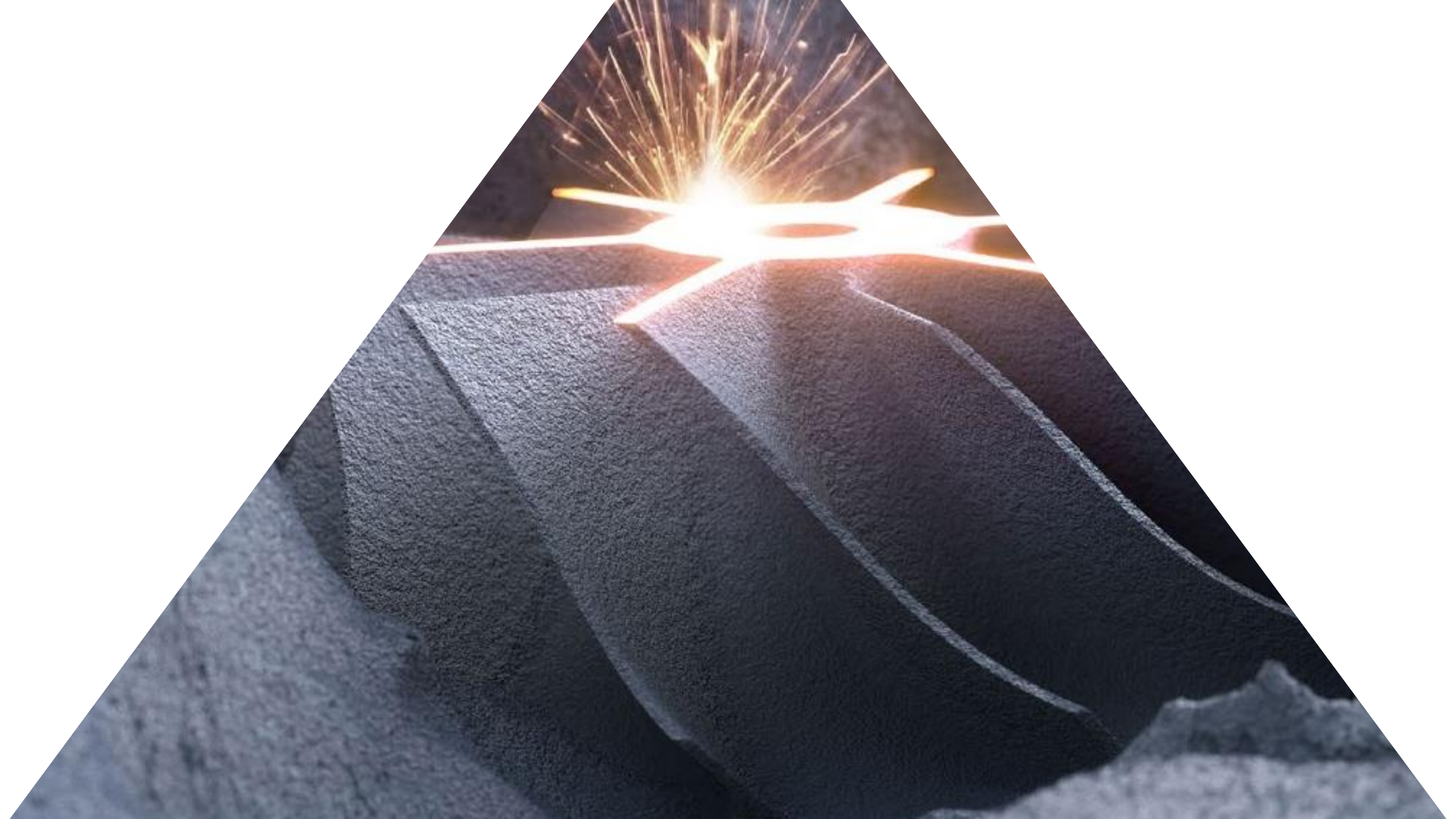


Turning Waste into Premium Metal Powders for a Sustainable Future

Omar Toso, CEO omar.toso@atanor.tech

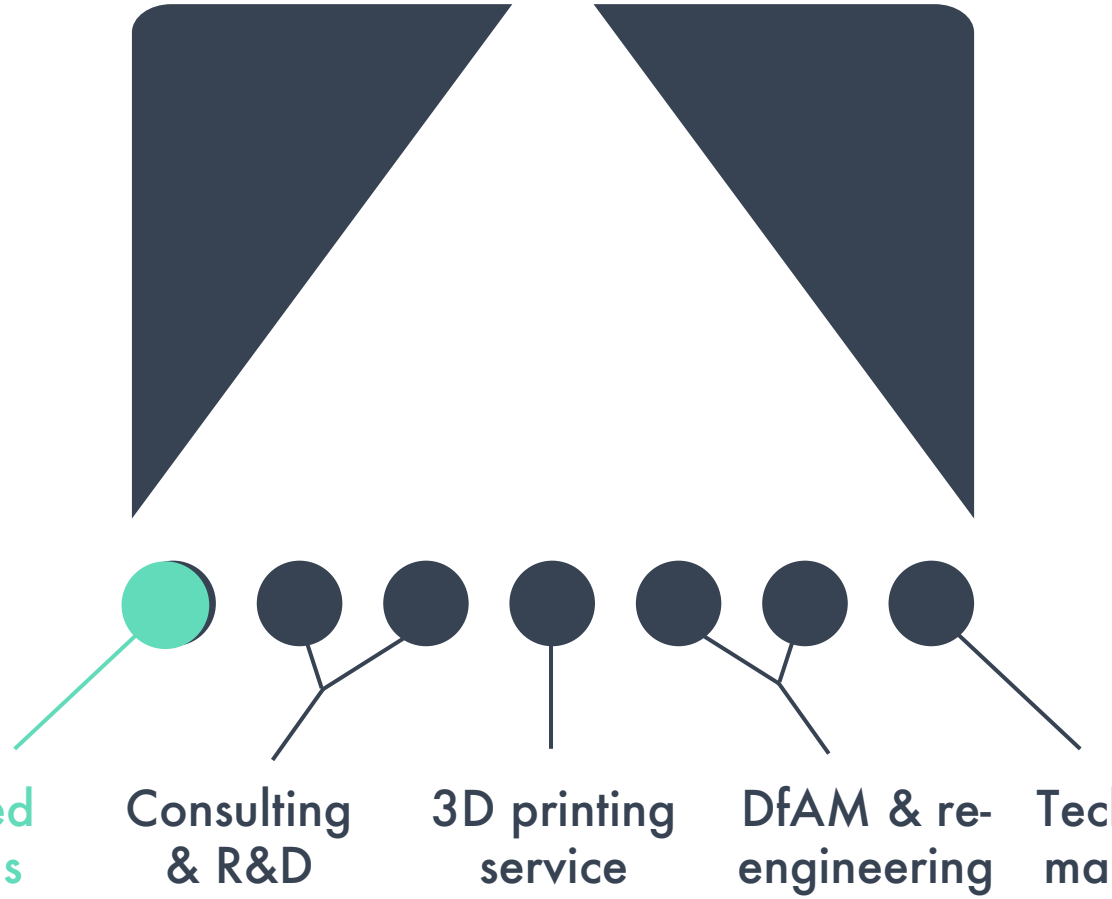
TRACTION

+20
Customers

6500€
MRR with 2 FTE

+17k€
NP for 2023

+200%
Growth rate year-over-year



Advanced materials

Consulting & R&D

3D printing service

DfAM & re-engineering

Technologies marketplace

Preliminary talks with:

Consiglio Nazionale delle Ricerche

EUROLLS

VDM Metals

From waste to resource

Reformation

Trade In

Clothes Plastics Electronics **Metal powders**

OVERVIEW

THE PROBLEM

90% of Metal Additive Manufacturing processes start with metal powders

Metal powders are crucial for consistent and reliable Additive Manufacturing production

THE PROBLEM

… but they face
significant challenges:

SHAPE

Not all the powder grains are spherical

CHEMISTRY

Powders are non homogeneous

RECYCLING

Powders get exhausted and need recycling

DEFECTS

Defected powders originate defected parts

THE PROBLEM

If you use defective powder,

you get defective parts.

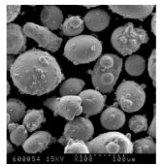
You lose time.

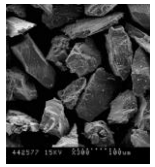
You can damage the 3D printer.

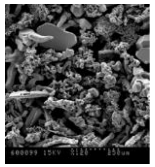
SOLUTION

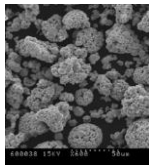
ATANOR **TRANSFORMS POWDERS**
with an innovative process that produces high-quality spherical powders

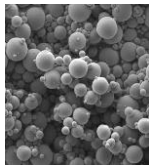
FROM


Atomized

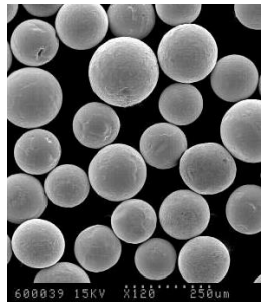

Crushed


Sponge


Spray-dried


Exhausted

TO



Premium spherical powder

Increased quality

Improved consistency

Higher ROI

REVENUE MODEL: B2B

ATANOR manufactures and delivers **high-quality** powders and custom materials for high-tech applications by **recycling** and **transforming** waste into valuable products.

