AMPOWER INSIGHTS

Venture Capital in Additive Manufacturing

INSIGHTS GAINED:

- Which startup categories received most funding
- What regions are leading AM startup hubs
- How did AM startup valuations change over time
- Who is investing into AM startups and why

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This AMPOWER Insights is based on a joint database of the industry leaders in consulting and Venture Capital for Additive Manufacturing AMPOWER and AM Ventures. The market analysis was performed by AMPOWER and is based on approximately 3,000 startups in Additive Manufacturing.

"Startups serve as the driving force behind innovation in Additive Manufacturing, continually challenging established manufacturing technologies. In recent years, there has been a notable transition from technology-focused startups to those emphasizing applications in Additive Manufacturing. This shift signifies a maturing industry with promising prospects. Investors now face the challenge of allocating budgets, deciding between high-potential application ventures and the select few truly groundbreaking AM processes that could enable a significant leap in productivity."

Matthias Schmidt-Lehr
MANAGING PARTNER AT AMPOWER

"In 2023, AM startups faced challenges with less capital availability and widespread valuation readjustments. As we enter 2024, indications suggest that capital markets are stabilizing, supporting sales growth. However, healthy capital markets are just one part of the equation to further drive the adoption of AM. We also need a focus on stabilizing the technology and transfer applications that we already see today into lights-out manufacturing. AM, pivotal in advanced manufacturing, gains from a shift as mainstream investors prioritize advanced manufacturing technologies. It will be startups solving the pain points in legacy manufacturing, fostering energy efficiency, bolstering supply chain resilience, and advancing climate-tech solutions."

Arno Held
MANAGING PARTNER AT AM VENTURES

Insights gained

Which startup categories received most funding

What regions are leading AMstartup hubs

How did AM startup valuations change over time

Who is investing into AM startups and why

Management summary

In Additive Manufacturing (AM), rapid innovation and substantial funding were driving forces in the past decade. However, the industry is now navigating in a more challenging environment. The once-thriving ecosystem, characterized by significant investments and flourishing ventures, faces headwinds due to overpromised expectations leading to disappointment and subsequently, the subdued valuation of publicly traded companies in the sector.

The top three AM technology startups raised over EUR 1.2 billion in total funding before going public in a SPAC deal. Although their valuation at the time of the IPO in 2021/22 was at EUR 4.6 billion, it has sharply dropped to only EUR 0.5 billion today. One of the reasons behind this decline is the overestimation of the addressable market by the startups and their investors. Another major obstacle is the adoption speed. Implementing a manufacturing technology is an intricate endeavor, particularly in the case of AM, which often involves not only a change in an existing manufacturing process but also the redesign of applications and new material specifications. The complexity and cost associated with changing all three factors have proven to be highly challenging and can take several years, while most startups assume high sales growth within a 5-year period.

Unsurprisingly, the US boasts the largest number of Additive Manufacturing startups, while Israel and the Netherlands lead in AM startups relative to their countries' economic power. A surprising second in the Asia Pacific region after China and a newcomer in recent years is India, with over 166 AM startups listed.

While the number of new AM technology startups annually has declined over the past decade, the number of new application-driven AM startups have steadily increased. Additive Manufacturing enables new applications, and while established companies often struggle to fully embrace AM, startups are likely to take the risk associated with a completely AM-driven approach to manufacturing applications.

While startups are currently facing challenges in raising money, investors find attractive opportunities due to lower valuations. However, the number of startups with a truly new value proposition is lower than in the past. Overall, startups with a customer focus and application-centric approaches are poised to have successful funding rounds in the next couple of years.

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ARGON GAS HEAT EXCHANGER, COURTESY OF CONFLUX TECHNOLOGY

Content

About AMPOWER

AMPOWER is the leading strategy consultancy and thought leader in the field of industrial Additive Manufacturing. The company advises investors, start-ups as well as suppliers and users of 3D printing technology in strategic decisions, due diligence investigations and provides unique access to market intelligence. On operational level, AMPOWER supports the introduction of Additive Manufacturing through targeted training programs, support in qualification of internal and external machine capacity and technology benchmark studies. The company was founded in 2017 and is based in Hamburg, Germany, operating worldwide.

About AM Ventures

The leading venture capital fund in industrial 3D printing (Additive Manufacturing, AM) has backed 20+ successful companies in 7 countries on 3 continents. The team possesses in-depth technology know-how and is well connected with the most experienced experts in the field. As an investment partner, the company provides a globally leading ecosystem of sustainable investments in AM and introduces entrepreneurs to a large pool of industry veterans, each one with decades of experience in engineering, manufacturing and executive management.

Introduction

METAL 3D PRINTED FUNCTIONAL COMPONENTS FOR ELECTRONIC DEVICES, COURTESY OF INCUS

Challenging times for fundraising as valuation experienced a rapid decline

In today's climate a realistic assessment of business models, emphasis on value proposition, and early profitability are becoming essential to collect funding and grow the startup successfully.

In Additive Manufacturing (AM) fast innovation and robust funding have been driving forces over the past decade. Currently however, startups have to navigate through a much more challenging landscape. The once thriving ecosystem, characterized by large investments and flourishing ventures, faces headwinds due to disappointment of overpromised expectations and consequently the subdued valuation of publicly traded companies in the sector.

In 2021 the enterprise value of established AM players ranged between 4–6x of their revenue. At the same time prominent SPAC deals and IPOs, such as DESKTOP METAL and VELO3D were valued at incredibly higher multiples of 300x and more. In this environment startups were able to collect investment at highly favorable conditions. Today the Enterprise Value to Revenue Index has dropped to roughly 1.5x for established as well as newcomer AM companies. The newcomer's evaluation from two years ago has rapidly dropped to match the multiple of established AM companies.

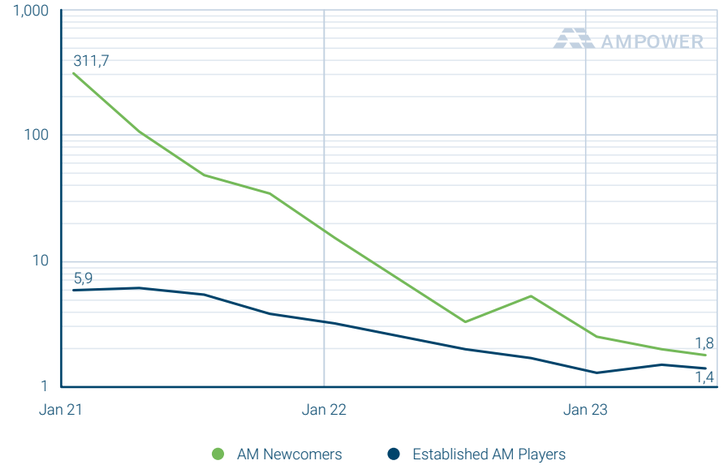
The downturn in the valuation of publicly traded AM companies has cast a shadow over the fundraising endeavors of all AM startups as well. Investors are looking less enthusiastic into the future of AM market development and therefore securing funding has become more difficult. This shifting landscape underscores the importance of adaptability and resilience for startups in the AM space. Navigating these financial challenges requires a strategic reassessment of business models, a stronger emphasis on value proposition, early profitability, and a new approach to communicating the long-term potential of their specific innovation.

Applications and customer value proposition are becoming even more important in earlier funding rounds. Entrepreneurs have to prove, that the technology will not only find R&D customers but consequently industrial applications, that will secure sales in the near- to medium-term. Investors on the other hand are more obliged to critically evaluate the proposed customer use cases and business plan claims at an early stage. Only if the technology provider can unlock new applications and the cost advantage of the end user justifies the high up-front R&D and qualification cost, a long-term growth plan can be sustainable.

These described trends are not unique to AM startups but describe a general trend in Venture Capital and the funding ecosystem. In the last couple of years early profitability is favored against growth-at-all-cost, as extremely cheap money of the past years is disappearing. AM is only one extreme example where overpromised technological advances and market shares in a second hype phase met with eager investors and the recovery from the lock-down to create and destroy extreme company valuation in merely a 2-year timespan.

