



TRENDS IN AM

The added value of sinter-based Additive Manufacturing technologies

Hamburg, 06.05.2021

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

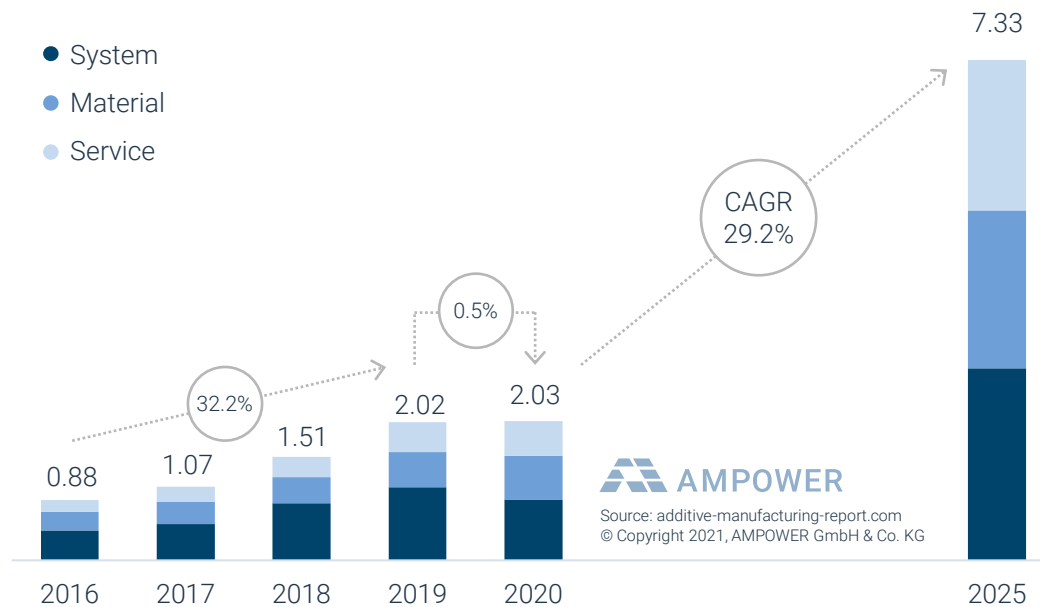
More than **100** international
Projects in Additive Manufacturing

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

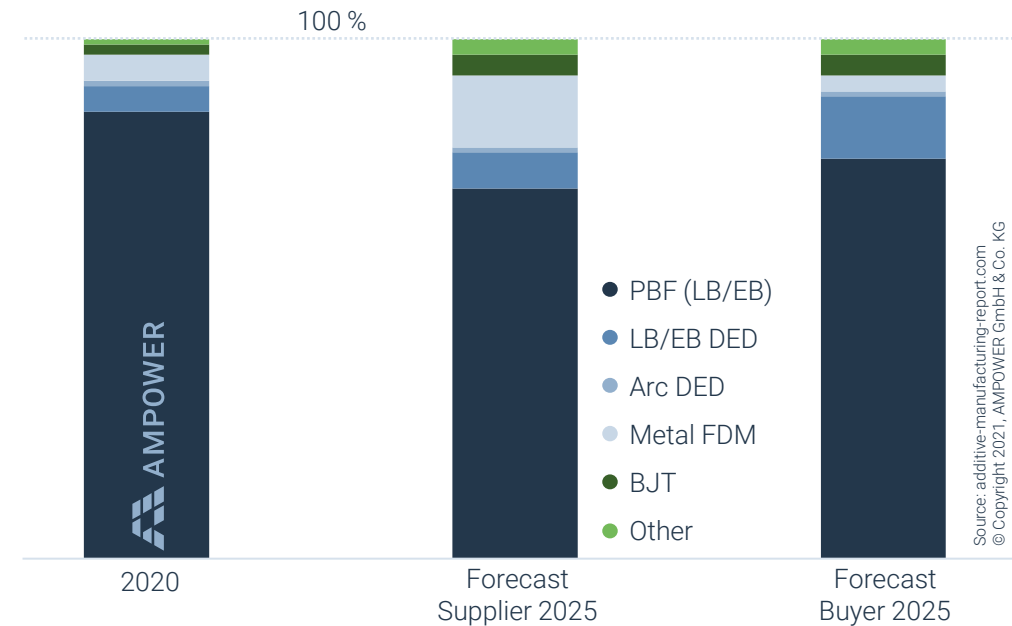
Publications with 35.000+ readers
setting references in Additive
Manufacturing community