Pricing models

Atanor has 2 pricing models:

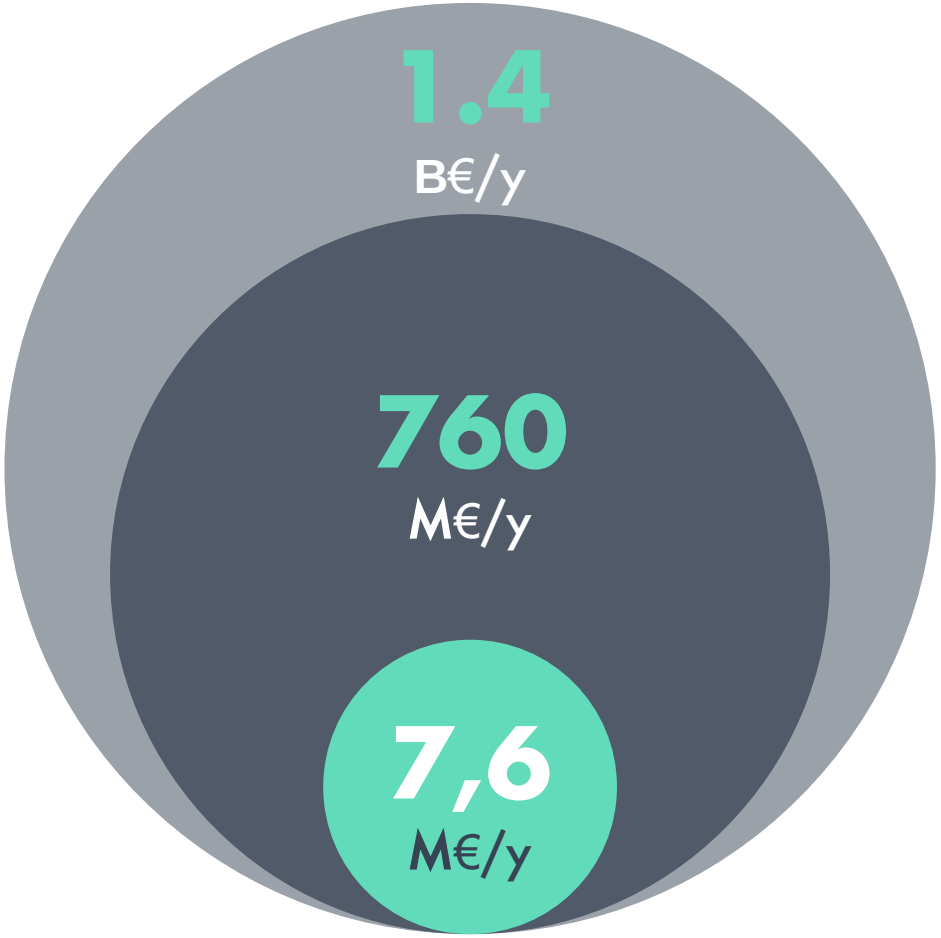
MANUFACTURING AND SALES BUSINESS MODEL
60% contribution margin

A. Special steels
B. Super alloys (Ni, Mo, Co based)
C. Nonferrous alloys
D. Advanced ceramics and special materials
E. Cermets
F. Feedstock for MIM and CIM

SERVITIZATION BUSINESS MODEL
84% contribution margin

G. Used powder recovery service

MARKET – Additive Manufacturing



Forecast of metal powder demand for AM market in 2025

TAM / AM metal powders global market

+14.800 metal 3D printing systems installed worldwide

SAM / AM metal powders available market

+8000 printing systems 2+ y old systems, out of warranty

SOM – AM metal powders market share (Atanor)

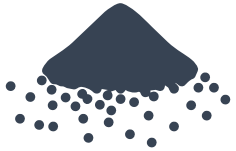
80 targeted customers – 1% of SAM - ~90ton

MARKET – Additive Manufacturing

Additional market: metal powder recycling for AM

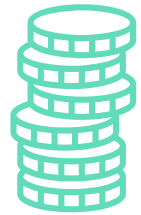
800 kg/y

Mean amount of powder used in a metal 3D printing system



5 %

Oxidised powder (to be recycled)



>30 M€/y

Waste powder global market value

TRACTION

Oct '22
Additive StartUp Italia

Dec '22
PR FESR

Jan '23
Kick-off
170k€ investment

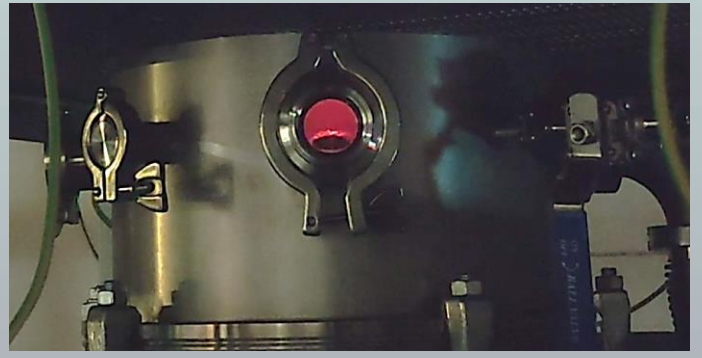
Nov '23
Functioning Prototype

Oct '24
Scale up
1st Production Line

2025
Multiple Production Lines

2028
Expand globally with multiple plants

7.5M€ Revenue
28% EBITDA
90 Ton Powder produced
80 Customers



THE TEAM

Omar Toso

Founder & CEO

MSEng Industrial engineering,
PhD Metallurgical engineering, MBA

+ 15 yrs of expertise in business management and R&D.
Proven track record in leading materials and tech companies with innovation and process improvement.

Manuel Marcellini

Production management

MSEng Industrial engineering

+ 4yr of expertise in system engineering and electric and mechanical design.
In Atanor Manuel successfully engineered the Astra plant.

Marco Regis

R&D and quality

MSEng Materials Science,
PhD Chemistry

R&D expert with a robust background in design, research, and innovation.
+16 yrs of extensive experience leading cross-functional teams in engineering, chemistry, and design.

ADVISORY BOARD

Howard R. Barnes

Mentor, strategic advisor

Entrepreneur, consultant, international projects expert

MSc (Oxon)

Howard advises Atanor on developing international strategic partnerships.

Andrea Bressan

Marketing and sales consultant

Metal powder expert consultant

MSEng.

As a seasoned metal powder expert, Andrea drives Atanor's sales development.

Nicola Scuor

Technical consultant processes

University of Trieste professor
Material Science

MSEng. PhD

Nicola enhances Atanor's process capabilities by integrating cutting-edge technologies.

Why now

- Powder-based processes are **resource-efficient**.
- Key sectors like automotive, medical, and aerospace are poised for **growth**.
- Additive manufacturing demands **higher-quality materials**.
- The next few years are **crucial** for market entry

GREEN TECHNOLOGY

PM is a green technology; in particular it allows high material yield utilisation and low energy consumption. Around 80% by weight of the raw material used in the manufacture of PM parts is derived from recycled scrap and over 95% is present in the final product, compared with levels often of only 50% for conventional processes. Thus PM helps to master the challenges of the future, like the rare earth supply issue, (less raw material required through PM).

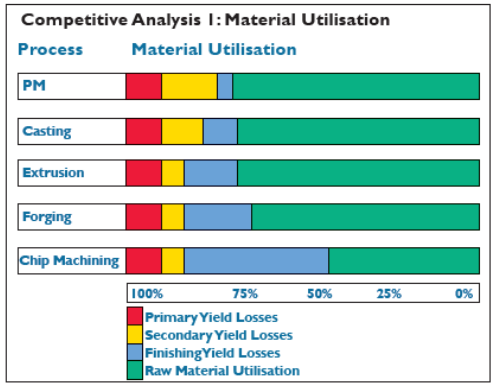


Figure 1: Material utilisation by different metal forming processes.

