

AMPOWER REPORT 2021

Additive Manufacturing

MANAGEMENT SUMMARY

THE INDEPENDENT MARKET & TECHNOLOGY SOURCE

Analytics of the international market size segmented by technology, industry, region and material
Covering all leading user industries • Supplier and user perspective • Representing 80 - 95% of the
installed system base • Global database of system, service and material suppliers with more than
1,400 entries • Catalogue with over 80 industrial applications

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Key facts and take-aways

- 1 Overall metal and polymer AM market size in 2020 at EUR 7.17 billion
- 2 Annual expected growth of 20.0 % per year until 2025
- 3 Total market to reach EUR 18 billion in 2025
- 4 Today polymer part manufacturing market five times larger than metal
- 5 Powder Bed Fusion is leading industrial AM technology

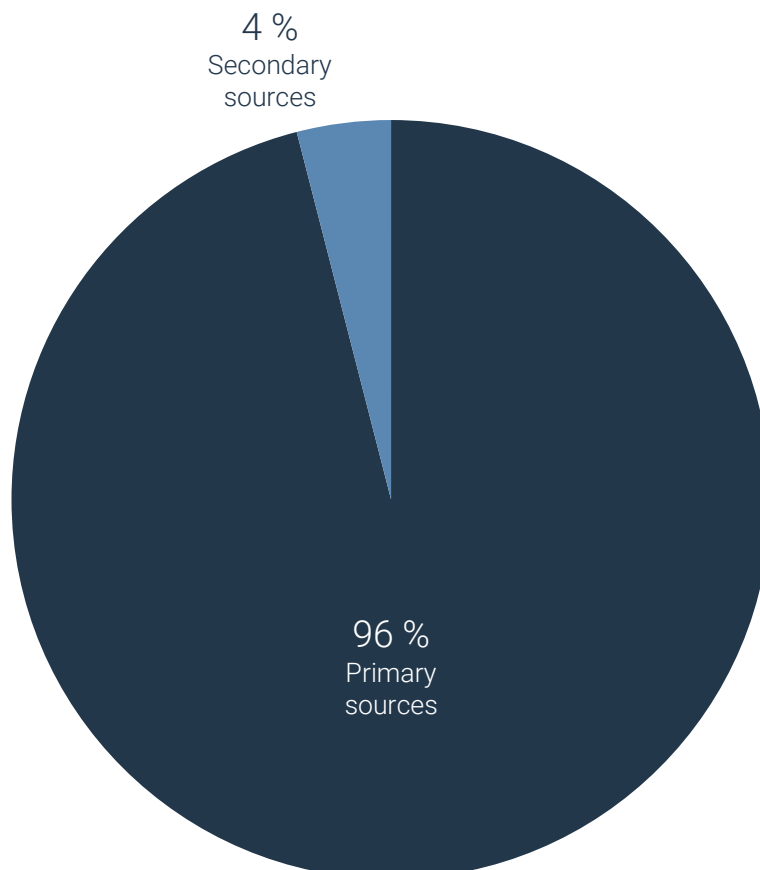
Thorough coverage of AM market

Basis for the AMPOWER Report 2021 are personal interviews as well as secondary research from publicly available sources.

All personal interviews were conducted directly by AMPOWER staff. The respondents were typically the respective Additive Manufacturing managers or directors with insight into the technological as well as economical company figures.

A highly dynamic and growing industry such as Additive Manufacturing is difficult to cover exhaustively. However, the system suppliers that contributed direct input for the AMPOWER Report 2021: METAL represent 95.8 % of the

worldwide installed base of metal Additive Manufacturing systems whereas the polymer contributors represent 82 %. Secondary sources such as indirect data sources, press releases, financial reports, etc. were used to provide coverage of the remaining installed machine base. The machine buyers, or users, that contributed direct input for the report represent 10.0 % of the worldwide installed base of metal Additive Manufacturing systems.