SINTER AM TECHNOLOGIES WITH ABOVE MARKET GROWTH RATES

Metal Additive Manufacturing market 2020 and supplier forecast 2025 [EUR billion]

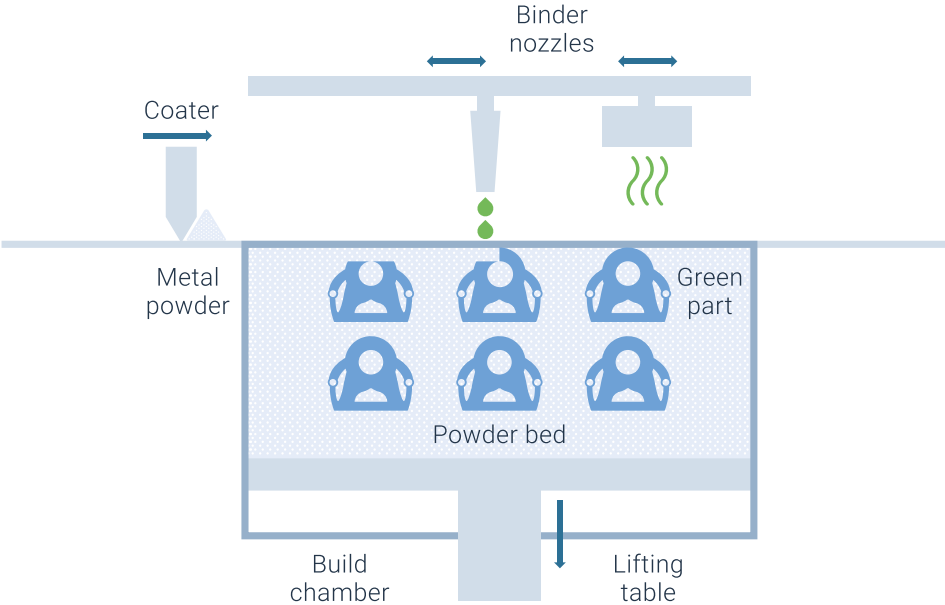


Installed metal base by technology 2020 and supplier vs. buyer forecast 2025 [share of units]