Valuation development of Additive Manufacturing companies

Quarterly EV / Revenue multiples since 2021 (logarithmic)



DATA SOURCE: FINBOX.COM"AM NEWCOMERS" INCLUDES DESKTOP METAL, MARKFORGED, VELO3D, XOMETRY, FATHOM, SHAPEWAYS; "ESTABLISHED AM PLAYERS" INCLUDES 3D SYSTEMS, STRATASYS, VOXELJET, MATERIALISE, PROTO LABS

About this AMPOWER Insights

The data shown in this study is based on a combined data set from AMPOWER and AM VENTURES with together 3350 entries. The funding sums are taken from public announcements. The closing date for the research was 31 December 2023. Thus, developments after this date might not be included. Any statements on future developments are based on predictions and expectations by the authors. The definition of "startup" used in this study is based on the following criteria: startups must be less than ten years old and must either be aiming for a planned growth in employees/revenue and/or be (highly) innovative with regard to their products/services or business models.
Startups are segmented into AM technology startups and AM user startups. While technology startups are focusing on AM machines, part manufacturing services, materials or software, user startups are utilizing AM for their product. The definition for AM user startups is less precise since many startups may not publicly advertise their use of AM for their product or the share of AM in the value chain is of a minor extend. As an example: A space startup like RELATIVITY SPACE is included in the analysis, since a main value proposition of the company is a 3D printed rocket. However, a headphone startup such as BRAGI, which is using AM for their prototypes or tooling, is not included, since AM is not the key enabler for their business model.

Study key facts

3,350

Additive Manufacturing Startups

Since 2012, over 3,300 startups had been founded in Additive Manufacturing globally. Each startup has been analyzed for this study regarding funding, value proposition and other metrics.

EUR 15 billion

Funding volume

Around EUR 15 billion in total investments have been documented for 854 Additive Manufacturing startups. EUR 9.4 billion was dedicated to AM technology startups, offering hardware, software, platforms, and other services integral to the AM process chain.

6 Hot-spots

Regions with over 35 AM Startups

In the US, major AM hotspots include San Francisco, New York City, and the Boston area. In Europe, London and Berlin each house over 35 startups, while in Asia, Singapore has the highest number of AM startups.

ADDITIVE MANUFACTURED CERAMIC FILTRATION MEMBRANE MADE BY EVOVE

What went wrong and what we can learn from it

In the past 10 years, AM companies raised an incredible amount of funding, as highlighted by the most recent IPOs of companies like DESKTOP METAL, VELO3D and MARKFORGED. However, after a short-lived success valuation of publicly traded AM companies plummeted and reached a new low in 2023. Two factors, associated specifically with AM, contributed strongly to those developments.

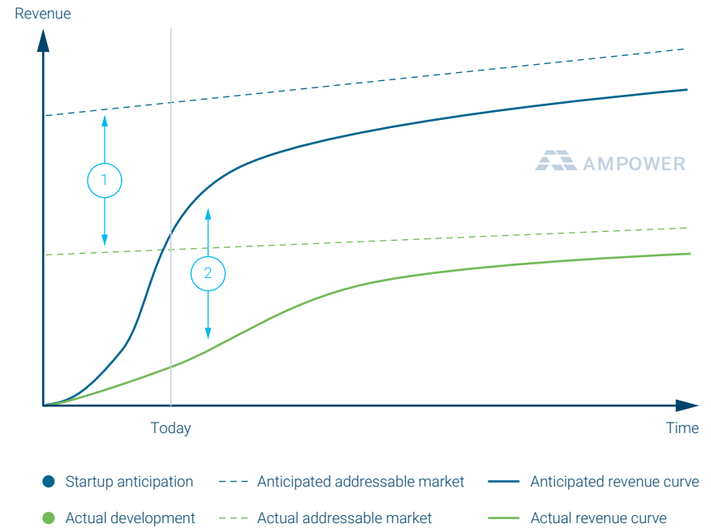
The top 3 AM technology startups raised over EUR 1.2 billion in total funding before they went public in a SPAC deal. Their combined valuation at time of IPO in 2021/22 was at EUR 4.6 billion, however, sharply dropped to only EUR 0.5 billion today. What was the reasoning behind the valuation in the first place and why did they plumet?

Among many general economic developments speeding up the devaluation, two specific reasons stand out, that can be easily avoided by future ventures.The first reason is in the overestimation of the addressable market by the companies themselves and their investors. The addressable market for manufacturing is closely related to the manufacturing cost. Even with their advanced AM technology approaches, the manufacturing cost for all AM technologies is much higher than most traditional technologies that dominate the manufacturing landscape. In order to switch the manufacturing technology, it has to be proven, that the new technology will either save cost in manufacturing or increase margin of the product. This leaves AM to only applications, where traditional manufacturing technologies require complex operations or assemblies to achieve the desired part design which AM can accomplish with less effort and cost. Many AM technology startups are overestimating the market for high-value applications or overestimating their cost advantage. In the first case, they only focus their value proposition on technical advantages and completely neglect the high cost the technology implies. In the second they fail to deliver on the promised cost advantages due to neglecting the overall process chain or on the promised performance of their technology.

The other major obstacle is the adoption speed. Changing a manufacturing technology is an extremely complex endeavor. In the case of AM, it often involves not only a change of the manufacturing process but a complete new part design as well as material specification. The cost and thresholds for changing all three has proven to be highly complex and cost intensive. This process may take several years at users while most startups already assume a high growth with follow-up sales within a short period.

Both factors coupled explain, why sales expectations where not met, and the valuations consequently dropped. Implementing a new manufacturing technology, design and material properties takes years and requires a very high and clear advantage that justifies this implementation effort. The extremely sharp drop in value of the most recent IPOs, is due to the the highly inflated expectations riding the 2nd AM hype fueld by sinter-based AM technologies and the quick realization of achievable applications in reality. These developments were overlayed by a general macro economic downswing and less cheap money in the market.

Revenue curve of AM startups



1

Overestimation of addressable market

The addressable market is the total annual sales volume, the company can theoretically achieve if it gains 100% market share. AM startups often overestimate this market volume. Either by choosing to refer to only the most optimistic market analysis available. Or by underestimating the reducing effects, manufacturing cost have on the addressable market.

For future investment, investors and entrepreneurs will have to rely more on actual end use cases and bottom-up calculations rather than top-down approaches to estimate the addressable market.

