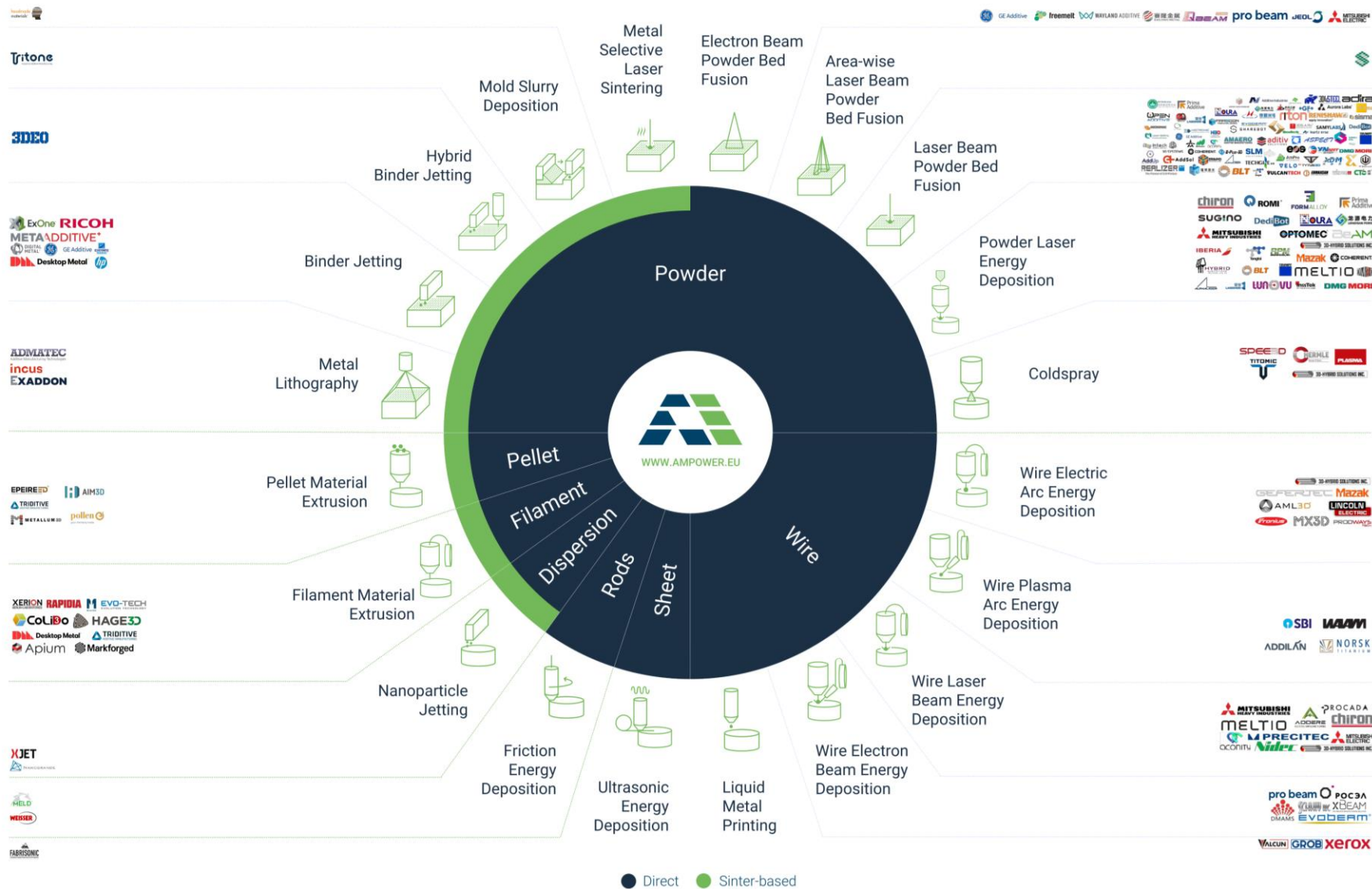
Metal and polymer system sales revenue by industry in 2021 [EUR billion]