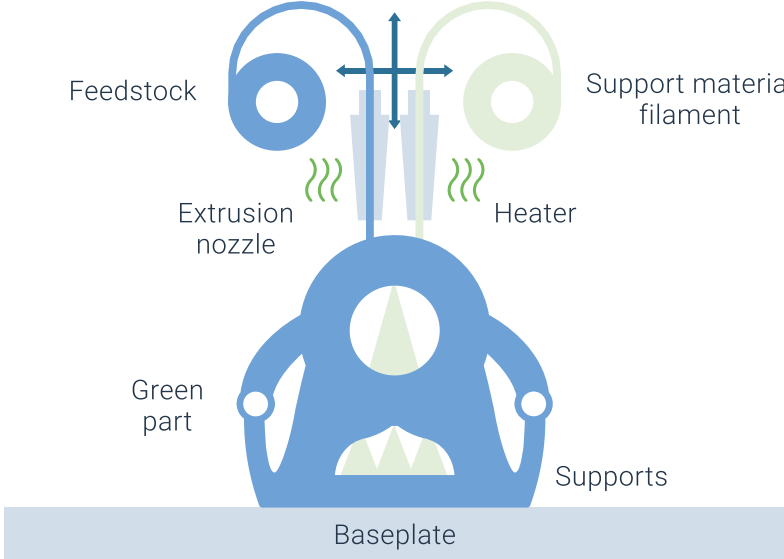


GREEN PART TECHNOLOGIES

Binder Jetting



Metal FDM/FFF



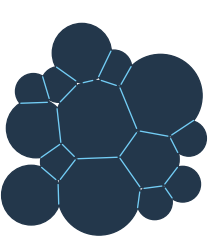
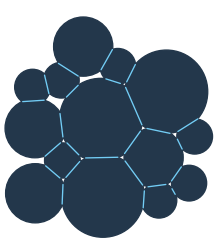
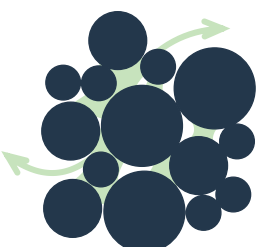
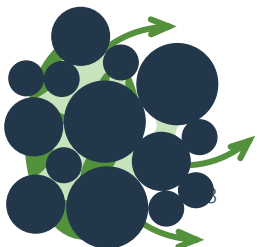
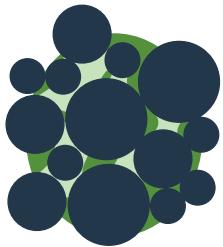
DEBIND AND SINTER PROCESS STEPS