ADDITIVE MANUFACTURING MARKET DEVELOPMENT

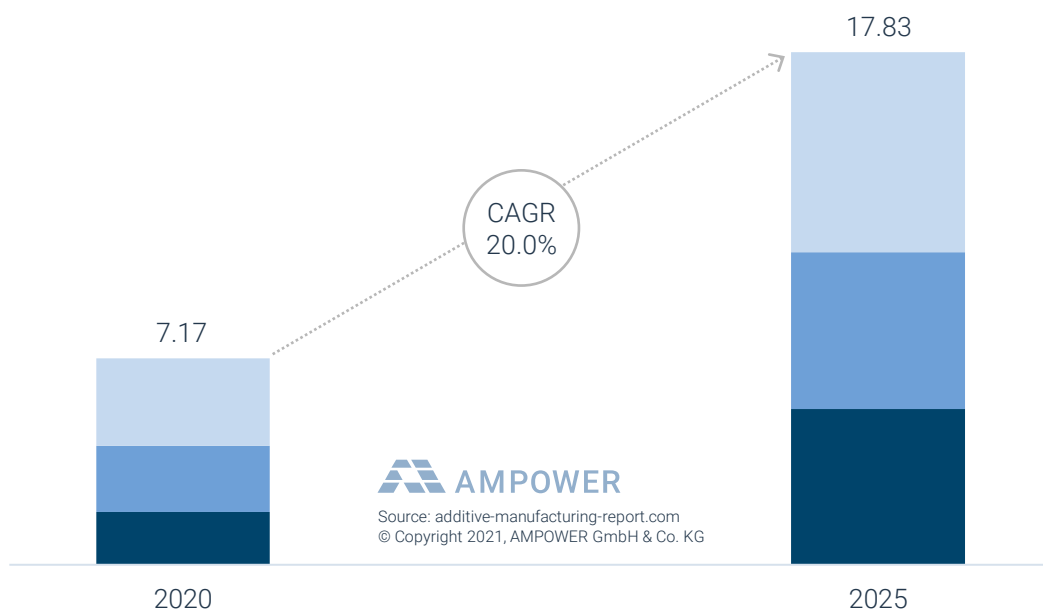
Additive Manufacturing market valued at EUR 7 billion

The overall Additive Manufacturing market for metal and polymer material is valued at EUR 7.17 billion with a projected growth of CAGR 20.0 % until 2025.

The industrial polymer Additive Manufacturing market is about 2.5 times the size of its metal equivalent. While system sales revenues in both markets are at a similar level, material and part manufacturing services are much more developed for polymers resulting in a larger share of revenue. The metal AM market alone is valued at EUR 2.03 billion in 2020 with an expected CAGR of 29.2 % until 2025, while the polymer market will grow with 15.4 % annually starting at EUR 5.14 billion in 2020.

Overall, the suppliers forecast an annual growth of 20.0 % for the total market and is thus projected to reach EUR 17.83 billion in 2025. The system suppliers, that faced a challenging year in 2020, expect overall the largest yearly gain of 24.3 % in the next 5 years. The material and part manufacturing suppliers for metal and polymers expect growth rates well in the double-digits with 18.9 % and 18.0 %, respectively.

Global metal and polymer Additive Manufacturing market 2020 and supplier forecast 2025 [EUR billion]



MACHINE SALES BY TECHNOLOGY

More than half of the revenue is earned by Powder Bed Fusion system suppliers

Most Additive Manufacturing production systems can be allocated to few working principles. Powder Bed Fusion of metal and polymer feedstock has the largest share with over 50 % of the total sales revenue.

