

1. Mergers and acquisitions

by Shamil Hargovan and Henry Ma

The industry recorded 33 mergers and acquisitions (M&A) of AM-related companies from March 2023 to February 2024. This compares to 21 transactions in 2022, 54 in 2021, and 27 in 2020. Several of the transactions were asset sales or smaller deals, signaling the anticipated industry consolidation has begun.

To be included in the following table, an acquired company needed to be an entity in which a predominant or significant part of the business is AM. The financial details of many acquisition transactions are not published. Healthcare- and aerospace-related deals continued to command the highest valuations.

Leading by servicing specific applications and industries

Applications were the clear winner in 2023. Companies that applied AM as a key part of their business strategy saw major enterprise value gains. For example, Align Technology is a leading global dental device company that designs, manufactures, and sells the Invisalign clear aligners. It completed an \$85 million acquisition of privately held Cubicure, a company offering polymer 3D printing solutions. With this acquisition, Align can go deeper into owning technology that supports its dental aligner business.

Nikon Corp. purchased SLM Solutions for \$670 million, driving portfolio expansion. The business experienced strong sales in aerospace, including the U.S. Air Force. The SLM acquisition also largely supports Nikon's focus on growing its U.S. government business. This is enhanced by a major operation in Southern California to drive specialization and increasing service levels.

Meta, parent company of Facebook, acquired Luxexcel, which uses 3D printing to make prescription lenses for eyeglasses. More recently, the company has focused its efforts on smart lenses, which can be printed with integrated technology such as liquid-crystal displays (LCDs) and holographic film. Meta wants to strengthen its offering in augmented reality glasses with vertical capabilities to support this application space.

Nexa3D acquired Essentium, adding high-speed extrusion technology and expanding its reach to military and defense applications.

The Society for Plastics Engineers (SPE) is a U.S. and Belgium-based not-for-profit industry association. In both a financial and strategic move, it acquired 3Dnatives, a Paris, France digital content, global events, and industry B2B marketing service provider. Also in 2023,

SPE acquired ImplementAM, a provider of learning workshops focused on AM technologies.

Zeda, a healthcare solutions provider using AM, acquired Orthopedic Implant Company (OIC). OIC is recognized as a leader in value-based medical implants. Zeda strengthened its capability of manufacturing and distributing medical devices globally, buying channels, customers, and market share.

Summary of 2023 deal activity

While 2023 was an active year, high interest rates and market cap declines among industry leaders made for a tepid M&A environment.

Acquired company	Acquiring company	Deal (\$M)	Country	Website
Kegelmann Technik	Handtmann Group	–	Germany	www.ktechnik.de
Essentium	Nexa3D	–	U.S.	www.essentium.com
Cubicure	Align Technology (NAS: ALGN)	86.34	Austria	www.cubicure.com
DP Seals	Lagercrantz Group (STO: LAGR B)	5.64	UK	www.dpseals.com
Biomodex	Mentice (STO: MNTC)	0.22	France	www.biomodex.com
IVIVA	United Therapeutics (NAS: UTHR)	50.00	U.S.	www.ivivamedical.com
Computer and Peripherals Group	MatterHackers	–	U.S.	–
Stratasys Direct (metals facility)	Cumberland Additive	–	U.S.	www.stratasysdirect.com
HAGE3D	BigRep	–	Austria	www.hage3d.com

Aerosint	Schaeffler (ETR: SHA)	–	Belgium	www.aerosint.com
ImplementAM	Society of Plastics Engineers	–	U.S.	www.implement-am.com
M. Holland Company 3D Printing Group	Interfacial Consultants	–	U.S.	www.mholland3d.com
VisionAir Solutions	NextStep Arthropedix	–	U.S.	www.visionairsolutions.com
Additive Flow	Nano Dimension (NAS: NNDM)	–	UK	www.additiveflow.com
Adira AddCreative	SLM Solutions	–	Portugal	www.addcreative.tech
Cards 3D Printing Solutions	Makerpoint	–	Netherlands	www.cards3dprinting.com
ClassIQMfg	Tech Cast	–	U.S.	www.classiqmfg.com
Wematter	3D Systems (NYS: DDD)	13.25	Sweden	www.wematter.se
CADS Additive	Hexagon (STO: HEXA B)	–	Austria	www.cads-additive.com
iQtemp	Hotset	–	Germany	www.iqtemp.com
Optimal Design	Deloitte	–	U.S.	www.optimaldesignco.com
3DPRINTUK	Solid Solutions Management	–	UK	www.3dprint-uk.co.uk
3DVerkstan	Solid Print3D	–	Sweden	www.3dverkstan.se
SGSolution	Bechtel (ETR: BC8)	6.70	Switzerland	www.sgsolution.ch