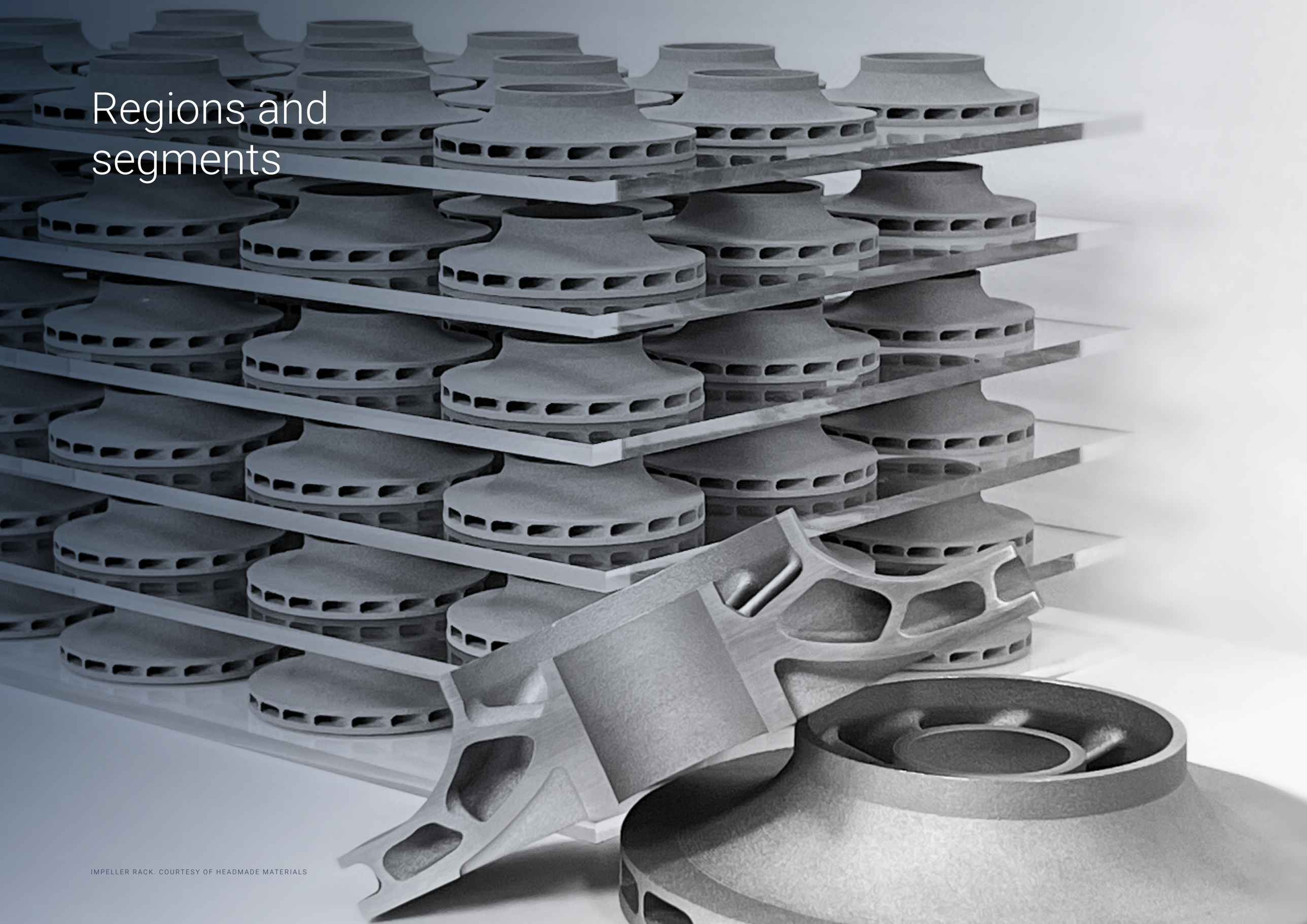
2

Overestimation of adoption speed

In manufacturing, the first sold solutions typically go to the R&D ecosphere. Companies will investigate the potential in an industrial setting and qualify the technology according to their requirements. Depending on the applications, this process takes several years. Only after the transition into production, a steep growth curve can be expected.

Investors should analyze, how long it takes for customers to adopt a technology and which hurdles have to be overcome before the it scales up.

Regions and segments

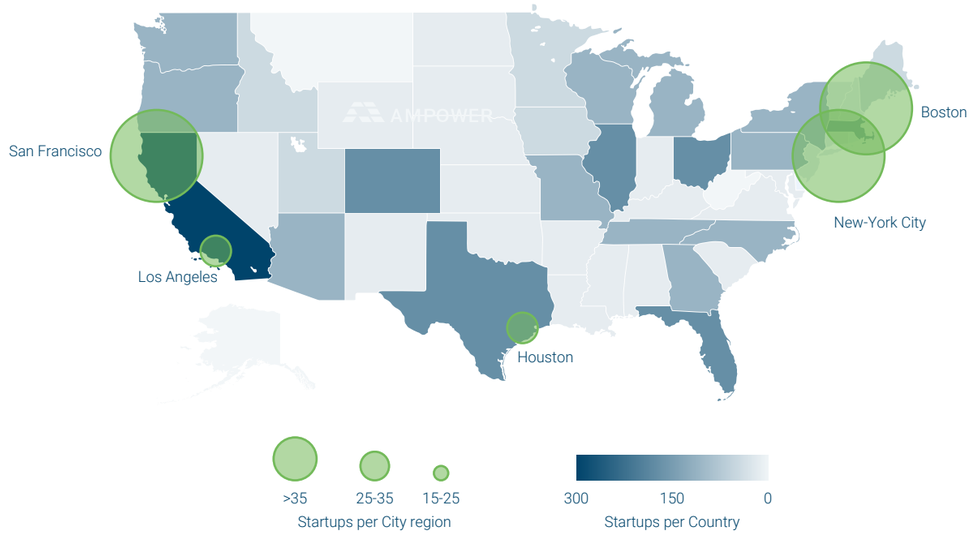


IMPELLER RACK. COURTESY OF HEADMADE MATERIALS

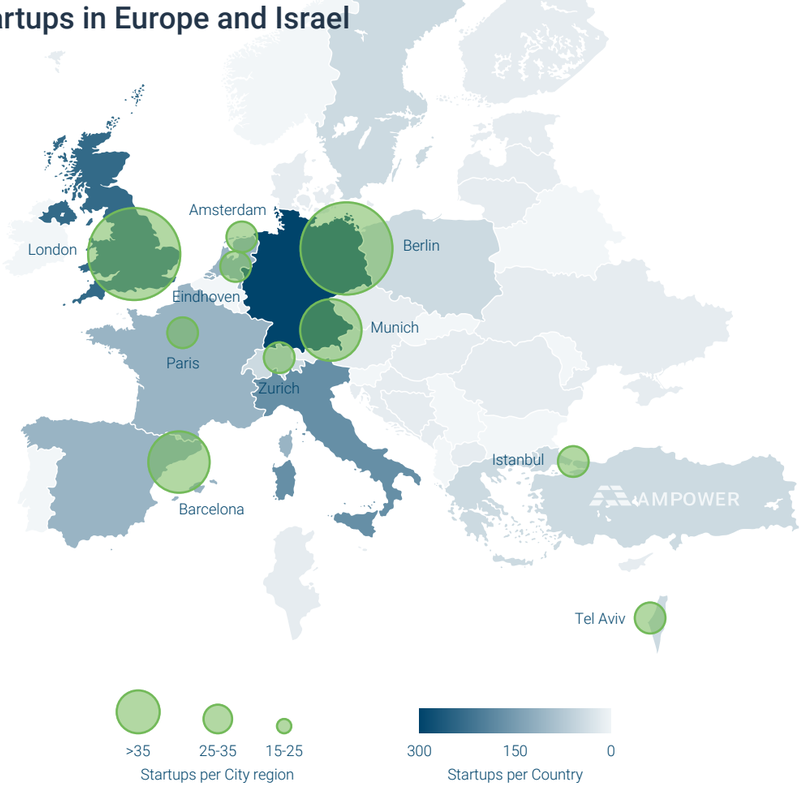
AM startup hotspots globally

It comes to no surprise, that the US has the largest number of Additive Manufacturing startups. California, the world center of the VC scene, is home to over 170 AM-related startups, while Texas and Massachusetts, especially the Boston Area, are following with 40-50 local companies, each. In Europe, Germany with its history in machine building in general and Additive Manufacturing specifically, has the highest number of startups. With 277 companies in the database, surpassing the UK with 225. For China, 174 AM-related startups are registered. A surprising second in the Asia Pacific region and newcomer in the last years is India, with over 166 entries.