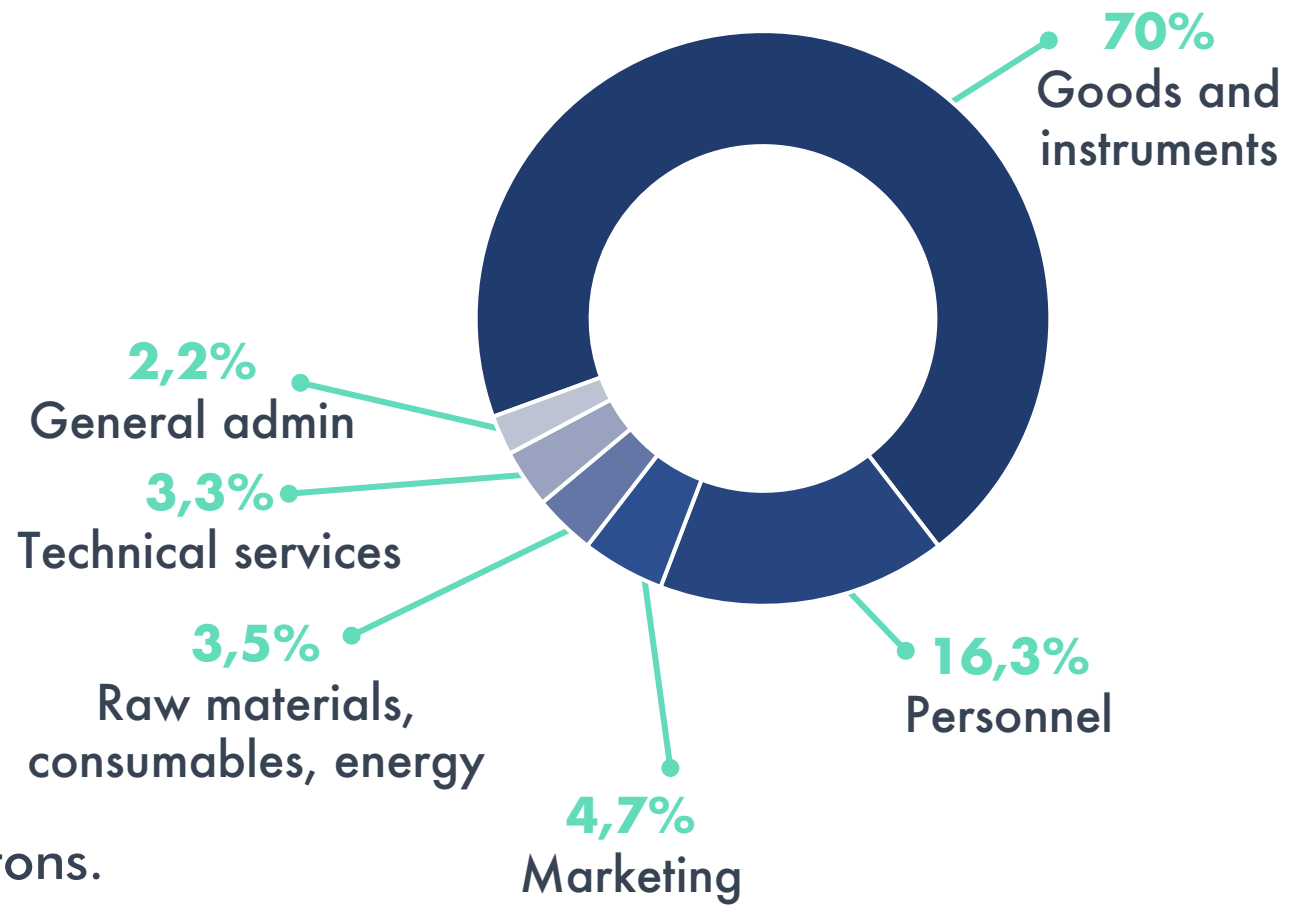
https://www.epma.com/epma-free-publications/product/vision-2025-high-res

ASK & USE

1 M€

Scaleup / 1st production line

- Establish our first production line.
- Achieve an annual capacity of 10 metric tons.
- Leverage partnerships and team expertise.
- Reaching ~1M€ of sales per line.
- Complete the line by Q1 2025.



THE MOAT

Atanor excels with unique spherical composites, transforming waste into high-quality powders.

We lead in premium, sustainable metal powders, thriving in a growing market with a scalable business foundation.

Atanor S.r.l. innovative startup

Full payed capital €50.000,00
Via della Tecnologia 6/1 Z.I.U.
33050 Pavia di Udine (UD) - ITALY
VAT Nr. 02977890306 - REA UD-354076
www.atanor.tech - info@atanor.tech

Enterprise supported within Friuli Innovazione incubator

APPENDIX

REVENUE MODEL: B2B

Metals, ceramics, powders to be regenerated

5-15€/kg
Waste powders material cost

50-300€/kg
Premium powder selling price

New alloys, Metal matrix composites

Key Processes:

1. **Acquisition**: Sourcing waste powders, metals, and ceramics at low cost.
2. **Recycling & Transformation**: Regenerating these materials into high-quality, high-value powders.
3. **Production**: Developing new alloys and metal matrix composites tailored for high-tech applications.

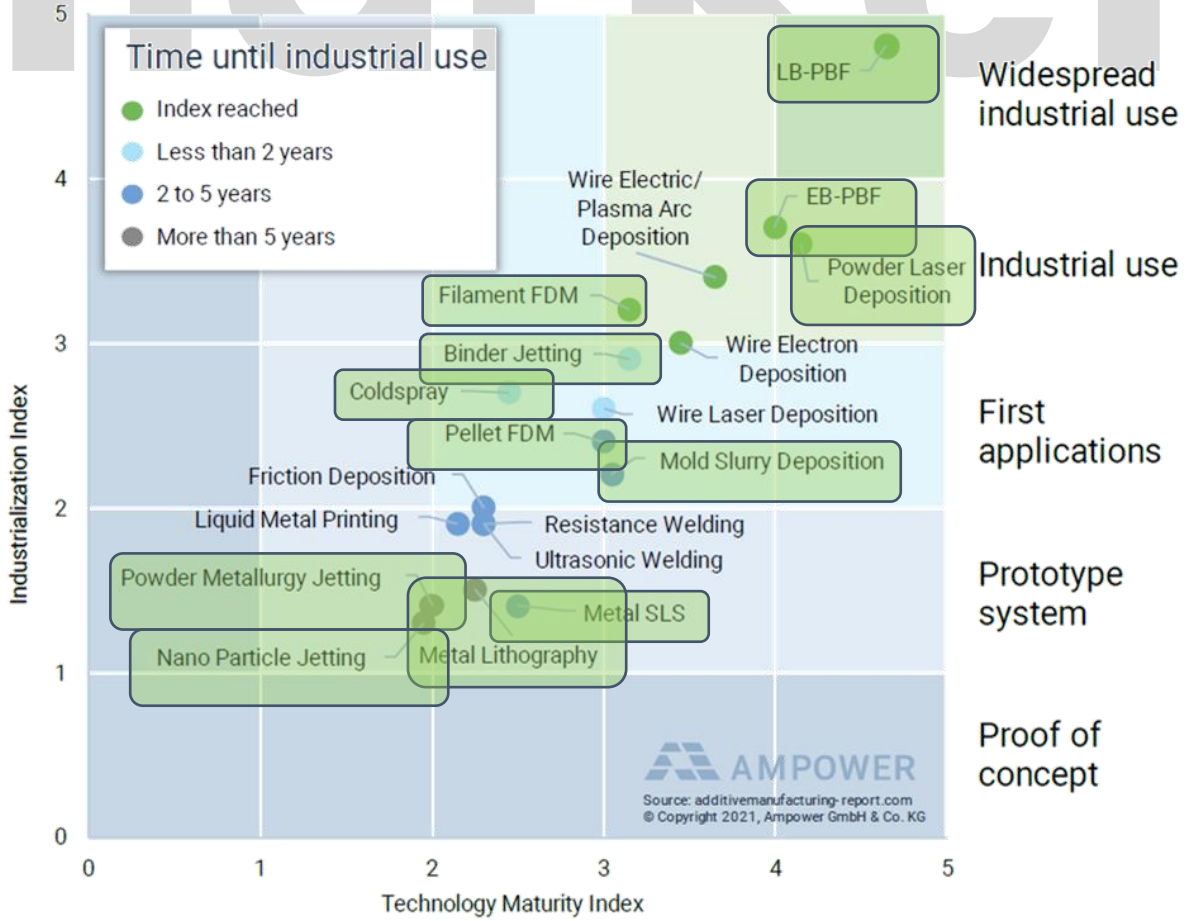
Value Proposition:

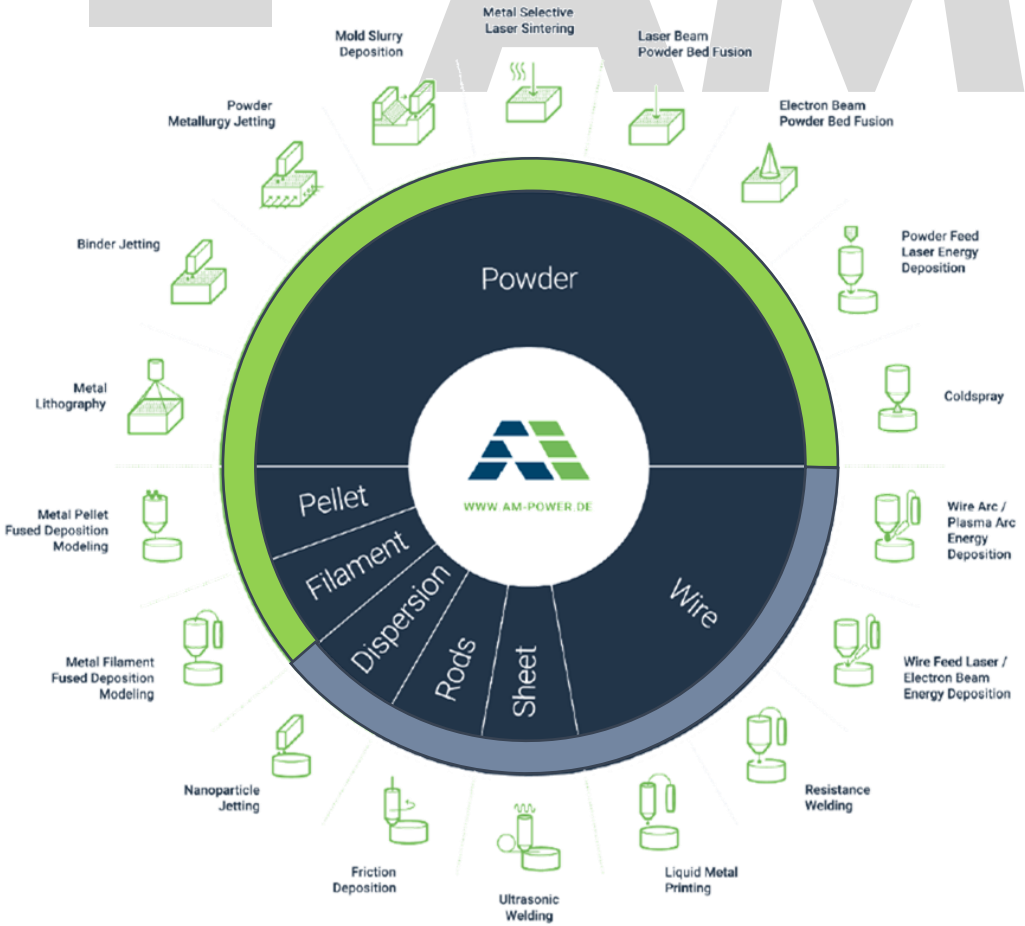
- **Cost Efficiency**: Leveraging low-cost raw materials to create high-margin products.
- **Sustainability**: Promoting eco-friendly practices by recycling waste materials.
- **Customization**: Providing bespoke solutions to meet specific industry requirements.

Target Market:

- High-tech industries requiring advanced materials such as aerospace, automotive, and electronics.

market – AM

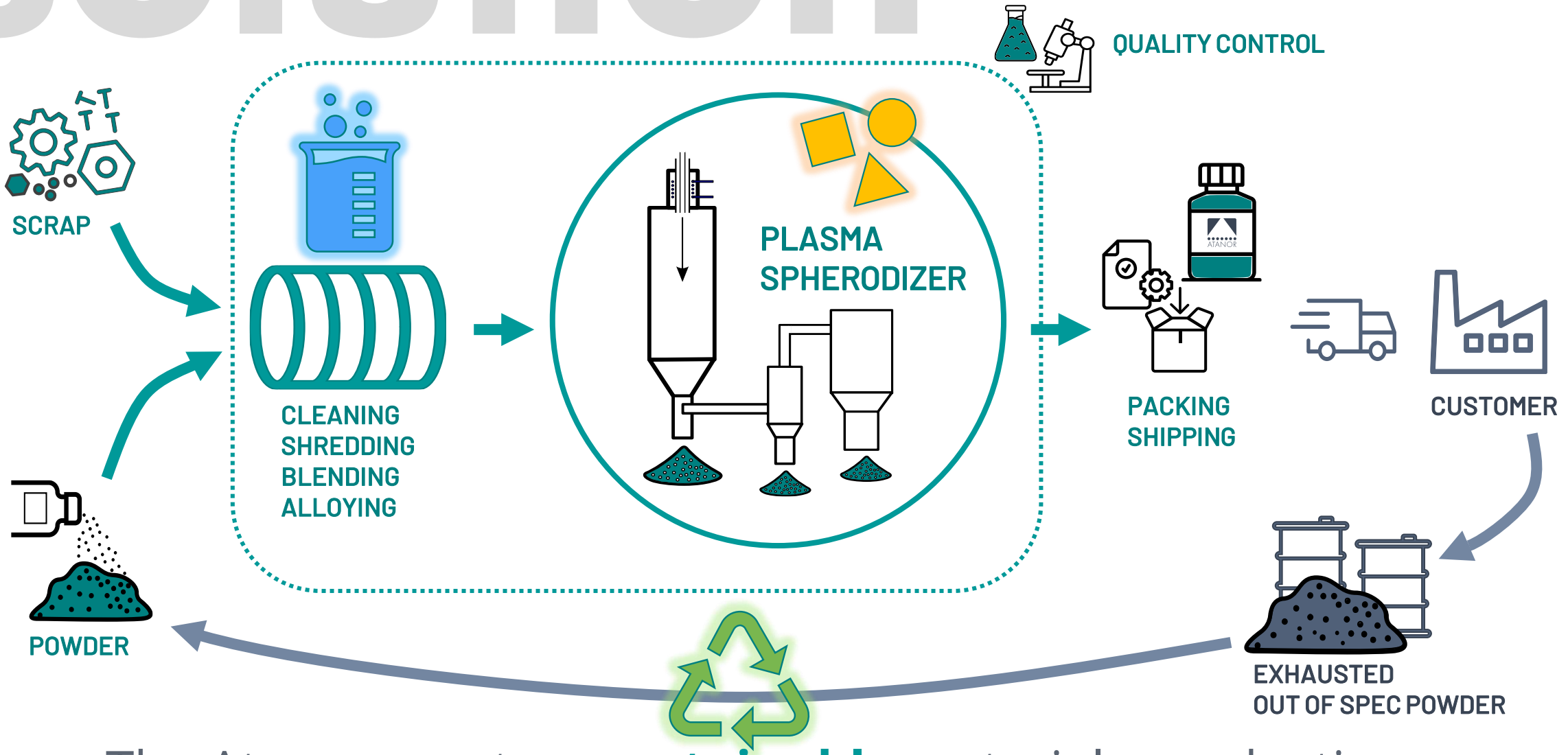




Material possibly manufactured by ATANOR

60% of Metal AM technologies can use ATANOR's powders

solution



The Atanor way to a **sustainable** materials production

markets

Additive Manufacturing
Thermal spray
Powder metallurgy (PM, HIP, MIM, CIM)
Catalysis applications (CO_2, H_2)

METAL AND POLYMER AM MARKET SIZE 2020 AND 2025

Additive Manufacturing market to reach almost EUR 18 billion in 2025

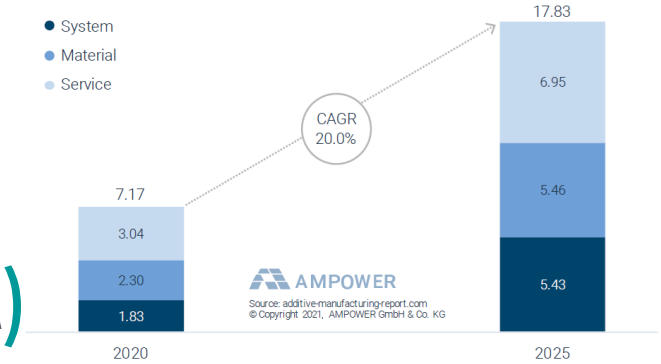


FIGURE 4 GLOBAL METAL AND POLYMER ADDITIVE MANUFACTURING MARKET 2020 AND SUPPLIER FORECAST 2025 [EUR BILLION]

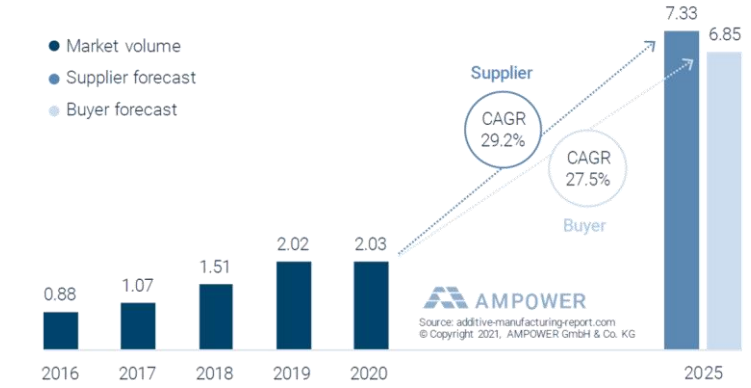


FIGURE 9 METAL ADDITIVE MANUFACTURING MARKET 2020 – SUPPLIER VS. BUYER FORECAST 2025 [EUR BILLION]

market – AM

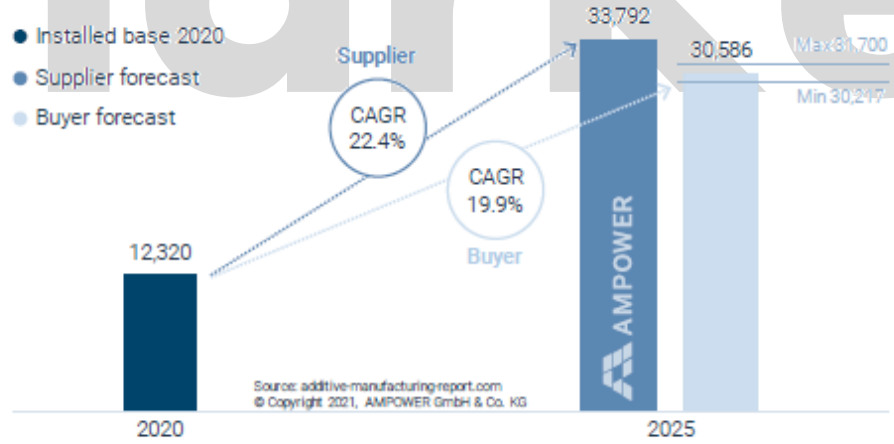


FIGURE 10 METAL AM INSTALLED BASE 2020 AND SUPPLIER VS. BUYER FORECAST 2025 [UNITS]