- Medical is largest single sector with 15 % market share in 2021
- Automotive and Industrial are continuously growing in overall share
- Strongest growth seen in Space with thruster and fuel tank applications
- Bounce back of Civil Aviation expected in the following years
- Large growth of Wire AM applications for frame structures expected within aviation



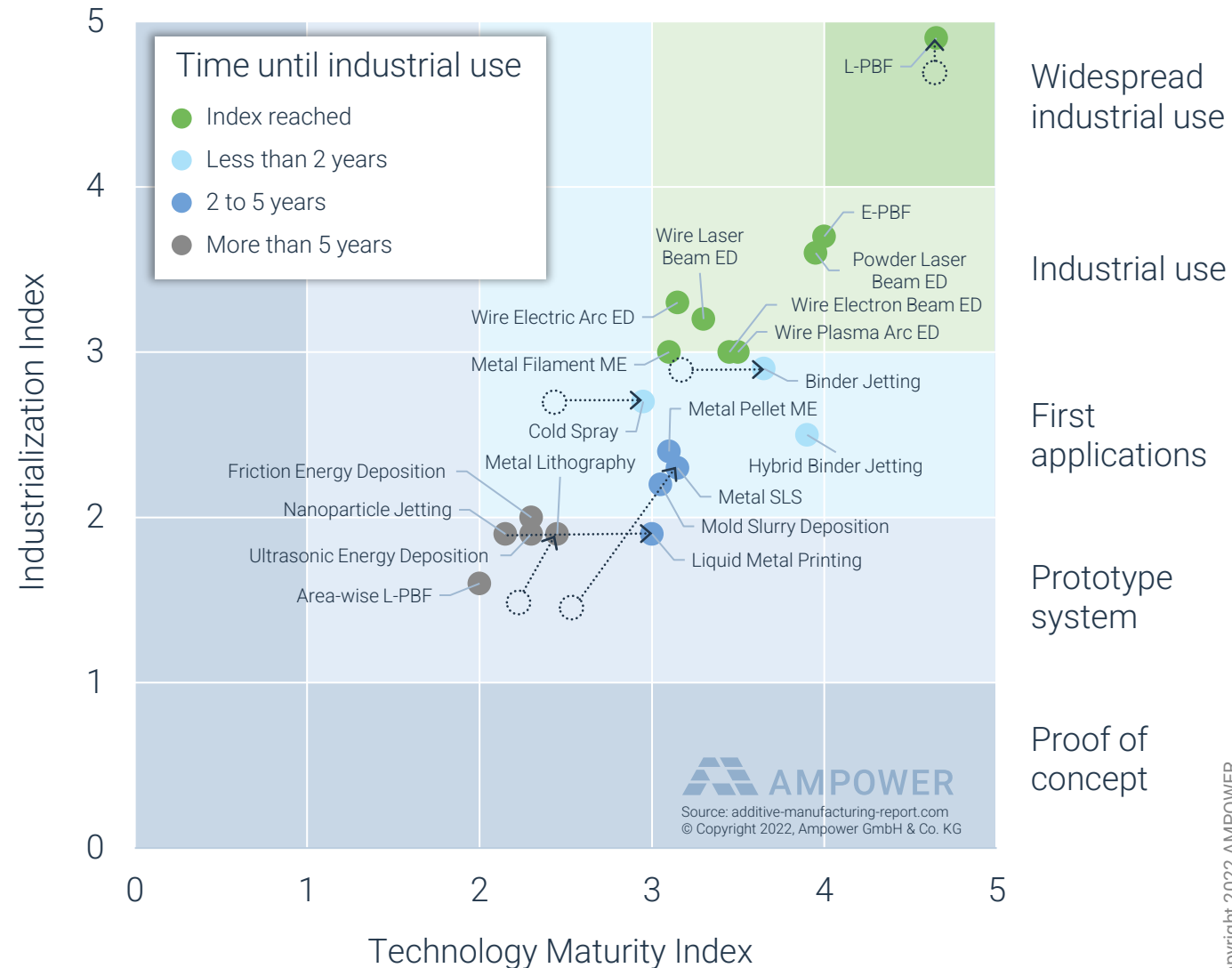
# Metal Additive Manufacturing technology landscape