- First stage binder
- Second stage binder
- Metal powder
- Grain intersections

First stage binder removal

Backbone binder removal

Intermediate sinter stage



Green part

Brown part

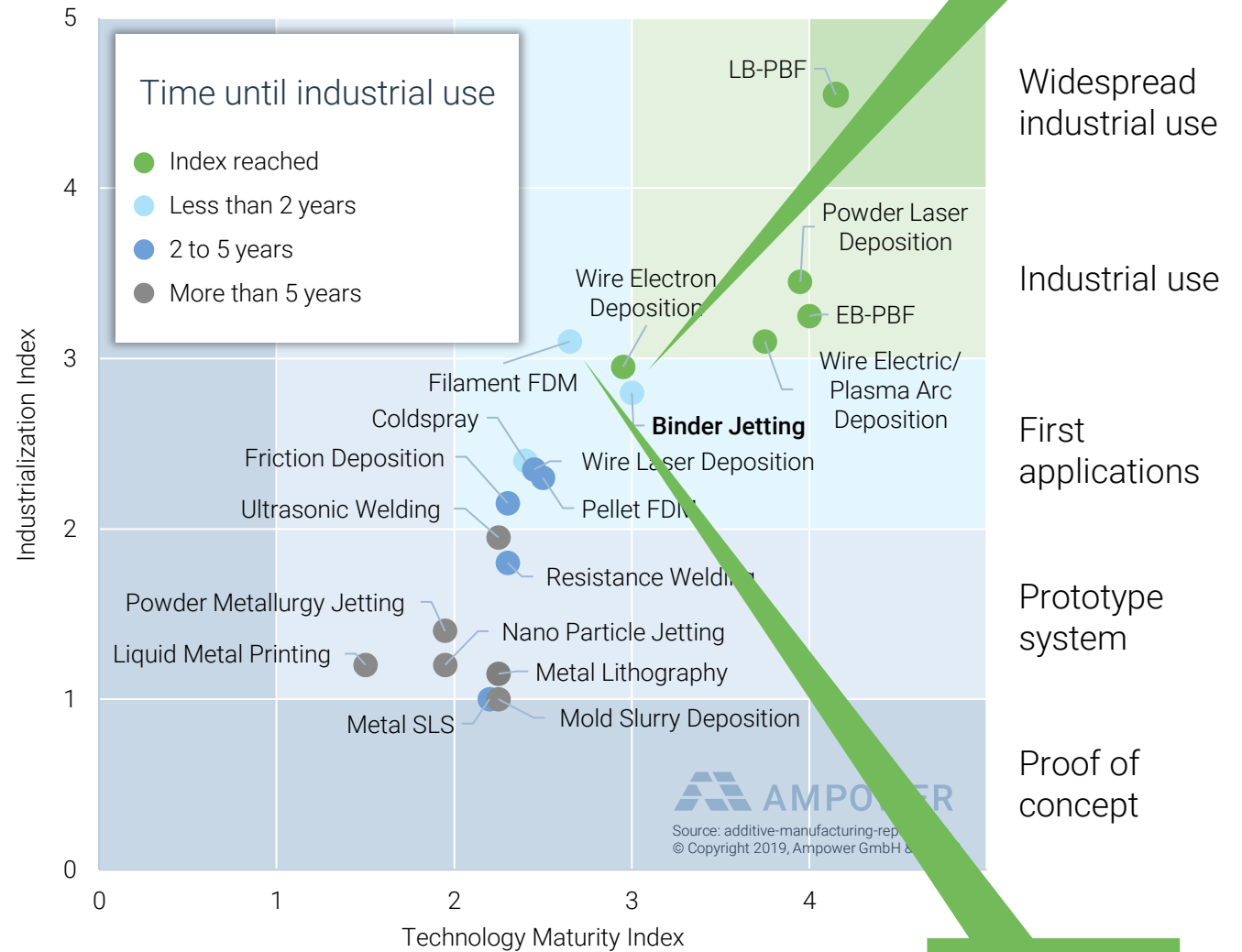
Sintered part



MATURITY OF BJT AND METAL FFF

2 years expected until significant industrial use
 10 years expected until PBF Level reached