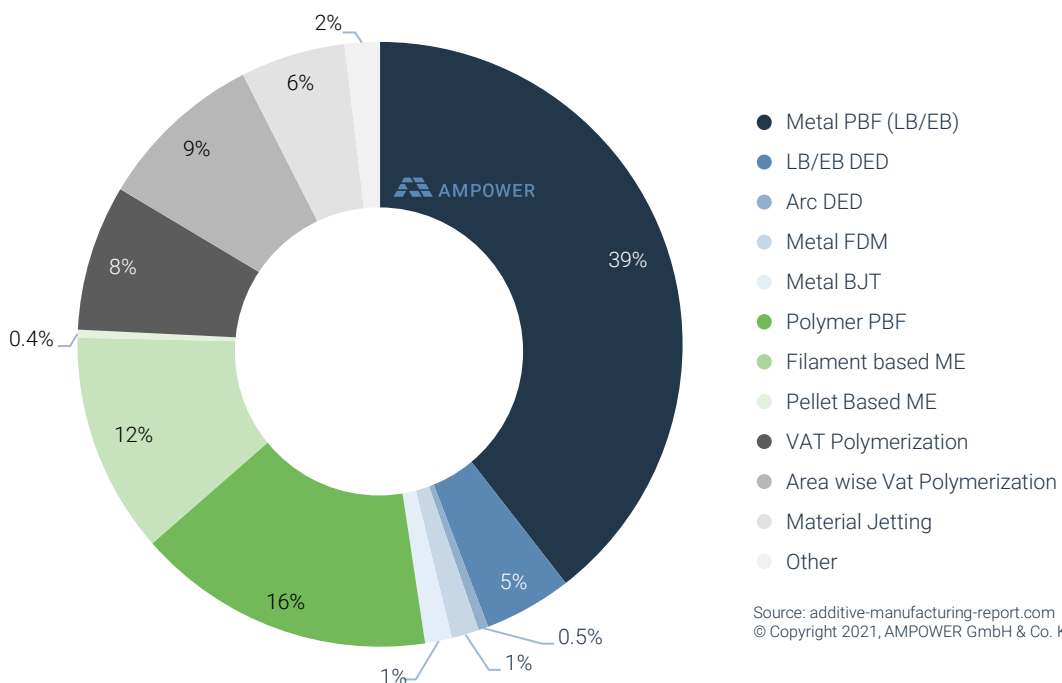
In metal Additive Manufacturing, the sinter-based technologies have recently gained attention as highly productive alternatives and are expected to increase their market share significantly over the coming years. However, the supplier predictions for these systems have yet to be confirmed by widespread, cross-industry implementation and use in profitable business cases.

For polymer technologies, the technology of Area Wise Vat Polymerization will continue to increase its revenue share. Proven in industrial settings, such as dental aligners or footwear,

the future revenue from system sales is projected to be EUR 650 million in 2025.

Furthermore, a variety of new technologies is expected to find their share of industrial applications. For example, composite-based AM technologies that use continuous carbon or glass fibers to achieve polymer AM parts with outstanding material properties. Already more than 20 different companies and start-ups were active in 2020 to develop new ecosystems for this technology, however, today they are still clustered in the group of "Other" due to their small overall footprint.

Share of system sales revenue by technology 2020



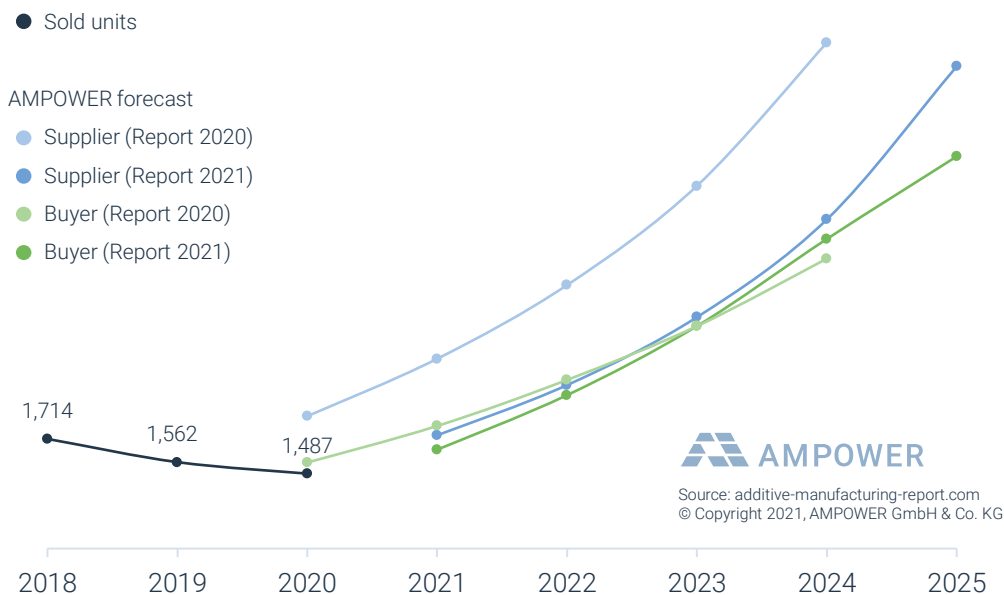
Ongoing consolidation followed by growth