# Technology developments in 2022

## AMPOWER Metal AM Maturity Index

- **L-PBF** consolidates its leading position as the most mature AM technology
- **Area-wise L-PBF** promises extreme increase in productivity and low part costs, however, is still in its early development stage
- Wire deposition technologies established their use in selected industries and applications, “low cost” **Wire Laser systems** will enable multiple future applications
- **Wire Plasma Arc** successfully complete qualifications task for aviation and is expected to gain industrial importance in the next years
- **Binder Jetting** improved technologically, however has not yet its industrial break-through
- Sinter based **Metal SLS** technology increased its maturity significantly with first industrial applications in 2021
- **Liquid Metal Printing** technology has matured but is still struggling to find real industrial applications.

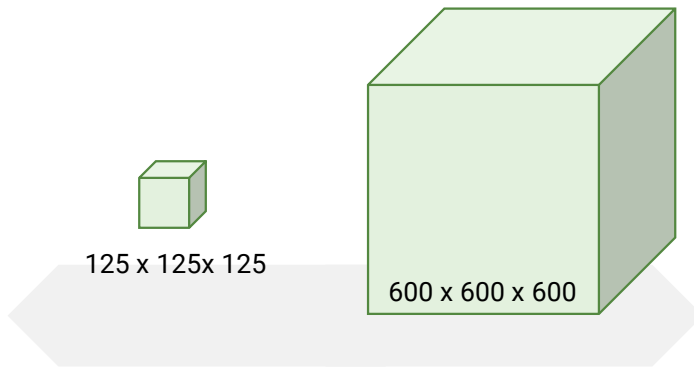




# Trends in metal technologies

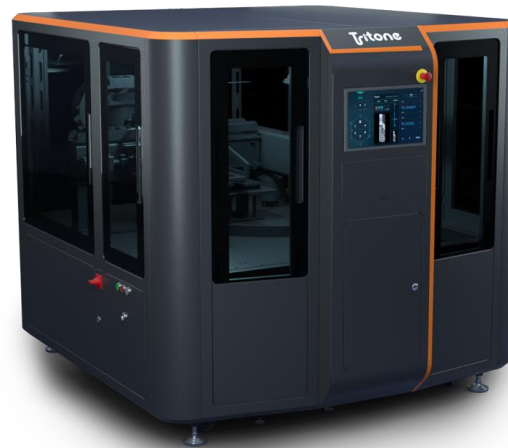
## PBF Size Gap

PBF vendors cover an increasing size range with their machine portfolio: very large machines with 10+ lasers to low-cost systems with low entry barrier.



## Sinter-based technologies

More and more effort is put into development of sinter-based technologies and material systems.



## DED Market Entries

Established companies enter the market and offer DED technology and solutions.



Market entrants have industrial applications in mind.

# Part examples metal AM

## Consumer goods

New sinter-based technologies find their way into markets previously too difficult for PBF.



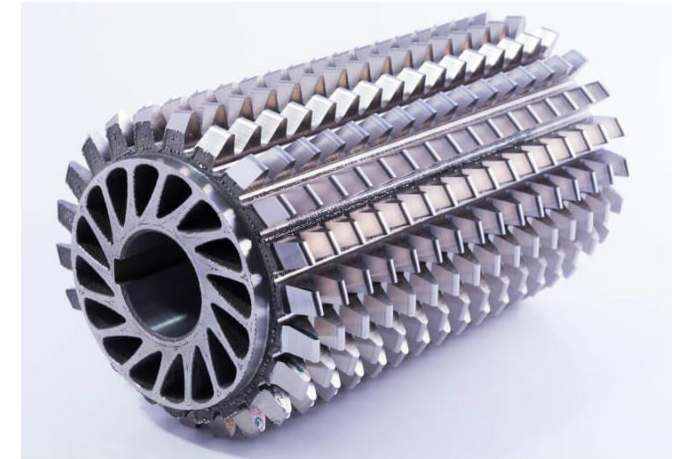
## Energy and Space

Large components in Energy and Space push the limits. Multiple benefits of AM come into play such as functional integration or difficult to machine alloys.