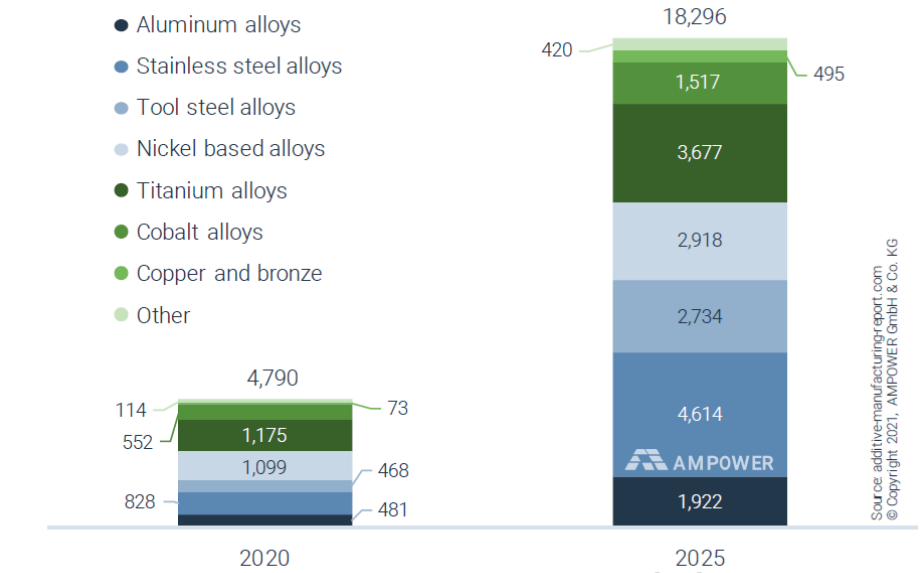


FIGURE 37 METAL MATERIAL CONSUMPTION 2020 AND FORECAST 2025 [TON]

Currently more than **10,000** systems for metal AM are installed and the market is expected to grow with a **20% CAGR** during the next years, reaching more than **30,000** systems installed by 2025

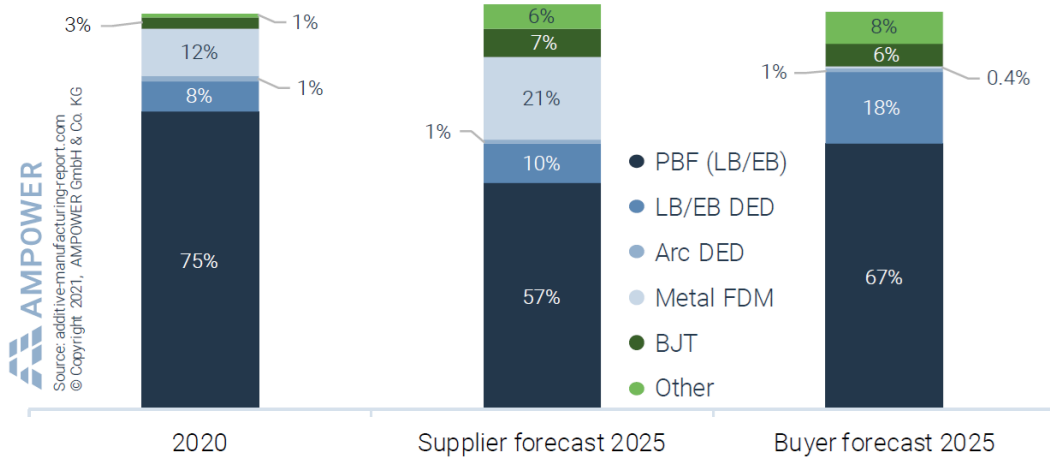


FIGURE 26 METAL MACHINE SALES BY TECHNOLOGY 2020 AND SUPPLIER VS. BUYER FORECAST 2025 – SHARE OF UNITS

market – AM

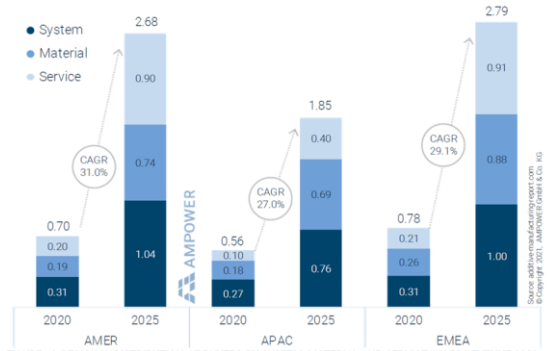


FIGURE 13 REGIONAL DISTRIBUTION OF BUYERS BY SYSTEM, MATERIAL AND SERVICE SALES REVENUE 2020 AND SUPPLIER FORECAST 2025 [EUR BILLION]

AREA	REVENUE	2020	2025
AMER	MATERIAL	0,19	0,74
APAC	MATERIAL	0,18	0,69
EMEA	MATERIAL	0,26	0,88
		0,63	**2,31**

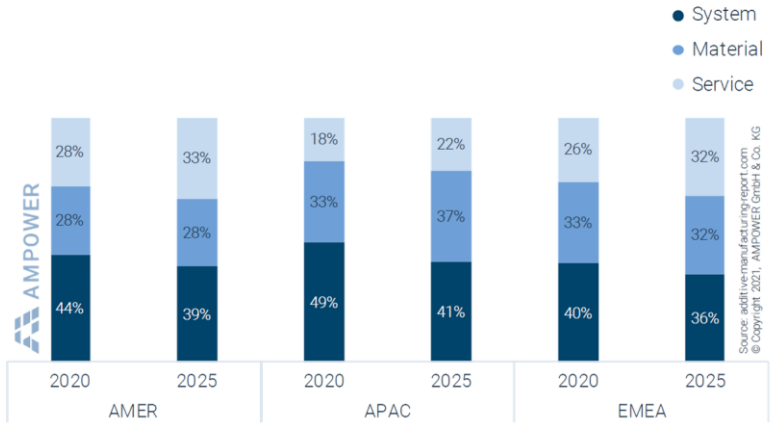


FIGURE 14 REGIONAL DISTRIBUTION OF BUYERS BY SYSTEM, MATERIAL AND SERVICE SALES REVENUE SHARE 2020 AND SUPPLIER FORECAST 2025

Materials market estimation for AM

[EUR BILLION]

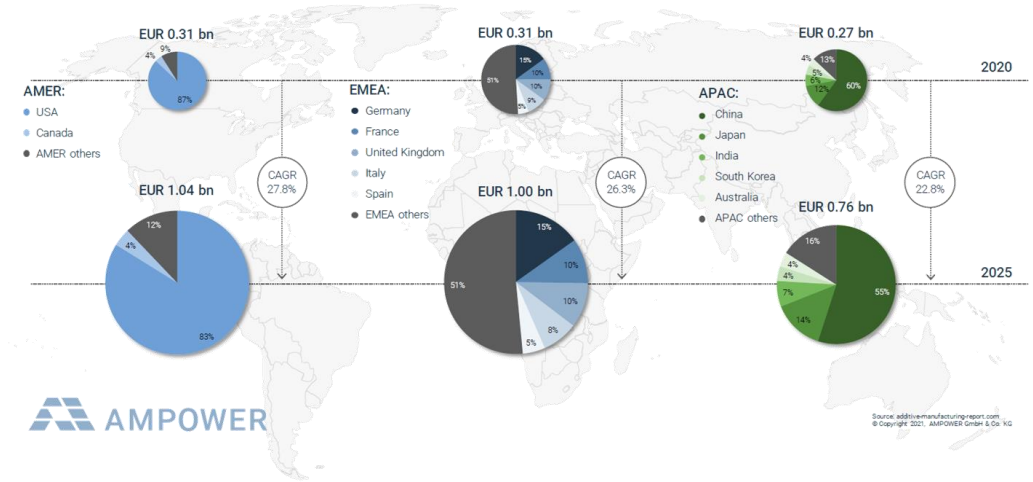


FIGURE 15 REGIONAL DISTRIBUTION OF BUYERS BY METAL SYSTEM SALES REVENUE 2020 AND SUPPLIER FORECAST 2025 [EUR BILLION]