AM Maturity Index 2020

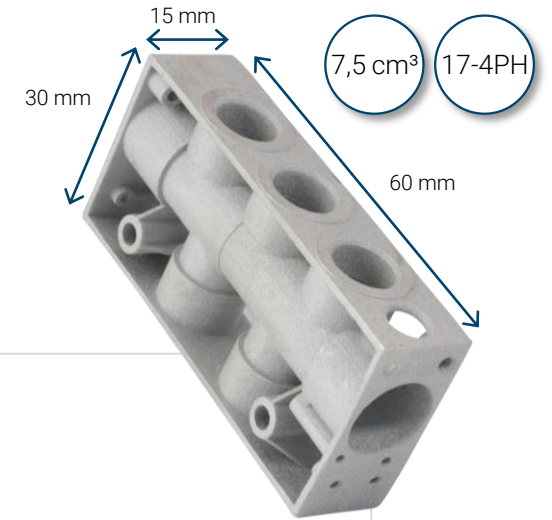


BJT

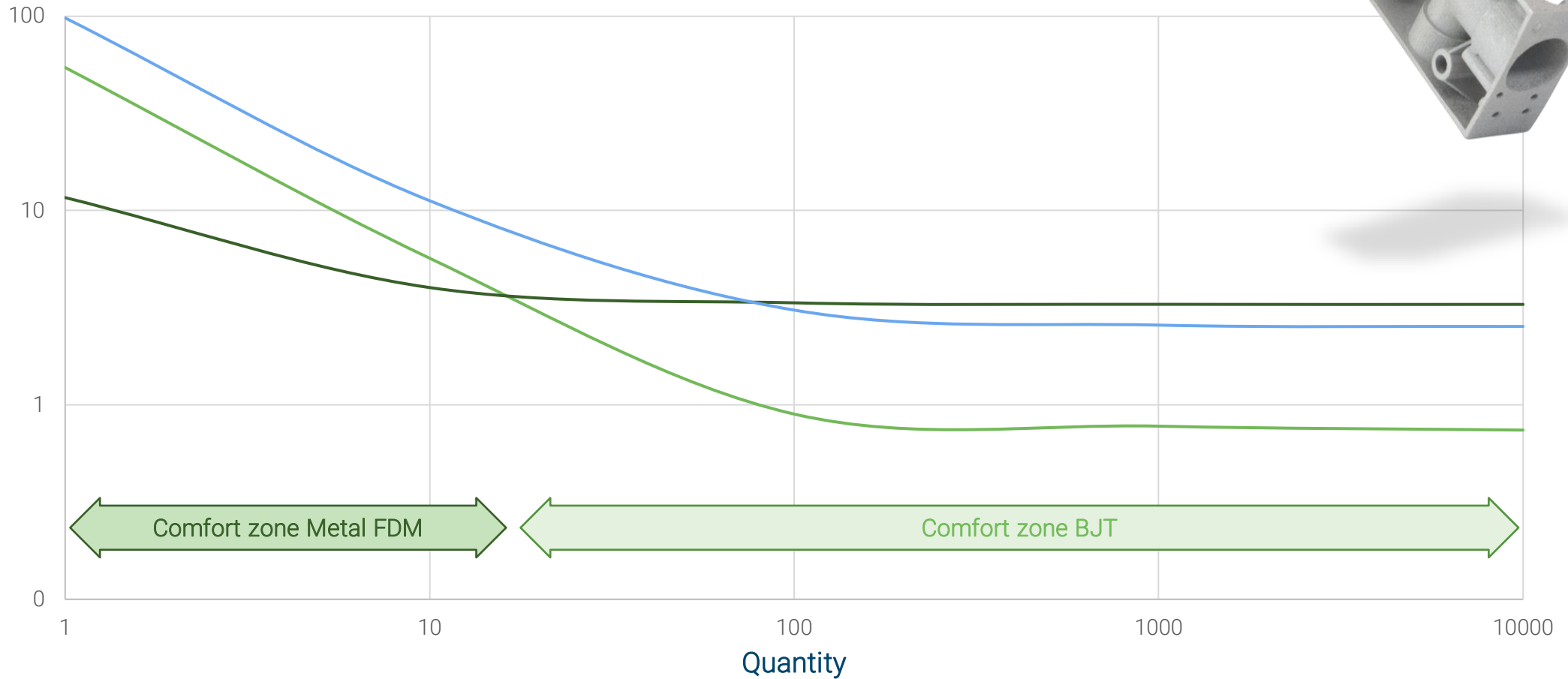
Metal FDM

COST AS THE MAIN POTENTIAL FOR SINTER-BASED TECHNOLOGIES

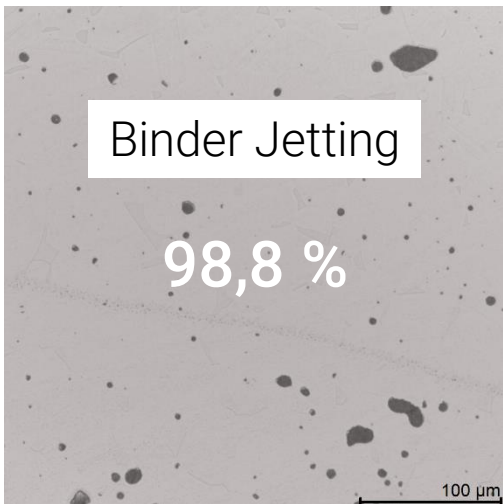
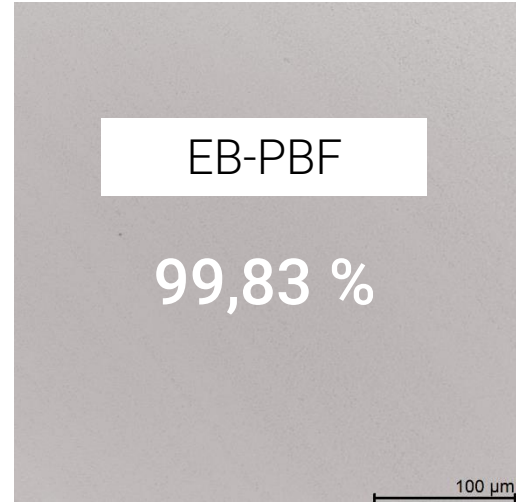
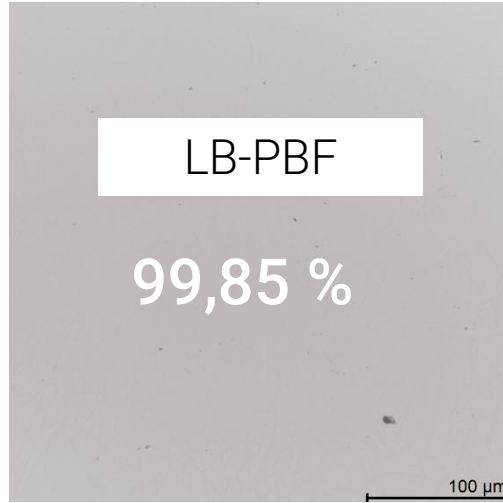
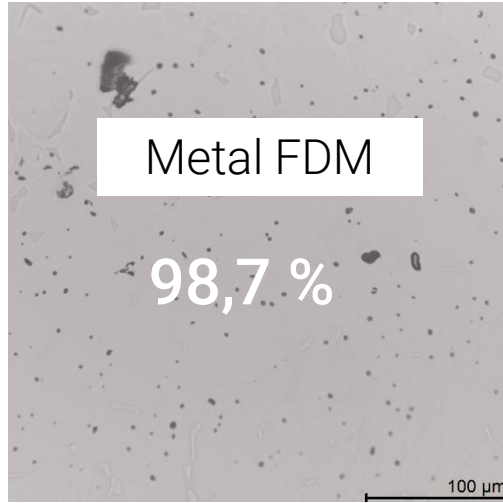
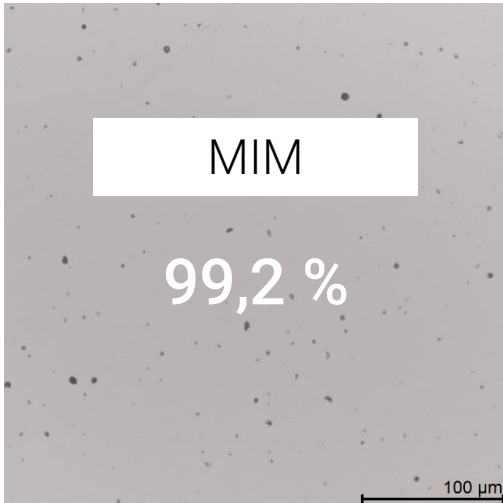
- PBF (Quad system)
- Metal FDM (OEM)