Supplier outlook of metal PBF system sales more conservative due to ongoing consolidation and pandemic impact. User and Supplier forecasts converge.

Displaying the data from last years report shows, that the actual sales volume in 2020 was very accurately predicted by the AMPOWER Report buyer forecast. 2020's low sales number were a result of the ongoing consolidation and the impact of the pandemic. For 2021, both users and suppliers see a reverse in the declining trend as previously unrealized sales projects and freed up budgets will drive new machine sales. Larger PBF vendors have adopted more conservative

projections and reducing their future sales targets significantly, resulting in nearly identical forecast numbers from suppliers and buyers for the next 3 years. The overall positive trend confirms that the consolidation and product development phase for PBF applications is completed in industries such as aviation, defense, space and energy now following the medical sector into a serial production set-up with increasing machine demand.

Trend of metal PBF machine sales 2020 to 2025 - supplier vs. buyer forecast [units]



Source: additive-manufacturing-report.com
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COURTESY OF DR. ING. H.C. F. PORSCHE AKTIENGESELLSCHAFT



MARKET DEVELOPMENTS BY INDUSTRY

Medical industry is leading system sales revenue

In 2020, the medical industry was the system suppliers' prime customer. About 19 % of the total system sales revenue was generated in this vertical.

Dental aligners, hearing aids, bone replacement endoprosthesis, or components for computed tomography scanners are only a few examples of medical devices which are in production using metal and polymer Additive Manufacturing technologies. The advantages of AM in terms of flexibility, design freedom and mass-customization meet the demand in this sector especially well. A growing material range, improved software platforms to further facilitate customizations to patient data and many other factors will continue to push medical AM

applications to further growth in the future. Another large user is the aerospace and defense industry. Complex designs allowing lightweight structures and integrated components as well as the use of high-performance materials in tool free fabrication for small and large batch sizes has made AM an indispensable production technology for many products today. The range of applications for Additive Manufacturing continuously grows as further industries adopt its use.