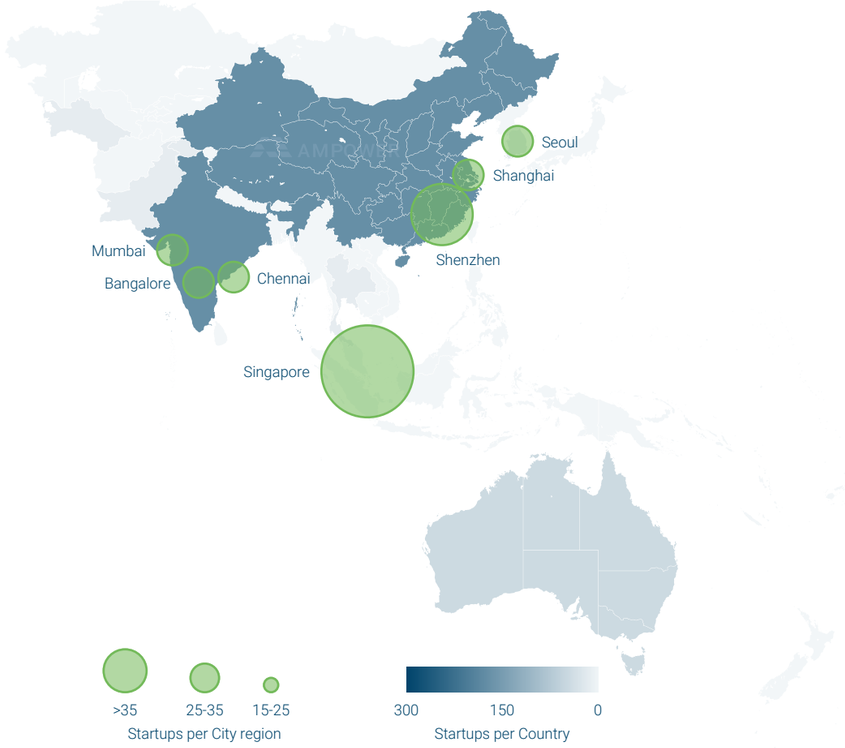
AM-Startups in the US



AM-Startups in Europe and Israel



AM-Startups in Asia Pacific



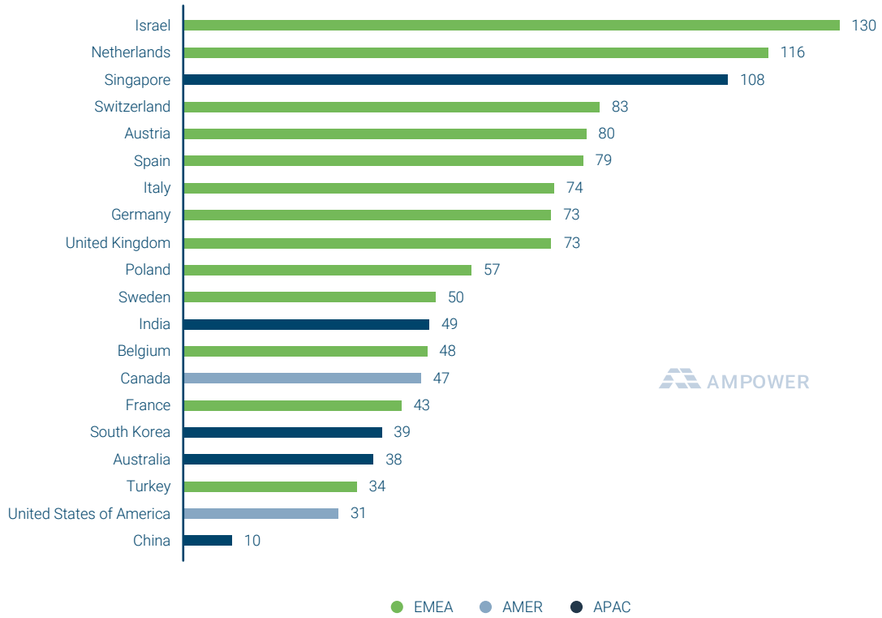
Startups per capita

Israel and the Netherlands are the leading regions for AM startups considering the company numbers relative to the countries' economic power.

Besides the absolute number of startups, AM hotspots can be identified by the number per country in relation to the specific economic performance, such as the GDP. Below, the graph displays the identified AM hotspots by number of AM startups for every trillion EUR of the countries GDP. This approach provides a more nuanced view and highlights the density of AM activities in smaller countries. Israel leads with 130 AM startups per trillion EUR GDP while the Netherlands ranks second with an adjusted 116 startups, followed by Singapore with 108 AM startups/GDP. In comparison to the leaders in absolute numbers of USA and Germany, these countries have a far denser AM startup landscape. Remarkably, in this representation China is in last place of the top 20 countries with only 10 AM startups per trillion EUR of GDP.

Both Israel and Netherlands are known to provide a nurturing environment for technological startups in general, being in the top 10 in many published rankings (e.g. DEALBOOK or CRUNCHBASE). This environment radiates out to support and attract AM startups as well. The analysis shows, that South-Western-Central Europe has the highest density of AM startups with 8 of the top 10 countries located in the region.

Relative startup density



[NUMBER OF AM STARTUPS/GDP IN TRILLION EUR]

EINDHOVEN IN THE NETHERLANDS IS HOME TO BRAINPORT, ONE OF THE GLOBAL AM HOTSPOTS.
PICTURE COURTESY OF BRAINPORT EINDHOVEN

AM supply chain startups focus on hardware and printing services

The number of startups that develop AM machine hardware, software and services steadily declined over the past decade. While in 2013, 368 startups were founded focusing on the AM supply chain, this number reduced to 90 in 2021.

The largest portion of Additive Manufacturing technology startups introduce new hardware to the market. Within the hardware-centric startups a majority are channeling their efforts into advancing the capabilities of 3D printing machines or introducing new AM principles. Additionally, a few focus on AM specific post processing or automation solutions.

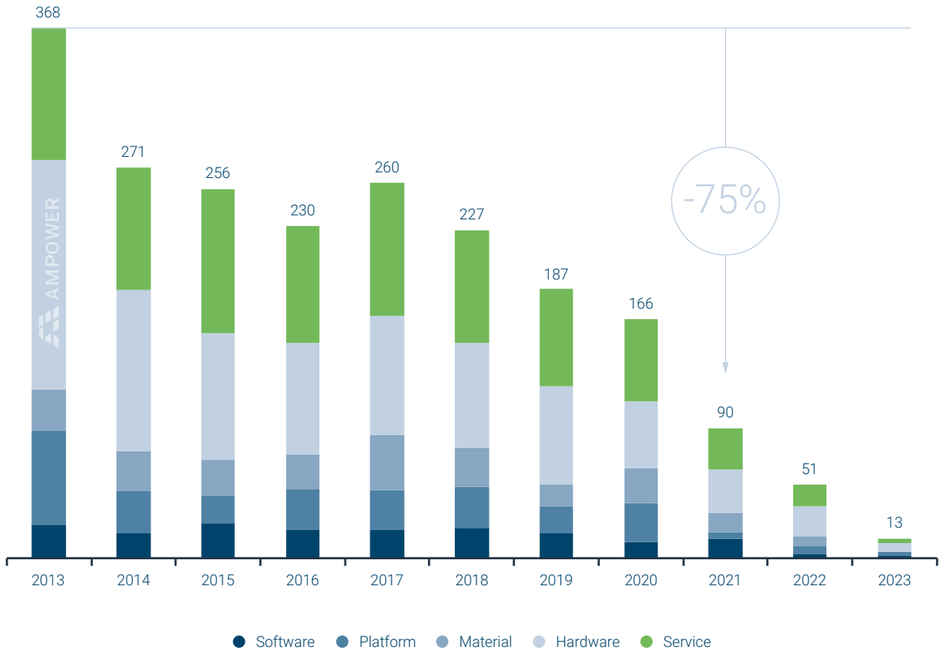
The second largest group of startups in the AM supply chain are part manufacturing service providers. Some service companies such as SEURAT and VULCANFORMS, showcase a unique position in the overall market. They are sorted into the service provider category due to their business model and market offering. Both entities are currently engaged in developing highly innovative AM technology hardware to gain a competitive edge. However, in both cases, the core emphasis remains on selling parts rather than the machines themselves.

The remaining third of startups offer material, software or platform solutions for Additive Manufacturing. Surprisingly, the split between the three groups has been quite constant over the last ten years. Only recently the number of newly founded part manufacturing service startups has slightly decreased.

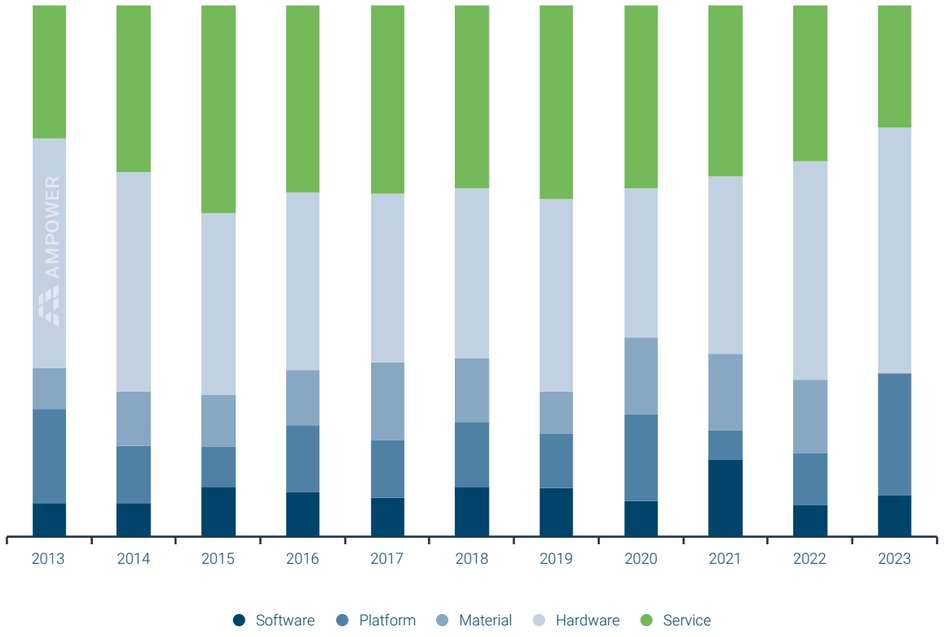
A clear overall trend when considering the annual number of newly funded AM technology startups is a continuous decline exceeding 75% over the past decade. Even considering, a number of companies still missing in the 2021-2023 data due to an ongoing "stealth mode", the decline in newly founded AM technology startups remains significant.

