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- Market and industry reports
- Market entry analyses
- Business and tax law information
- Funding and financing information



Contact

Marie-Christin Menke
Machinery & Equipment Industry
Investor Consulting
marie-christin.menke@gtai.eu



Peggy Görlitz
Machinery & Equipment Industry
Investor Consulting
peggy.goerlitz@gtai.eu

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Editor: William MacDougall, GTAI

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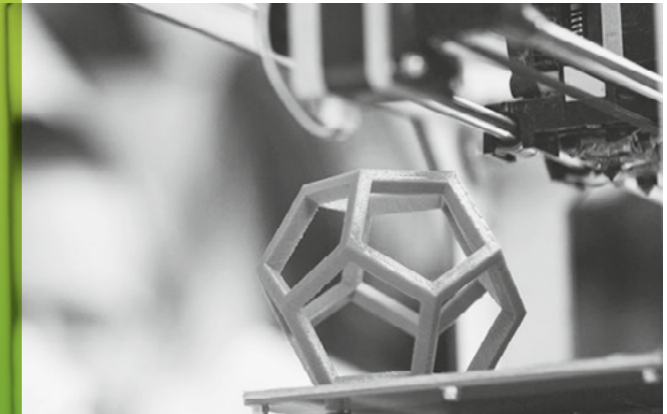


on the basis of a decision
by the German Bundestag

FACT SHEET

The 3D Printing Industry in Germany

ISSUE 2023/2024



Germany is Europe's leading additive manufacturing market. The growing popularity of 3D printing among many flagship European industrial companies makes the continent's largest economy an attractive location for international specialist providers.

Germany – Europe's Leading 3D Printing Nation

Germany is Europe's number one 3D printing market. Almost half (140 manufacturers) of the world's industrial additive system manufacturers are based in Europe. With 37 manufacturers who produce and sell industrial AM systems, Germany ranks first within Europe and – together with China – second worldwide after the US.

In 2021, a bitkom survey showed, some 44 percent of industrial companies in Germany with more than 100 employees were already using 3D printing technologies and 20 percent planned to use them in the near future. The industrial companies already using 3D printing primarily produce samples or molds (57 percent), spare parts (48 percent) or visual models (33 percent).

Growing Global Market

The global AM market is growing. Average annual growth during the period 2019 to 2022 was 16.6 percent according to the most recent Wohlers report. Additive manufacturing products and services grew by 18.3 percent to USD 18 billion in 2022 as the market recovered from the coronavirus pandemic.

Revenues from AM products worldwide increased to over USD 7.3 billion in 2022 – a year-on-year increase of 17 percent. Turnover from services grew by 19.1 percent to more than USD 10.7 billion in 2022.

→ Visit our website: www.gtai.com/3d-printing

3D Printing in Numbers

Number 1

manufacturer of industrial AM systems in Europe
(number 2 worldwide)

4 out of 10

German industrial companies with more than 100
employees use 3D printing

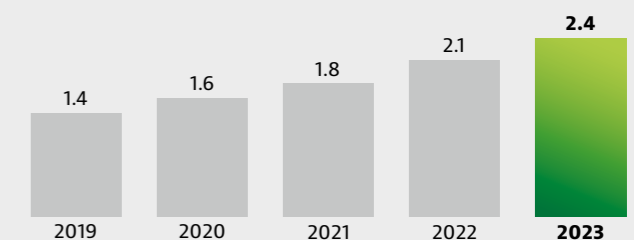
Europe's most favored

FDI destination country for AM projects

Number 1

in Europe for patent applications submission

3D Printing Market Revenue in Germany in EUR billion



Note: Data and forecasts are based on information available as of July 2020 (EITO in collaboration with IDC) Source: Bitkom Research 2021

AM Market Opportunities in Germany

With its renowned engineering heritage, Germany boasts numerous manufacturing facilities in those industries that can help serve international investors with their expansion into Europe. Find out why Germany satisfies the essential conditions for market success in one of the world's most dynamic industry sectors.

AM Plant Applications

AM plant technology sales by industry reflect the broad application potential. The segments automotive (11 percent), aerospace (16 percent), and medical technology and dental (23 percent) are forming a focal point with around half of the total market volume. Germany boasts numerous manufacturing facilities in these industries.

AM for Climate Neutrality

Germany's climate goals to achieve climate neutrality by 2045 is creating attractive business opportunities and favorable conditions for AM companies. Additive manufacturing technologies have the potential to revolutionize production and create sustainable advantages by producing lightweight components, reducing waste, optimizing supply chains, and reducing time to market. Some AM processes allow the use of 100 percent reusable green materials. Cross-industry partnerships and digital design technologies can potentially support sustainable development goals, with efficient value chain management also helping reduce industry's carbon footprint.

AM Metal Machine Sector

Revenue from AM metal machines has grown strongly with an increase of over 27 percent to more than USD 1.4 billion worldwide in 2022. Europe is the leader in this area, with 49 manufac-

turers of AM metal systems in 2022 – compared to 23 in the US and 16 in China. The installed base for metal AM systems is currently dominated by German manufacturers including EOS, SLM Solutions and Trumpf. Taking into account the Concept Laser facilities, which was acquired by US group General Electric in 2017, system technology produced in Germany makes up more than half of the global installed base.