- BJT (Medium build volume)



Cost per cm³



MATERIAL PROPERTIES



Sinter-AM technologies can achieve similar density values to metal injection molding but do not reach PBF level

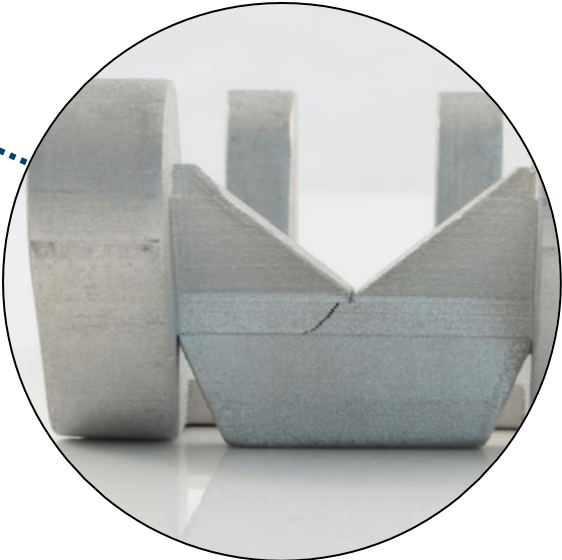
CHALLENGES REMAIN

Depowdering



Green part stability

Sintering behavior





Empowering your AM business.

Thank you for your attention!

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