This trend underscores the growing challenge for startups to carve out a distinctive value proposition in the AM ecosystem for themselves. It may be indicative for a maturing of the technology, showing a slow down in innovation and the potential for radical improvements or breakthroughs becoming scarcer. This correlates with the largely diverse, already existing technology landscape of well over 40 different AM principles. With each new approach, the niche to operate in becomes smaller and less attractive for an investment. At the same time, many aspects along the AM process chain from software to post processing, have already been tackled to some extend by multiple companies. Innovation and investment is more and more channeled application driven startups, which are utilizing the AM technology to create new business models and markets.

Number of AM startups founded per year segmented by offering



Share of AM startups by offering in percent



Applications are driving the startup ecosystem in AM today

While the number of AM technology startups declined over the past 10 years, application driven AM startups increased steadily. Additive Manufacturing enables innovative applications and while established companies often struggle to introduce AM to the full extend, startups are more likely to take the risk associated with a AM-driven application.

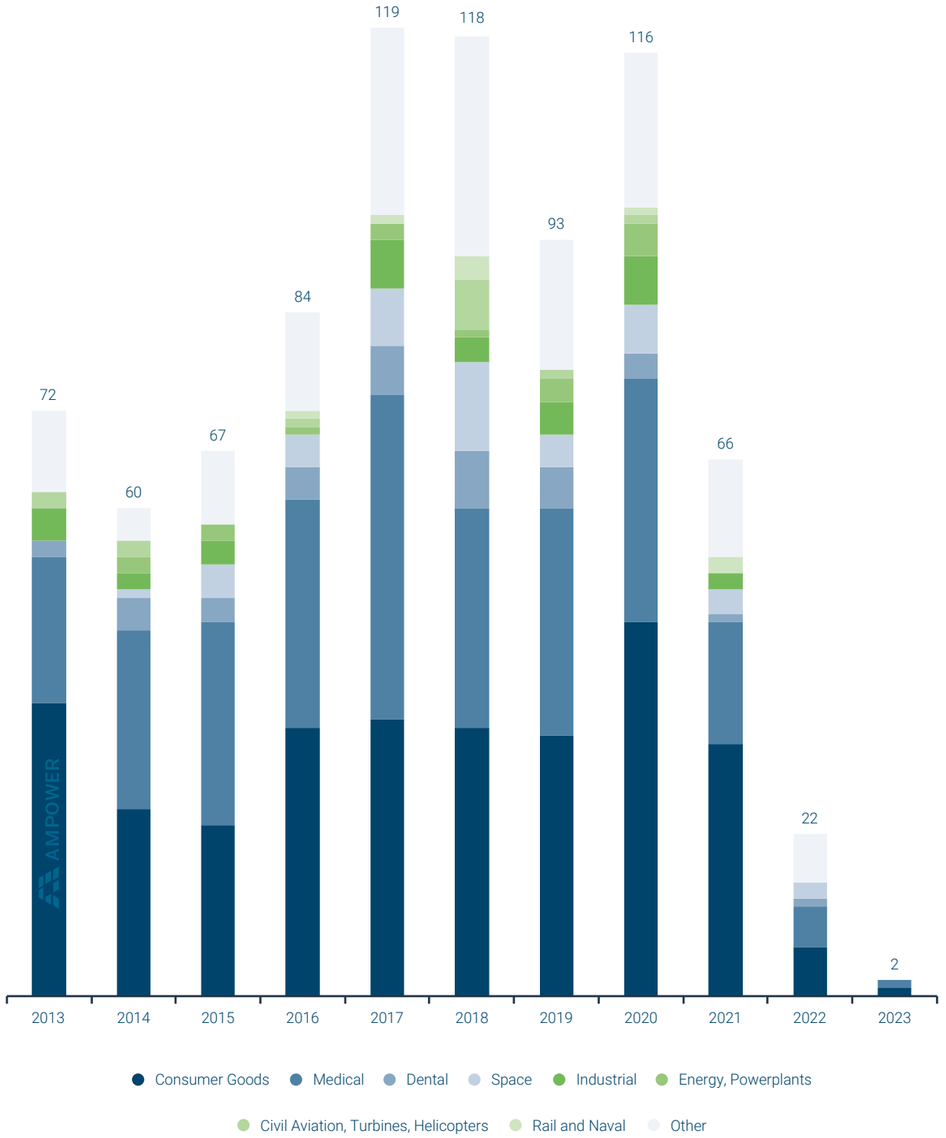
In the last decade, a notable surge in AM startups has been observed, where the business model has shifted from the technology itself to the applications it enables. The transformative capabilities of Additive Manufacturing, such as freedom of design, shortened lead times, and on-demand production of customized geometries, have paved the way for new and innovative business models.

Entrepreneurs, particularly in the medical and consumer goods sectors, are capitalizing on this potential, recognizing that startups often possess a competitive edge over established players due to their flexibility and adaptability. For example, startups around dental and orthopedic use-cases have witnessed substantial growth. Companies like LIGHTFORCE and CANDID, specializing in mass-customized dental applications, have collectively raised over EUR 200 million in recent years. The dental segment alone boasts nearly 40 startups, showcasing the industry's dynamic nature. AM is the key enabler for the provided service or product but often not the main innovation. Business models based on highly digitalized solutions, mass-customization or energy optimized products give the companies a competitive advantage.

In terms of funding sum, space-related startups dominate the top ranks, constituting 5 startups out of the top 10. Notably, RELATIVITY SPACE stands out as the leading AM user startup, securing a remarkable EUR 1 billion in accumulated funding. The company distinguishes itself by employing an internally developed wire-based Additive Manufacturing technology to fabricate primary rocket components.

The increased number of startups with an application background is a clear sign, that the technology is further maturing. Simultaneously, it points to a persisting reluctance or challenge faced by established companies to fully integrating this technology into their operations. While AM is often associated with high manufacturing costs on a per-part basis, a comprehensive evaluation of the full value chain, encompassing design, product lifecycle, time to market, and considerations such as storage, transport, component efficiency, and CO2 footprint across the entire lifecycle, reveals its true advantages. Established companies often struggle to fully leverage these benefits due to their tendency to isolate cost factors, hindering the realization of AM's potential. Furthermore, the substantial investments required to develop new applications, qualifying the technology for production, and managing associated risks appear more viable in the dynamic and adaptable environment of startups.

Number of startups founded per year segmented by applicaton industry



STEALTH COMPANIES NOT INCLUDED
THE 2021-2023 VALUES ARE NOT COMPLETE DUE TO UNKNOWN STARTUPS, THAT WILL EMERGE AT A LATER STAGE. STARTUPS SOMETIMES OPERATE IN A "STEALTH MODUS" FOR THE FIRST 12-24 MONTHS BEFORE MAKING A PUBLIC APPEARANCE. THIS MAY BE BECAUSE THE NECESSARY IP PROTECTION IS NOT YET IN PLACE OR BECAUSE THE PRODUCT OR SERVICE IS NOT YET FULLY DEVELOPED AND DOESN'T MAKE A PUBLIC APPEARANCE NECESSARY.