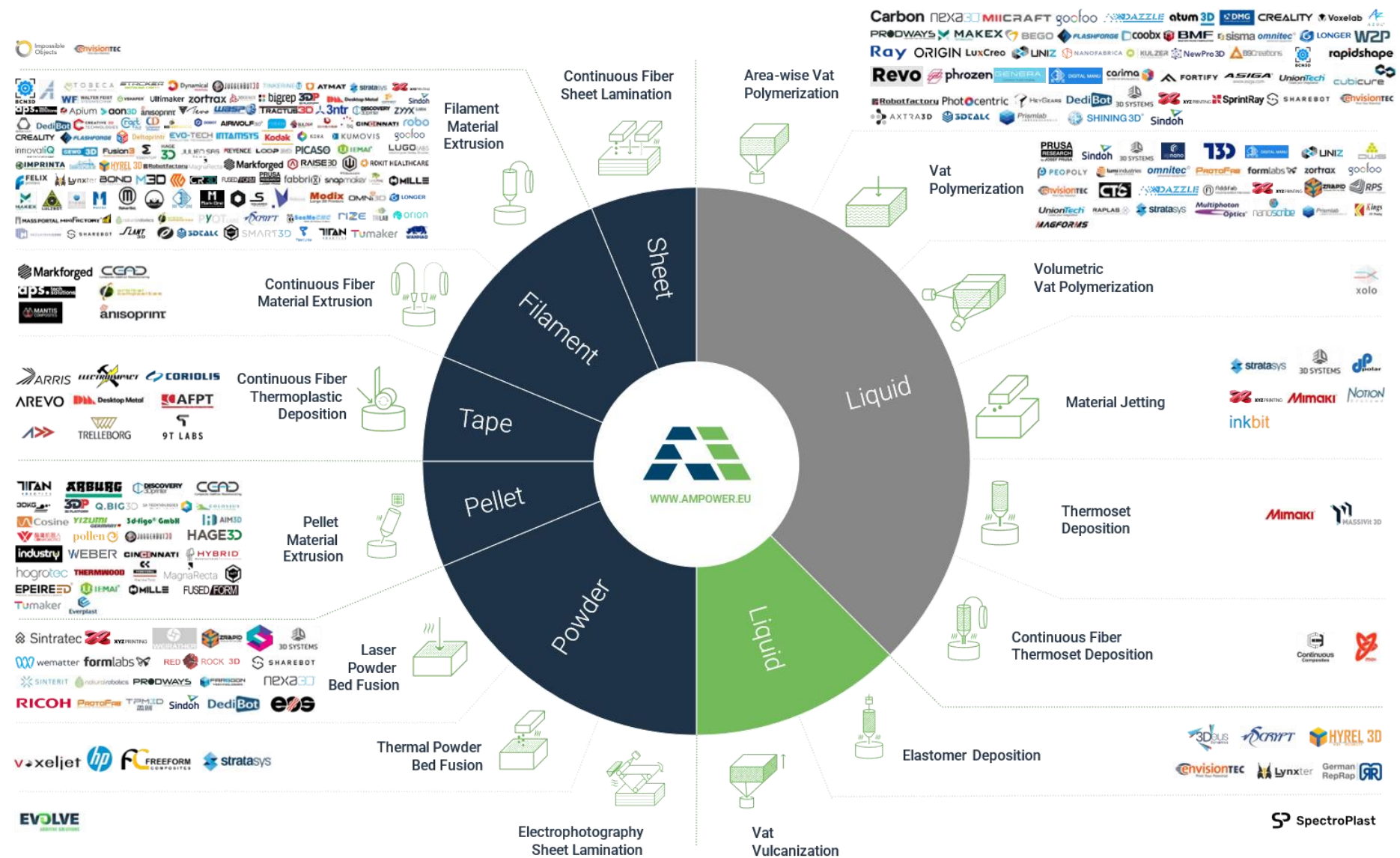
## Industrial applications

A future enabler will be AM specific material development to achieve excelling properties such as toughness, wear resistance, strength,...