Share of system sales revenue by industry 2020

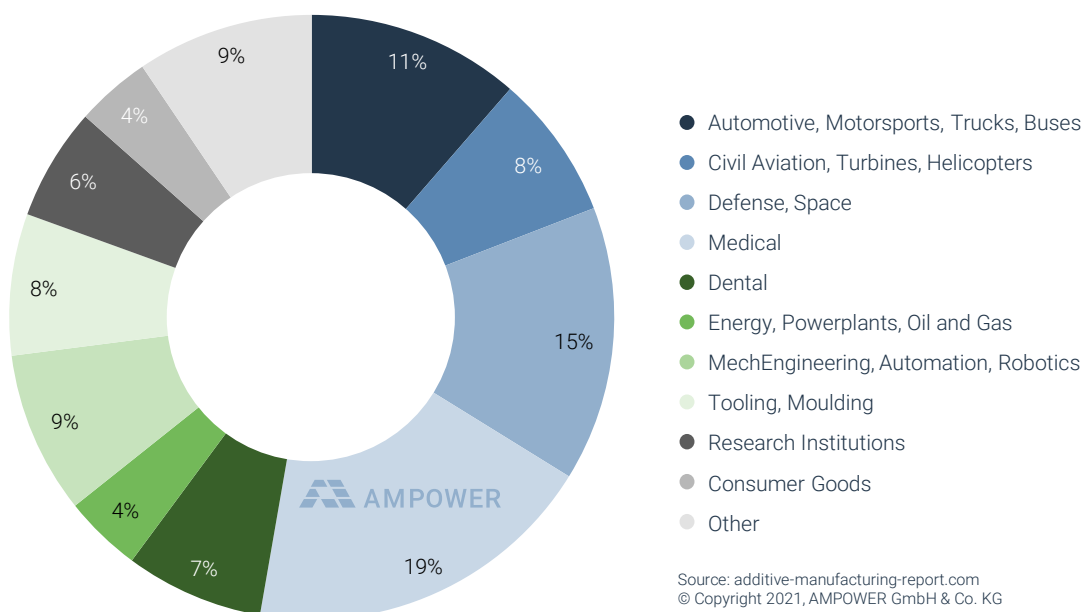
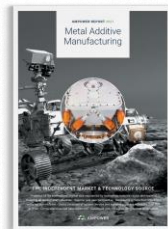


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Polymer Additive Manufacturing New

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Find the detailed table of content here:

additive-manufacturing-report.com

Insights Gained

The AMPOWER Report 2021 is the new reference for the Additive Manufacturing industry. It provides a detailed view on the AM market and state of the art AM technologies. The AMPOWER Report forecasts the developments expected in the next 5 years.

Features & Benefits

- Over 90 figures and graphs of AM market data
- Application database with over 80 industrial applications
- System supplier data based on personal interviews representing over 90 % of the globally installed base
- Online report with all data and figures directly accessible
- Global system, service and powder supplier database with more than 1400 entries
- Metal AM machine database with system properties
- PDF report available

Read the full report today:

additive-manufacturing-report.com

About AMPOWER

AMPOWER is the leading consultancy in the field of industrial Additive Manufacturing. **AMPOWER** advises their clients on strategic decisions by developing and analyzing market scenarios as well as compiling technology studies. On operational level, **AMPOWER** supports the introduction of Additive Manufacturing through targeted training

program as well as identification and development of components suitable for production. Further services include the setup of quality management and support in qualification of internal and external machine capacity. The company is based in Hamburg, Germany.

About the authors



Dr. Maximilian Munsch

Maximilian is a professional user of Additive Manufacturing since 2007. In his first affiliations he acquired extensive knowledge in Laser and Electron Beam Powder Bed Fusion for medical applications. He was responsible for the installation and qualification of AM production lines, today turning out over EUR 10 million in revenues, and supported multiple implant manufacturers, among others, setting up a qualified LB and EB-PBF production for regulated applications.



Matthias Schmidt-Lehr

Matthias successfully led multiple projects in Additive Manufacturing with focus on business case and strategic development for AM users as well as system and material supplier. With a history in management consulting he has a wide experience in business development, strategy development and communication. At AMPOWER he led multiple projects concerning DED, BJT and Metal FDM as well as a wide range of polymer AM technologies.



Dr. Eric Wycisk

Since 2008 Eric successfully supports OEMs from aerospace, medical and automotive to identify Additive Manufacturing applications and implement production capacities in their regulated environments. With a background in topology optimization, titanium alloys and fatigue he is focused on achieving the maximum part performance with the right AM technology.



Timo Führer

Timo joined the AMPOWER team in 2020. With a Master of science in the field of production technology and management he combines profound engineering know-how with an eye for economic correlations. In former affiliations he has been intensively involved in Additive Manufacturing and worked on numerous projects in research and consulting. At AMPOWER Timo is leading the market and technology analysis as well as consulting projects involving polymer based Additive Manufacturing..

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