Financing

Funding developments

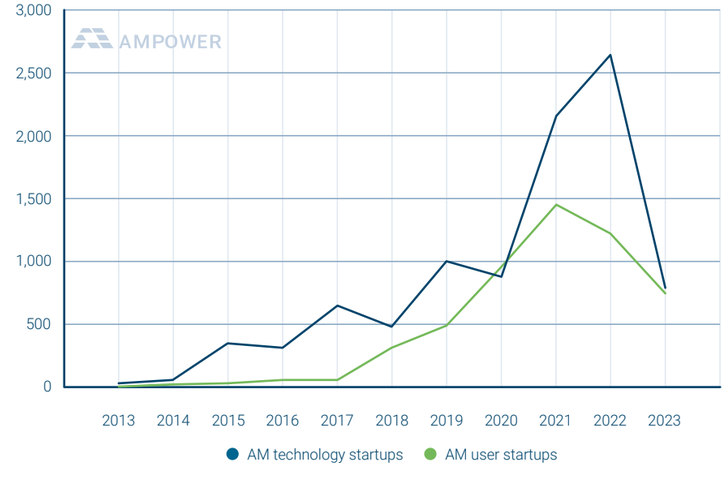
While space startups dominate the AM user startup landscape, hardware companies where able to secure most of the documented funding for AM technology provider companies. The development of funding volumes follow the current trend in Venture Capital in general and the AM specific reasons described before specifically.

Out of the exhaustive database on approximately 3,000 Additive Manufacturing related startups, 854 entities were identified with documented funding rounds within the past decade. Within this cohort, 27 companies successfully closed an IPO or SPAC deal. Simultaneously, 68 startups were acquired either by large cooperations or other AM companies. 3D SYSTEMS as an established player in Additive Manufacturing acquired 10 AM startups in the past decade. 97 startups are no longer operational with no documented exit.

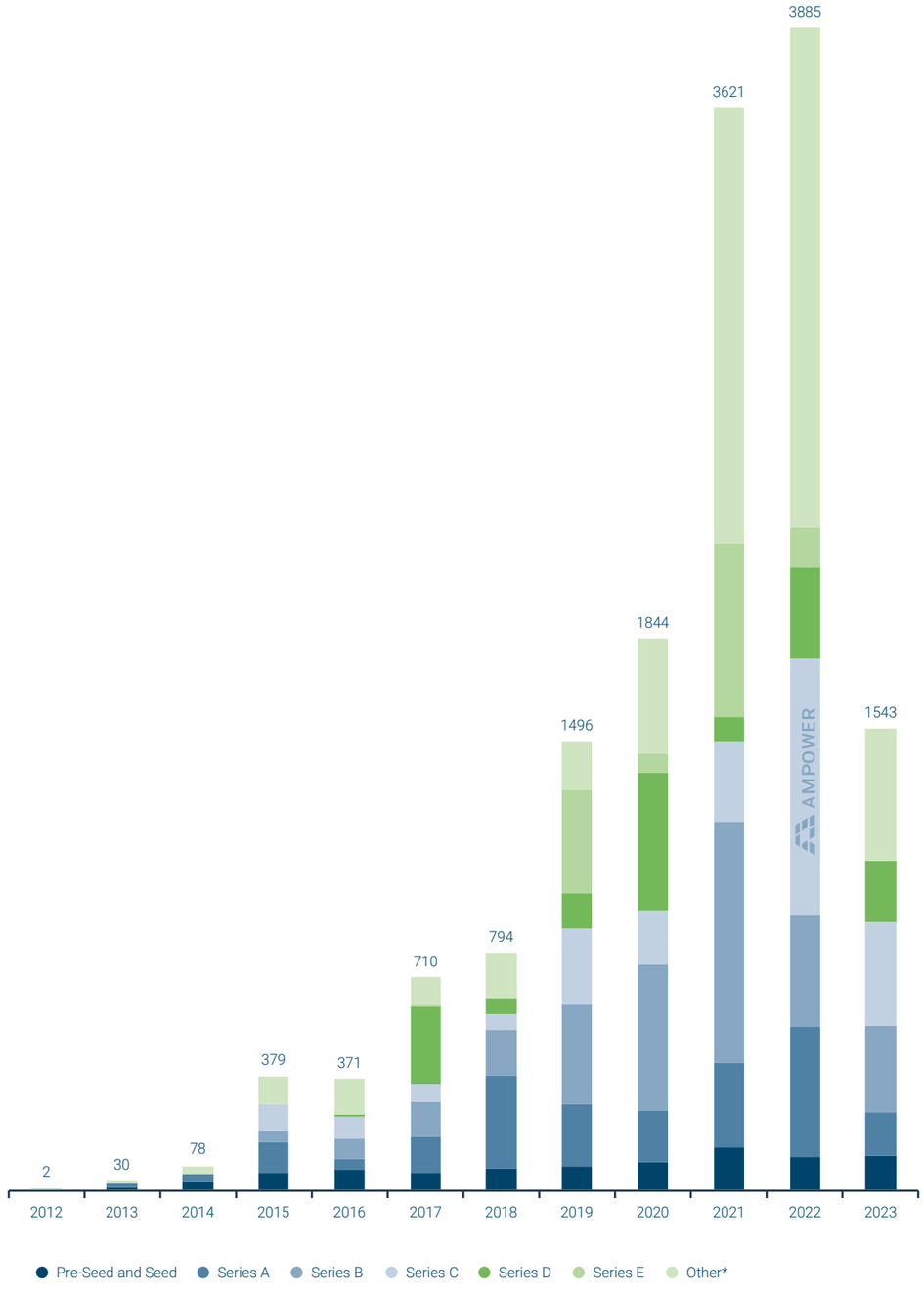
Around EUR 15 billion in total investment has been injected into the 854 startups over the analyzed timeframe. Of this sum, EUR 9.4 billion was dedicated to AM technology startups, covering hardware, software, platforms, and other services integral to the AM process chain. At least EUR 170 million were invested in AM startups, that are no longer operating and have not managed to close a successful exit.

The overall trend between 2013 to 2022 showed a steady increase of funding. While technology startups received significant funding from 2015 onwards. User funding started on a similar trajectory in 2018 and not even slowed down during the COVID pandemic. However, both groups experienced a recent downturn. While the downturn for user startups started in 2022 and is overall less significant, technology startups experienced a huge increase in 2021 and 2022 fueled by only a few companies and their pre-IPO collection and finalized IPO before plummeting to a similar funding value as the User group in 2023.

Annual funding of technology vs. user startups in EUR million



Annual funding of AM startups in EUR million



*OTHER MAY INCLUDE POST IPO EQUITY, PUBLIC GRANTS, CROWDFUNDING OR DEPT FINANCING

Valuation of AM startups

Depending on the stage, investors often choose a set of methods in order to perform a valuation analysis from different angles. Some selected methods are listed here. These results are compared in a valuation matrix sometimes just referenced as football field. However, the calculation results are often not the last word – depending on negotiations between startup and investor and general hype in the industry the actual enterprise valuation might differ significantly.

1

Comparable transaction method

The comparable transaction method involves valuing a company by comparing its financial metrics and characteristics to those of similar companies that have recently been involved in transactions. While the investment sum is often made public, the shares received and hence the total valuation is not. Usually, investors have their own database they can refer to.

2

Venture capital method

The venture capital method is a widely used method due its simplicity, however, a few variants exist. Usually, the method takes into account the future exit value, return or profitability of an enterprise based on its projections from the business plan. Using industry specific multiples and discounting the result by rate reflecting risk and future money value, the enterprise value today is derived.

3

Scorecard method

The Scorecard Method is an approach to startup valuation that involves assigning weighting to various factors, such as management team, market opportunity, product or service, and competitive landscape,. The startup is scored on each factor to arrive at a comprehensive valuation assessment. The valuation and the weighting is depending on the investor and their experience as they can compare to previous situations.

4

Market multiples

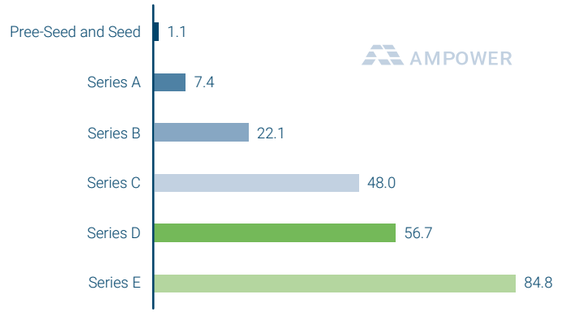
Market multiples or valuation multiples involve assessing a company's value by comparing its financial metrics, such as earnings or revenue, to those of similar publicly traded companies in the market. An example is the multiple of price-to-earnings. The earnings considered are usually forward looking such as next twelve months based on analyst opinions from financial institutions. The current stock valuation of companies in the comparison has hence a significant influence if applied to startups.