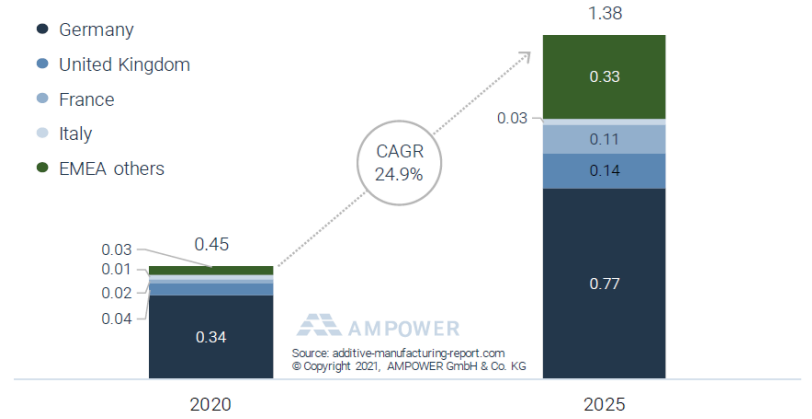


FIGURE 19 REGIONAL FOCUS EMEA – ORIGIN OF METAL SYSTEM SUPPLIERS BY SALES REVENUE 2020 AND SUPPLIER FORECAST 2025 [EUR BILLION]

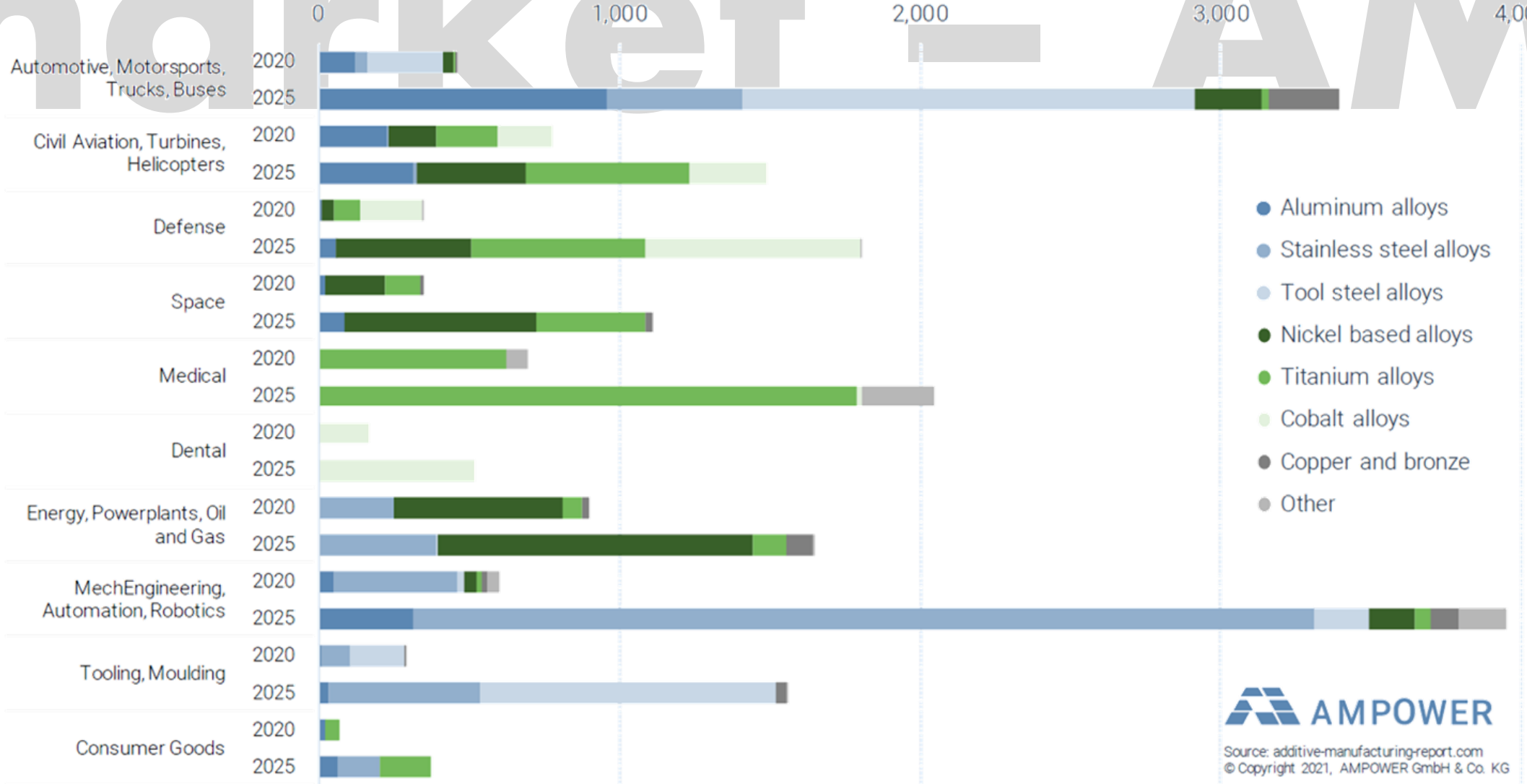
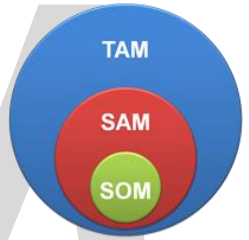
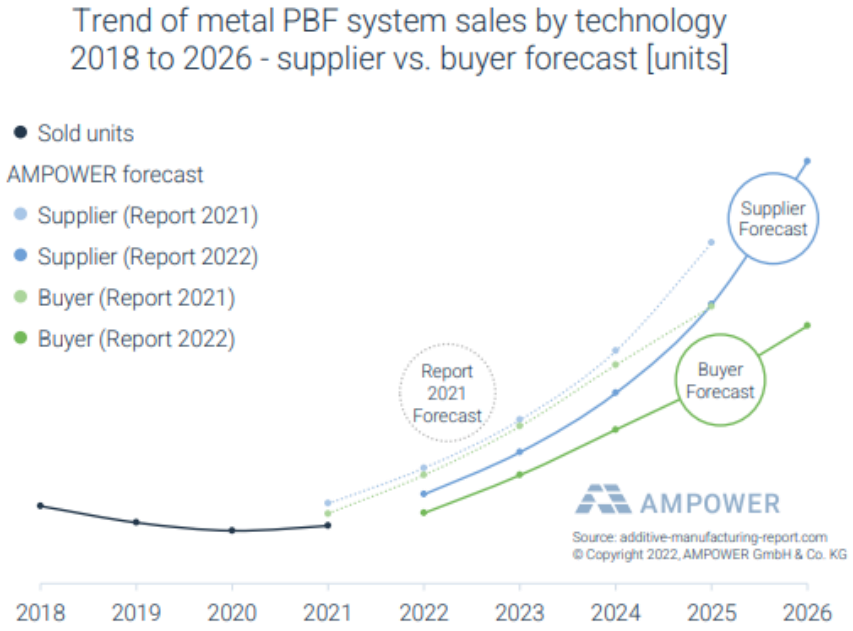


FIGURE 38 METAL MATERIAL CONSUMPTION BY INDUSTRY 2020 AND FORECAST 2025 [TON]

market – AM



Year	2020	2021	2022	2023	2024	2025	2026
Yearly PBF systems metal AM sold (buyer forecast) [nr]	1.520	1.570	1.700	1.940	2.270	2.600	3.050
TAM (cumulative PBF installed systems) [nr]	4.796	6.366	8.066	10.006	12.276	14.876	17.926
SAM (2+ yr old systems, out of warranty) [nr]		1.714	3.276	4.796	6.366	8.066	10.006
SOM (reachable systems) ~ **1% of SAM** [nr]	-	17	33	48	64	81	100
Annual **demand** [Kg/yr] (for 1200Kg/year of estimated supplied material each PBF sys)		18.800	36.700	53.700	71.500	89.600	112.000