Evolution of the technology and the materials leads to added-value in more industries.

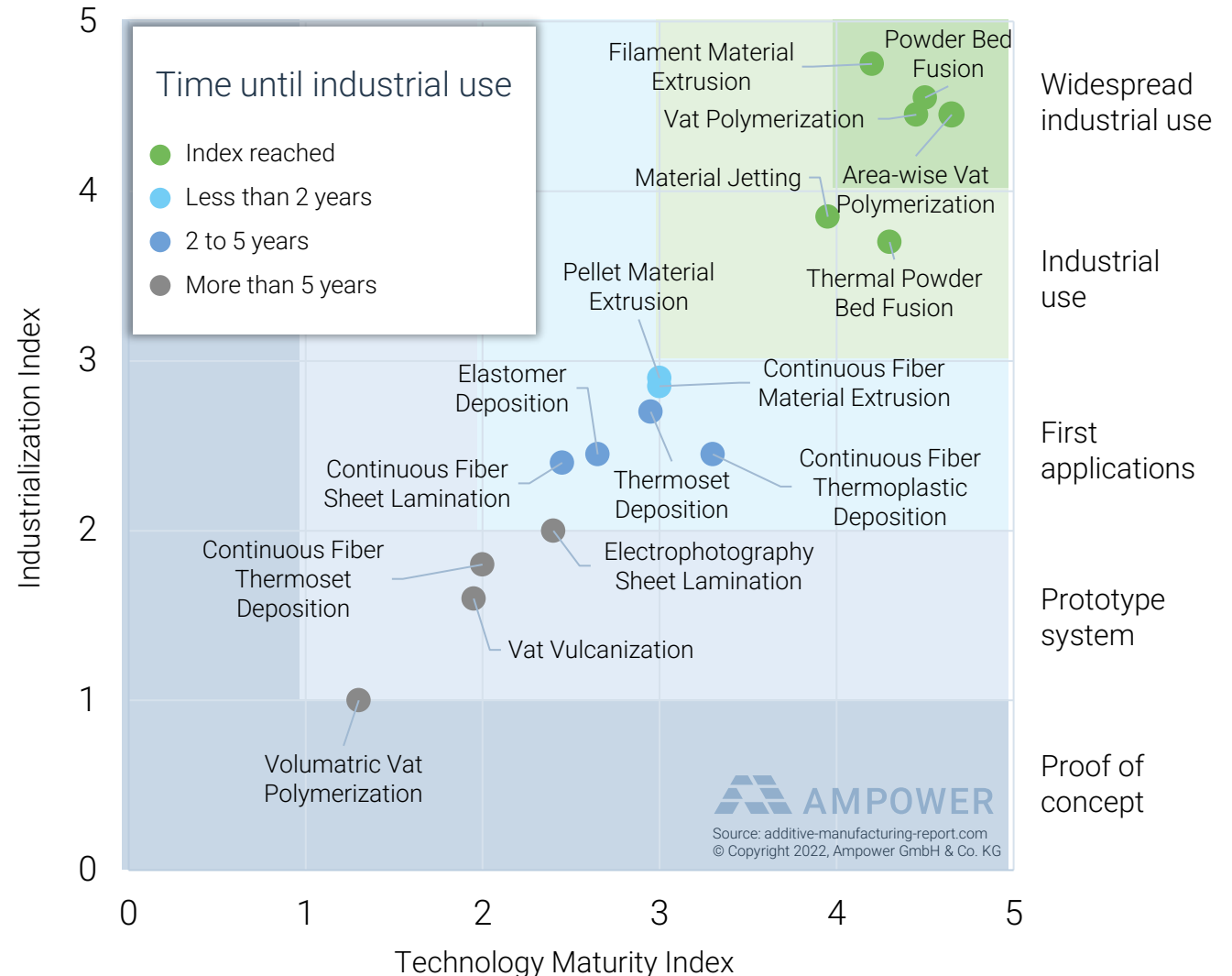
# Polymer Additive Manufacturing technology landscape