5

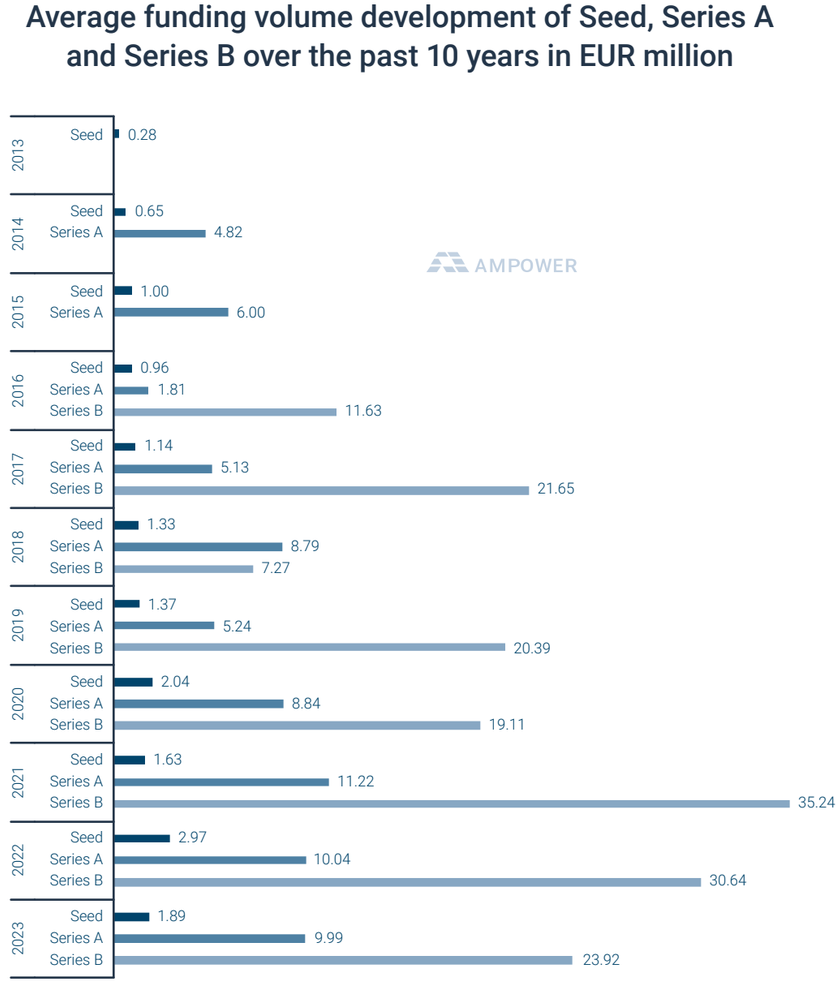
Discounted cashflow method

The discounted cash flow (DCF) method is a valuation approach that involves estimating the present value of a company's future cash flows by applying a discount rate. This method incorporates the time value of money, considering that a money received in the future is worth less than a money today, and it is commonly used to assess the intrinsic value of a business. Due to the lack of historic data, this method is often not directly applicable for startups.

Average funding volumes over the past 10 years for AM technology startups in EUR million



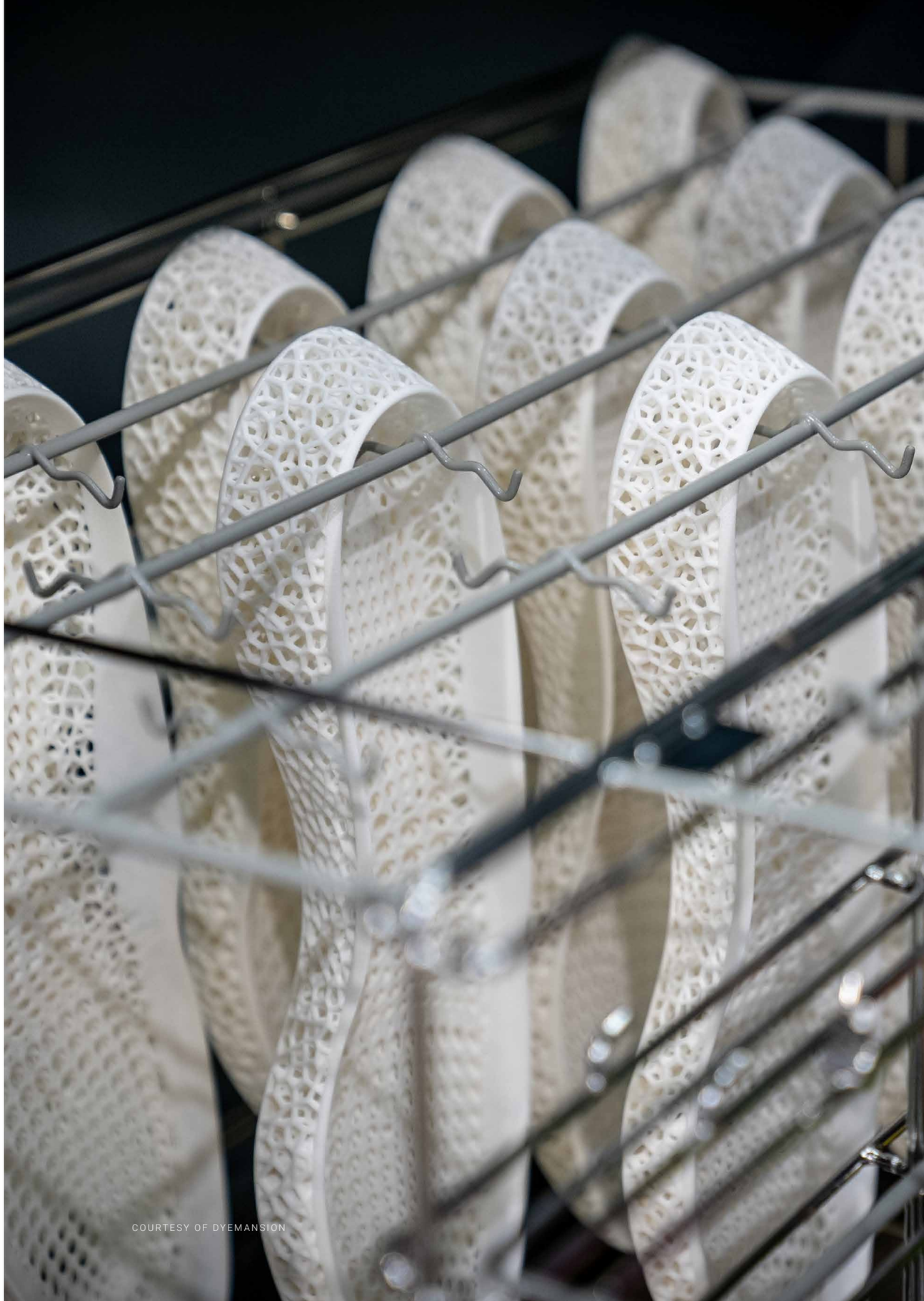
Average funding volume development of Seed, Series A and Series B over the past 10 years in EUR million



VC Firms

Overview of the most active strategic Venture Capital organizations for Additive Manufacturing

	Location	Number of AM Portfolio companies	Website
AMVENTURES	Germay	17	amventures.com
asimov VENTURES	USA	13	asimovventures.com
3DVENTURES	USA	10	3dventures.com
khosla ventures	USA	7	khoslaventures.com
HZGGROUP	Germany	7	hzg-fund.com
NEA	USA	5	nea.com
FOUNDER COLLECTIVE	USA	4	foundercollective.com
TYCHE PARTNERS	USA	4	tychepartners.com



COURTESY OF DYEMANSION

What is your investment focus in 2024?

Across many industrial sectors, I have witnessed technology adequately developed and applied to real applications helps solve the many challenges facing mankind. The maturity and application for AM has only just begun and will over the years ahead have more impact and business success. The current hype/valuation cycle lows can provide investment opportunities for those who can find real application value added with a focused/pragmatic leadership team. Rewarding but buyer beware!!