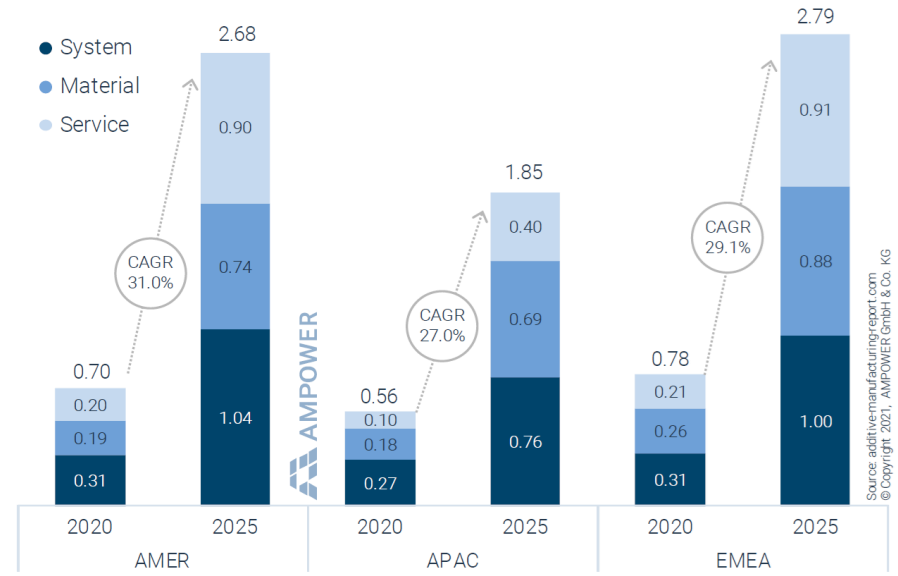
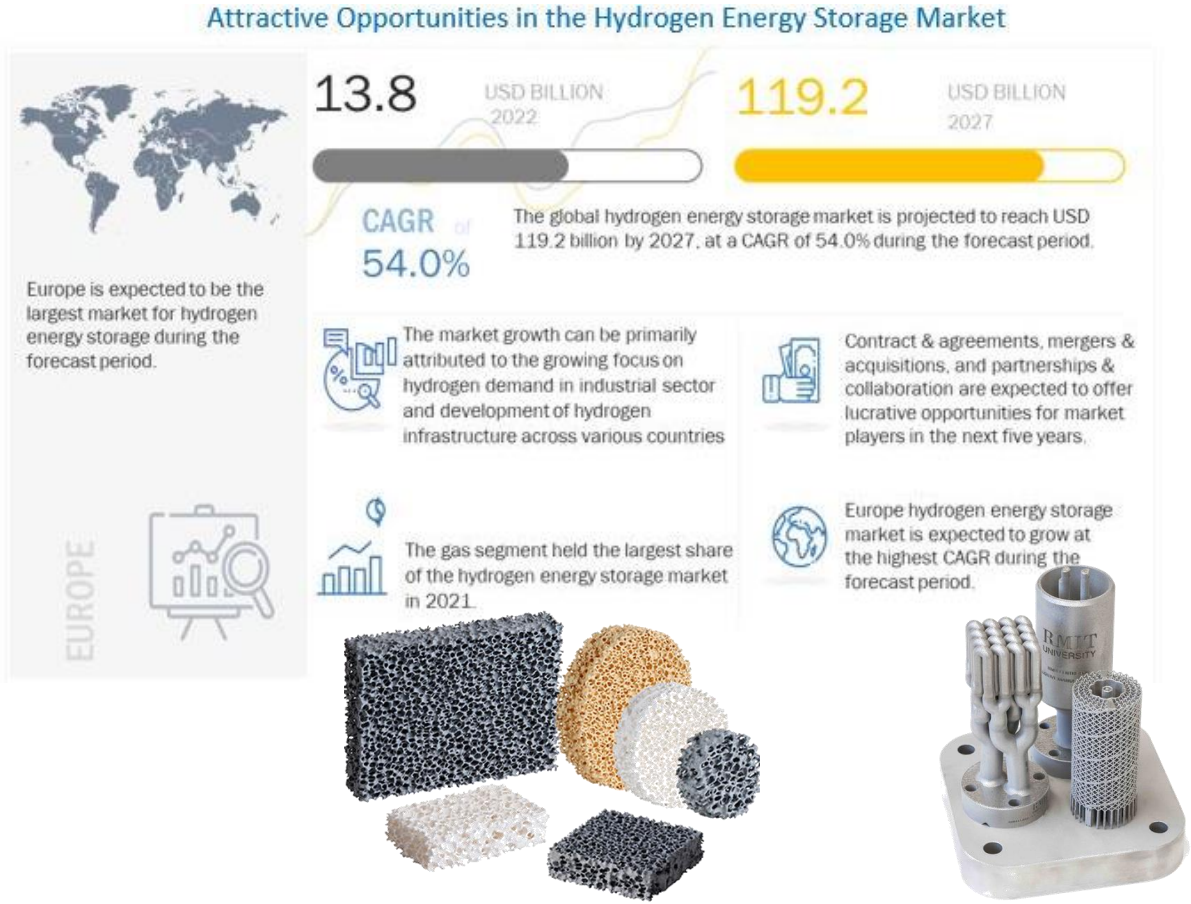
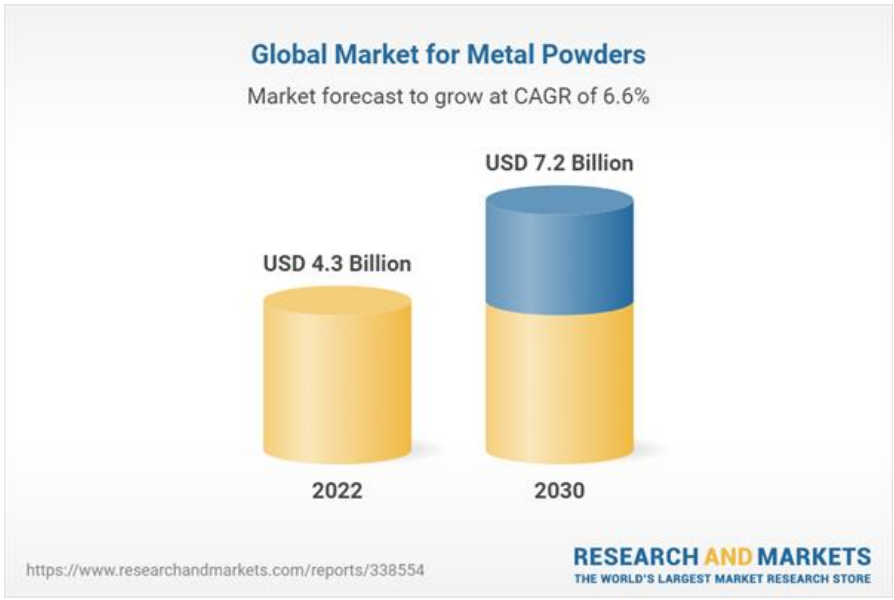


FIGURE 13 REGIONAL DISTRIBUTION OF BUYERS BY SYSTEM, MATERIAL AND SERVICE SALES REVENUE 2020 AND SUPPLIER FORECAST 2025 [EUR BILLION]