AM Metal Machine Research Leader

Germany is also a leader in the field of research and development of metal AM systems. The Fraunhofer ILT is generally regarded as the founder of laser-based additive manufacturing. RWTH Aachen, for instance, also conducts research on processing low-cost steel using AM and hot isostatic pressing in the framework of its HIGHRES project.

Innovative R&D Environment

System AM manufacturers interviewed by Wohlers Associates indicated that they spend an average of 30.6 percent of their annual turnover on R&D. The high percentage spent on R&D highlights the importance of R&D activities and that many companies in this sector are relatively young manufacturers in an early development phase. Many of today's leading AM companies manufacturing have their origins in spin-offs from university institutions or are based on developments and patents that were developed at universities or research institutions.

Networks and Clusters

There are several AM networks in Germany that provide great opportunity for exchange between member companies, help in identifying research partners as well as representing common interests to policymakers.

The Mobility/Medical Goes Additive (MGA) network based in Berlin is the largest AM network with more than 140 international member companies and scientific institutions. To enhance the development of an AM ecosystem in Berlin, the Berlin Senate has established the AMBER (Additive Manufacturing Berlin-Brandenburg) regional cluster and the association "Verband 3D Druck e.V." is also located in Berlin.

The Agent3D network in Dresden has more than 100 members, including leading research institutes, industry as well as small and medium sized companies.

Representatives of AUDI AG, EOS, GE Additive, Linde, MTU Aero Engines, Oerlikon and Siemens as well as TUM have agreed to found the „Bavarian AM Cluster“ (BAMC) as a non-profit association in 2023. The "Additive Manufacturing Coordination

Office" at Bayern Innovativ acts as a hub to network all competence providers and newcomers in additive manufacturing and to further develop the Bavarian AM ecosystem. In the north of Germany investors find networks like Additive Manufacturing Nordwest e.V. or 3D-Druck Nord.

Germany Trade & Invest informs about Germany's research excellence in the additive manufacturing industry and provides market information and service support to companies seeking to establish a business in Germany.

Contact our industry experts for more information:

marie-christin.menke@gtai.eu

peggy.goerlitz@gtai.eu

Selected 3D Printing Networks and R&D Clusters in Germany



Network/Association

- 1 Additive Manufacturing Nordwest e.V.
- 2 German 3D Printing Association
AMBER (Additive Manufacturing Berlin-Brandenburg)
Medical - Mobility goes Additive e.V. (MGA)
- 3 Network for 3D-Printing in the Maritime Industry (MN3D)
3D-Druck Nord
- 4 Bavarian AM Clusters (BAMC)
- 5 AGENT-3D e.V.
- 6 Bayern Innovativ GmbH - Additive Manufacturing Coordination Office
Bayern Innovativ GmbH – New Materials Cluster

Research Institute

- 1 Leibniz Institute for Materials-oriented Technologies - IWT
- 2 Fraunhofer Institute for Production Systems and Design Technology (IPK)
Federal Institute for Materials Research and Testing (BAM)
Werner-von-Siemens Centre for Industry and Science (WvSC)
- 3 Institut of Laser and System Technologies (iLAS)
Helmholtz Center Hereon
Fraunhofer-Institute for Additive Production Technologies (IAPT)
- 4 Fraunhofer Institute for Casting, Composite and Processing Technology (IGCV)
- 5 Additive Manufacturing Center Dresden (AMCD)
- 6 Fraunhofer Institute for Material and Beam Technology (IWS)
Fraunhofer Institute for Manufacturing Technology and Advanced Materials (IFAM)
Leibniz Institute for Solid State and Materials Research (IFW)
- 7 Fraunhofer Institute for Laser Technology (ILT)
Aachen Center for Additive Manufacturing (ACAM)

Source: Germany Trade & Invest Research 2023

R&D Partnering Opportunities in Germany, Selected Institutions

Fraunhofer Competence Field Additive Manufacturing

The Fraunhofer Competence Field Additive Manufacturing integrates 19 Fraunhofer institutes across Germany which, subject to their main focus, deal with areas concerning additive manufacturing and represent the entire process chain.

Aachen Center for Additive Manufacturing

The Aachen Center for Additive Manufacturing (ACAM), a joint venture between the RWTH Aachen University and Fraunhofer-Gesellschaft, has become one of the leading research centers for additive manufacturing in Europe since its foundation in 2016.

Additive Manufacturing Center Dresden

The Technical University Dresden is home to the Additive Manufacturing Center Dresden (AMCD), which is operated by the university and Fraunhofer IWS as a joint competence center. Here researchers are developing multiprocess material and manufacturing solutions for innovative products.

New AM Materials Research Partnership

The Federal Institute for Materials and Research and Testing (BAM) and the Leibniz Institute for Solid State and Materials Research are attractive research partners for potential investors for the development and improvement of new materials for additive manufacturing.