John Hartner
FOUNDER DIGITAL INDUSTRIALIST LLC

"As we look ahead to 2024, our investment focus remains centered on our strong existing portfolio, comprising 17 active investments after two successful exits. We have effectively deployed more than half of our EUR 100 million fund since 2021, and our continued emphasis for the upcoming year will be on selectively curated opportunities, with a primary focus within the application domain"

Johann Oberhofer
MANAGING PARTNER AT AM VENTURES

"AM continues to be a pioneering technology. With our technical expertise and our network from decades of experience in the industry, we at HZG can continue to identify a wide range of exciting innovations and provide precise advice for accelerated growth. These are also the main reasons why our investor partners have invested in our fund.
The general market situation has become more challenging, and this also includes the AM sector. However, with concrete break-even scenarios and funds for subsequent financing rounds of our portfolio companies, we can counter this well."

Dr. Florian Bechmann
CTO OF THE HZG GROUP

"We believe the AM industry has a very bright future and the ground floor is the best place to invest. After nearly a decade of investing in AM startups we have seen impressive maturation and growth from many of our portfolio companies. So we know firsthand that nurturing an AM investment can pay off, and we're inspired to keep doing so. In terms of identifying critical success factors for AM startups in the coming years, this is difficult to answer because the factors will be different depending on the type of AM company. If it's an application, then market fit, if it's end-use parts, then materials quality and standardization, and so on. But some overriding critical success factors across AM and all industries are a passionate vision and driven leadership."

Tyler Benster
GENERAL PARTNER AT ASIMOV VENTURES

ADDITIVE MANUFACTURED METAL BIKE COMPONENTS. COURTESY OF URWAHN BIKES

Learnings for startups

1

Specific applications are key

While application driven startups will receive most attention, AM technology startups are also well advised, to develop an application driven value proposition and design their hardware, software and services around customer demand. A general „we will change the way of manufacturing“ will not easily attract funding anymore.

2

Ramp up sensibly

Addressable market and ramp up speed was often highly overestimated in the past. The development and sales focus should be on industries and applications that have significant advantages through the value proposition. Time for R&D and qualification efforts must be considered. Communicated towards investors, how you manage and focus on customers, that have the potential to ramp up production level is key.

3

Take care of your customers

Every new piece of equipment and software needs time to be evaluated. The more successful customers emerge from this evaluation stage, the more likely they will become a long-term asset. Startups will have to develop a strategic customer-relationship management roadmap beyond the first deal and focus on after-sales services and customer success.

Learnings for investors

1

Question customer strategy

Investors need to challenge the go-to-market strategy of their potential portfolio companies. The startups should have a clear understanding of their target audience and applications.

2

Build a homogenous network

An AM technology-portfolio should be accompanied by application companies. While multiple technology companies might cannibalize each other, application startups can bring in valuable use cases and customer perspective.

3

Talk to customers

Investors need to understand customer needs and views. Beyond a theoretical analysis of the startup’s key figures, expert consultants and AM representatives of large AM users can provide needed insights. Their feedback is a valuable asset when considering an investment into an AM startup.

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AMPOWER REPORT

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Shortly, after its first release in 2019, the AMPOWER Report became the reference for the Additive Manufacturing industry. It provides a detailed view on the AM market and state of the AM technologies. The AMPOWER Report shows the current market and forecasts the developments expected in the next 5 years.

Features & Benefits

- Based on primary research data from over 300 personal interviews
- Over 100 figures and graphs of AM market data
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- 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 2,400 entries
- Metal AM machine database with system properties
- PDF report available

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SMALL-SCALE METAL AM COMPONENTS. COURTESY OF INCUS

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MANAGING PARTNER AT AMPOWER

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 Material Extrusion as well as a wide range of polymer AM technologies.

Dr.-Ing. Eric Wycisk

MANAGING PARTNER AT AMPOWER

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. As Managing Partner at AMPOWER, Eric focuses on technology evaluation and benchmarking, AM material and part properties as well as sustainability.

Dr.-Ing. Maximilian Munsch

MANAGING PARTNER AT AMPOWER

Maximilian is a professional user of Additive Manufacturing since 2007. After finishing his dissertation on reduction of residual stresses in metal Additive Manufacturing in 2012, he acquired extensive hands-on experience with different Powder Bed Fusion processes in regulated industry before co-founding AMPOWER in 2017. As Managing Partner at AMPOWER, Max focuses on data analysis, market intelligence and due diligence investigations.

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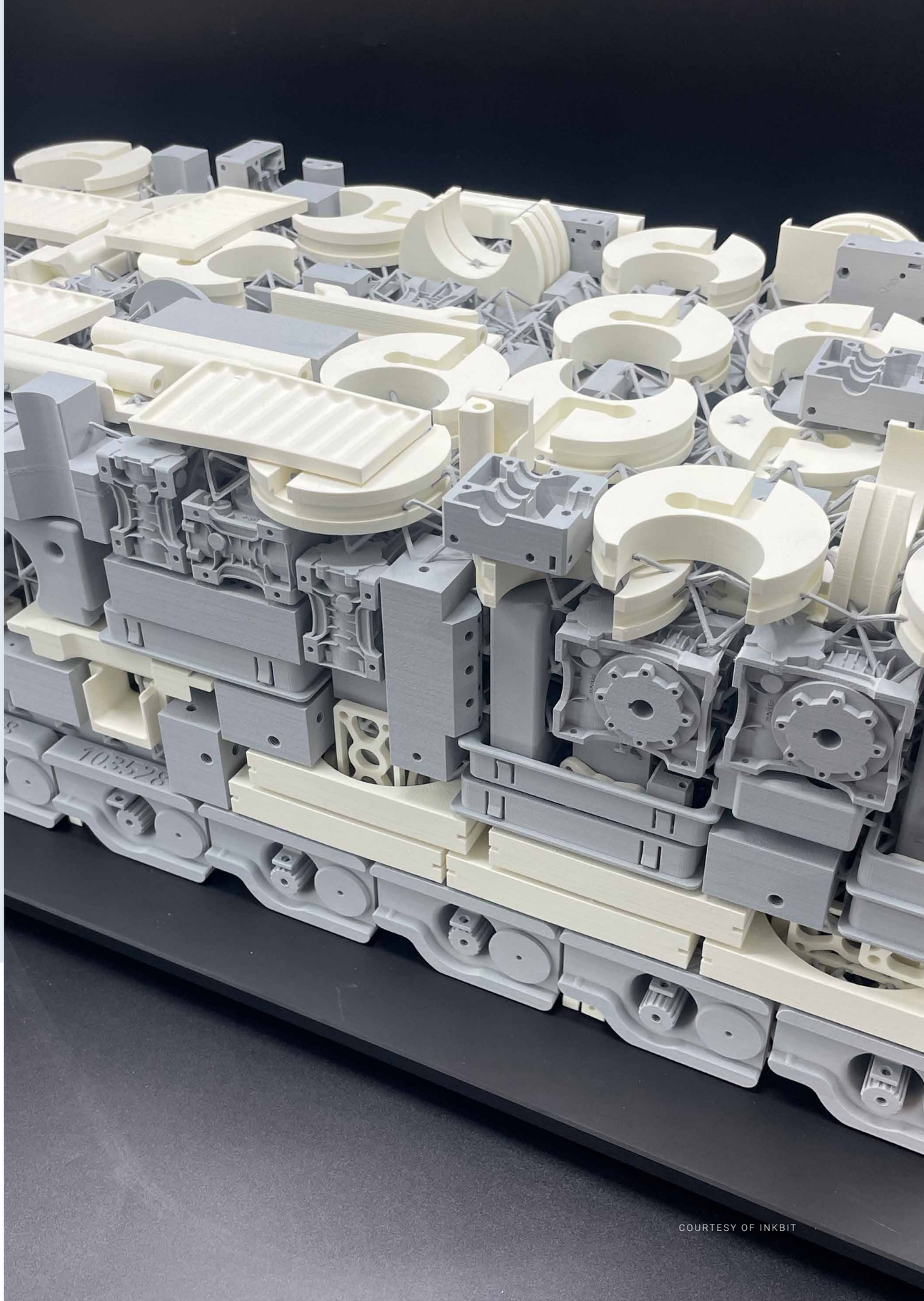

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