market - Energy PM

Several markets for a resilient business model





competition

Global: few players directly involved in powder spheroidization

Europe: some facilities have lab scale plants

Italy: no plants for industrial spheroidization

TEKNA

6K

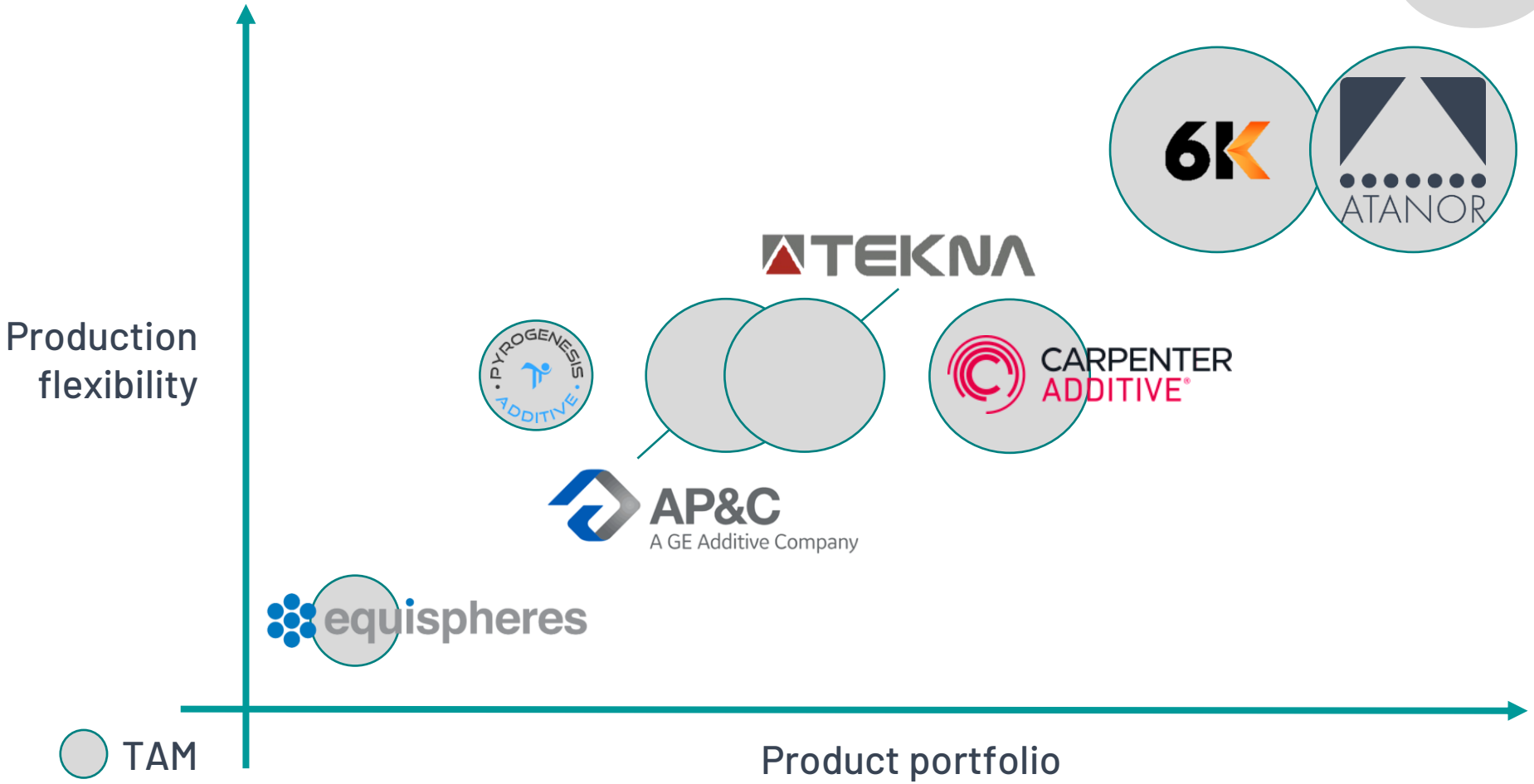
equispheres

AP&C
A GE Additive Company

CARPENTER ADDITIVE

PYROGENESIS ADDITIVE

positioning



Market dimension estimations for 2025 (Data Source: AMPower Report 2021 Metal Additive Manufacturing)

traction

	2023	2024	2025	2026	2027	2028
	€	€	€	€	€	€
Sales turnover	77.800	158.870	5.520.070	6.803.140	7.345.050	7.520.350
EBITDA	**21.529**	**61.963**	**1.105.790**	**1.596.461**	**2.009.211**	**2.119.572**
Net profit	17.832	40.049	472.707	799.740	1.098.731	1.179.529
+/- Investments	-160.000	-4.148.000	-952.000	0	0	0
+/- Capital injection/remboursement		5.000.000	0	-1.500.000	-1.500.000	-1.600.000

financials

Operating plan – Phases of development

The plan has been developed in three phases:

#	Phase	Goals	Asset	Phase duration [months]
1	R&D	Demonstrate the technical feasibility of the spheroidiser for the production and processing of metal, ceramic and metalloceramic powders. Experimental plant reusable for low volume production	Experimental device	14
2	Scaleup	Small-scale construction of the plant. The constructed plant can then be used for experimental and high added value production	Scaleup of the experimental device	9
3	Startup Production	Build a full scale spheroidization plant suitable to serve market demand and production targets.	Industrial plant	12

Go-to-market strategy

- 3 steps project plan [❶lab prototype – ❷scaleup plant – ❸industrial plant]
- Already established some partnerships with:
  - End-users
  - Manufacturers of materials
  - Manufacturers of technologies
  - R&D/Universities and Research Institutions
- Further improvement of a sales network
- Advertising on industry specific websites and publications
- Potential strategic partnerships
- Scientific publications based on materials produced

we transform powder

business model

Key partners
Universities and research institutions

Raw material suppliers

Business customers - AM service providers

Manufacturers of 3D printing machines

Key Activities
Design and simulation of alloys and materials for AM

Plasma spheroidization of powders

Powder milling, screening and blending

Laboratory analysis of materials

Key Resources
Production and packaging plants

Distribution

Dedicated website

Value Propositions
Production of high quality, spherical powder

Development of novel grades of metallic alloys for additive manufacturing

Small production batches

Openness to experimentation

Management of non-standard materials

Management of standard material orders from the web with production progress and shipment tracking

Customer Relationship
Scientific approach to production

Quality controlled and certified products

Co-design of materials with customers

Identification of market trends

Channels
Partnership with other powder and plant manufacturers/ Direct sales

Community research projects

Website with e-commerce

Customer Segments
Business customers with activities in:
- Thermal spray
- PM industries
- AM parts producers
- Users of catalytic materials

Producers of atomised powders

Manufacturers of additive manufacturing machines

Thermal spray machine manufacturers

Users of powder recovery services

Research organisations

Cost Structure
Production costs + Raw material purchasing
Personnel and overhead cost
Purchase of goods and equipment + Maintenance costs
Research and development materials products and equipment
Distribution
IT platform

Revenue Streams
Sale of spheroidised powders
Sale of metallic powders for other industrial applications
Sale of feedstock for MIM/CIM
Sale of used powder recycling service
Consulting on material development for AM
Marketing of polymeric, ceramic and metal powders

we transform powder

business model

LEAN CANVAS

PROBLEM

Available metal powders for additive manufacturing face serious problems of:

- irregular shape and defects
- sub optimal chemistry
- deterioration and contamination
- high cost

EXISTING ALTERNATIVES

High quality materials are produced with really low throughput technologies that impose high selling prices.

Few companies started manufacturing special materials, specifically designed for additive manufacturing, but there are so many applications still to be explored.

SOLUTION

Manufacture high quality, spherical powder.

Use scrap/recycled materials as a raw material.

Use a high temperature source able to process materials without polluting the chemical analysis.

KEY METRICS

- Number of customers
- Material throughput
- Percentage of recycled materials.
- Number of novel material grades developed.
- Number of customers.

UNIQUE VALUE PROPOSITION

We make excellent materials for your additive manufacturing revolution.

We have a green mindset transforming materials from scrap to diamonds.

HIGH LEVEL CONCEPT

Atanor is the Ferrari for additive manufacturing metallic and ceramic powdered materials.

UNFAIR ADVANTAGE

Deep knowledge of materials.

Deep knowledge of the spheroidization technology.

Marketing innovation in the sales of metal and ceramic powders through the usage of web interface.

CHANNELS

Partnership with other powder and plant manufacturers.

Direct sales through website e-commerce with innovative pricing technique.

Community research projects.

CUSTOMER SEGMENTS

- ❖ Business customers, end users with activities in:
  - Additive Manufacturing
  - Thermal spray
  - Powder Metallurgy industries
  - Users of catalytic materials
- ❖ Producers of atomised powders.
- ❖ Additive manufacturing systems producers.
- ❖ Thermal spray equipment manufacturers.
- ❖ Powder recovery service users
- ❖ Research organisations.

EARLY ADOPTERS

Owners and producers of additive manufacturing L-PBF and E-PBF systems.

Metal powder manufacturers (via milling, water atomizing, VIGA).

COST STRUCTURE

Production costs + Raw material purchasing + R&D expenses.

Personnel and overhead cost.

Purchase of goods and equipment + Maintenance costs.

Research and development materials products and equipment.

Distribution.

IT platform.

Revenue Streams

Sale of spheroidised powders.

Sale of metallic powders for other industrial applications.

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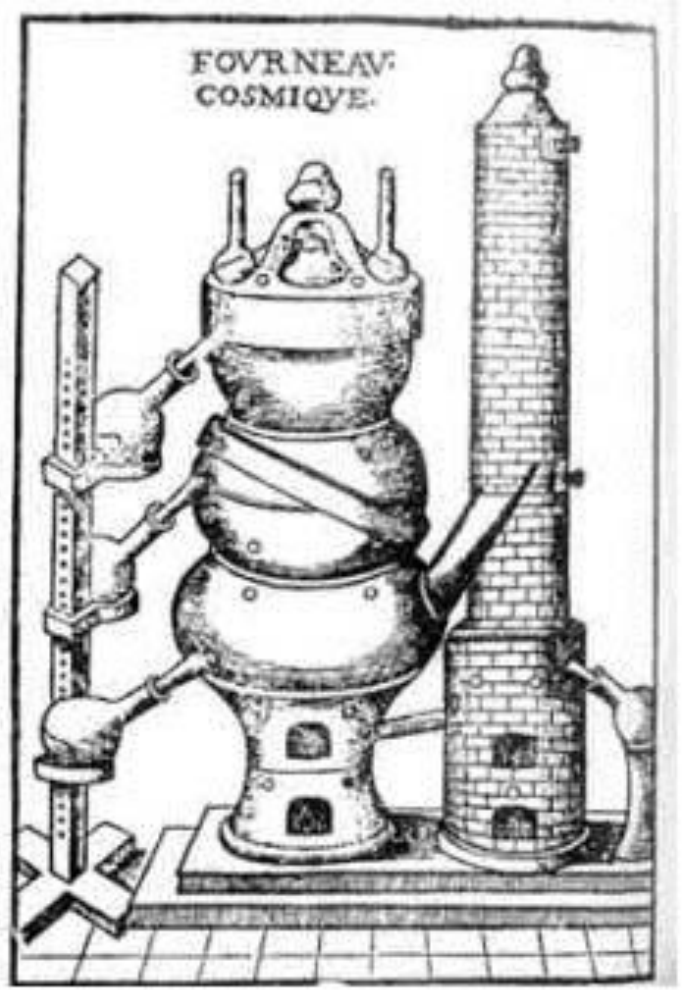

Atanor

at-tannūr

tanur

Α-Θάνατος

"the vessel used by alchemists where simple matter is **transformed** into something precious"