# Technology developments in 2022

## AMPOWER Polymer AM Maturity Index

- PBF and Thermal PBF (MJF) technologies dominate the volume thermoplastic markets.
  - Good material properties of common materials
  - Established process chain from software to finish
  - No significant innovation lately with regards to materials and speed
- FDM technologies only with few volume applications, majority of systems are used for prototyping and tooling.
  - Few serial applications e.g. in Aviation
  - Limited scalability
- 2K Resin technologies with strong dynamic despite sustainability concerns.
  - Roadmap for scalability
  - Good part properties
  - Potential road blocker: sustainability





# Upcoming polymer technologies

## Evolve Additive Solutions

**Evolves Electrophotography Sheet Lamination**  
is aiming at series production of thermoplastic parts



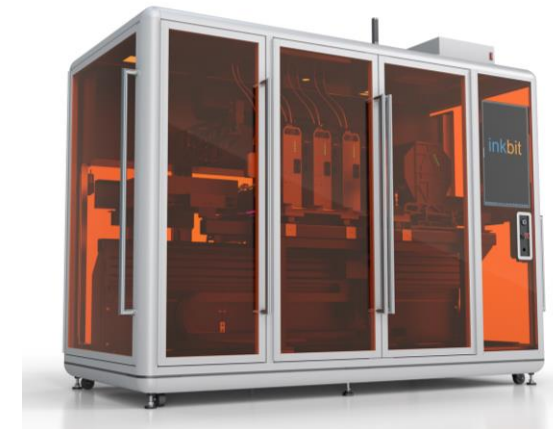
## Cubicure

**Cubicures Cerion System**  
is industrializing photopolymer technologies



## Inkbit

**Inkbits Material Jetting approach**  
is bringing new movement to this almost forgotten technology



**New systems are often designed to move polymer AM towards serial production.**

# Part examples polymer AM

## Series Production Parts

More and more user are looking for serial production parts within AM. Electrical connectors are one focused industry by several supplier.



## Consumer Goods

Consumer Goods like glass frames or shoe soles are driving the attention for AM. However, customization of these parts is still very limited.



## Manufacturing Equipment

Manufacturing equipment and prototypes are additively manufactured by all major industries. Decentralization and short lead time are the main drivers.



**Automation of AM processes is key to drive AM towards serial production.**

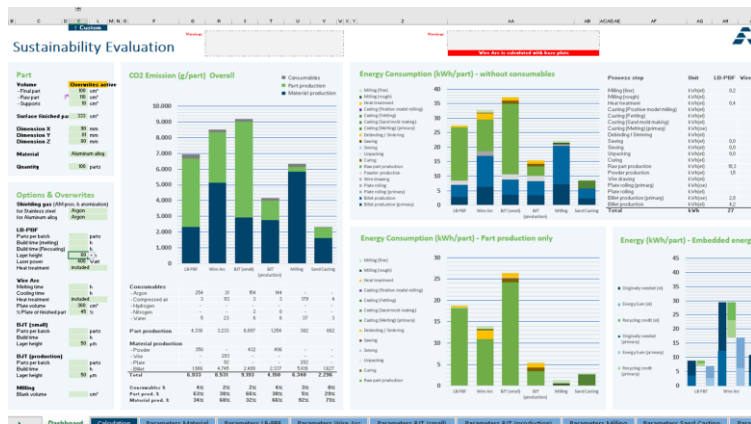


# Automation in AM



# Megatrend Sustainability

## How sustainable is Additive Manufacturing?



- Calculation of energy consumption and CO2 emission
- Comparison of multiple AM and conventional technologies
- Considering technology specific part geometries and different alloy groups
- Modeling of material, gas, water and consumables

### AMPOWER Sustainability tool



Recycling







Empowering your AM business.

Thank you for your attention!

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