Nilas3D	Tura Scandinavia 0.23		Denmark	www.nilas3d.com
Ossis	Zimmer Biomet (NYS: ZBH)	–	New Zealand	www.ossis.com
Bionic Production	Autoflug, Rheinmetall (ETR: RHM)	–	Germany	www.bionicproduction.com
AddiFab	Nexa3D	–	Denmark	www.addifab.com
Covestro (AM materials business)	Stratasys (NAS: SSYS)	46.14	U.S.	–
XYZprinting (polymer PBF operations)	Nexa3D	–	Taiwan	–
3Dnatives	Society of Plastics Engineers	–	France	www.3dnatives.com
Luxexcel	Meta	–	Netherlands	–

We expect to see continued consolidation across machine manufacturers and material providers. Service providers are aiming for greater flexibility and increased share of the AM market. Some public companies will attempt to go private as public market share prices decline. Typically, these companies will take on additional assets and aim to go public a second time or be acquired by a strategic buyer. Given tightening monetary policy and deteriorating sentiment, AM industry deals in 2023 and beyond will require sticking to business fundamentals. Companies perceived as running a lean operation will continue to attract a range of buyers.

In early March 2023, Nano Dimension made an offer to acquire all outstanding shares of Stratasys at a premium of 36% above the Stratasys stock price on March 1, 2023. At the time of publication of this report, the fate of the offer had not yet been determined. In July 2022, Nano Dimension had accumulated 12% of Stratasys' stock in open market trading.

2. Corporate investments

Despite economic headwinds in some markets, corporate investments in AM show continuing confidence in the future of AM. Without them, the development, commercialization, and adoption of products and services would be slow. In 2023 and early 2024, companies around the world continued to invest in AM projects, systems, and facilities. The following are among the leading investments:

- GKN Aerospace invested £50 million (\$63 million) in an AM Center of Excellence at its facility in Trollhättan, Sweden. Nearly 25% of the investment was provided by the Swedish Energy Agency. The facility will become operational in 2024.
- Oerlikon, the Swiss materials, engineering, and AM company, is centralizing its AM operations in Huntersville, North Carolina. The reason for the consolidation is to identify greater opportunities for AM applications in North America compared to those in Europe. Worldwide customers will be served from the U.S. operation.
- Airbus has opened a new AM facility in Donauwörth, Germany. The site includes systems for manufacturing titanium, aluminum, and polymer parts. The company reported that since 2017, it has processed 11 tons of titanium to produce 9,400 parts for use on the Airbus A350 aircraft.
- Epson Atmix broke ground on the construction of a sustainable metal powder production plant in Aomori, Japan. The facility is expected to come online in June 2025. Investment in the plant is budgeted at ¥5.5 billion (\$36.7 million). The powder produced at the facility will be used for AM and metal injection molding.
- Thyssenkrupp and Wilhelmsen, two large corporations in the maritime industry, established a joint venture called Pelagus 3D to offer spare parts for the maritime industry using AM. The joint venture will deploy a digital platform to link customers to manufacturers of spare parts worldwide.
- AMEXCI, an industry consortium in the Nordic countries, announced that it is expanding its operations with the building of a new AM facility located in the Örebro region of Sweden. Several AMEXCI member companies are leading the investment in the new center, including Ericsson, FAM, Saab, and Scania.
- Collins Aerospace expanded its AM capacity at its location in Des Moines, Iowa. The company invested \$14 million in the 835-m² (9,000-ft²) facility. It is used for the design and production of engine parts for commercial and military aircraft.

- Siemens will invest in AM facilities and solutions at its facility in Erlangen, Germany. The money is part of a €500 million global investment in advanced manufacturing.
- Medical device manufacturer Paragon has invested \$16 million in a new 3,160-m² (34,000-ft²) facility located on its manufacturing campus in Pierceton, Indiana. Paragon is a contract manufacturer of medical devices, including those made by AM.
- Immensa, a service provider based in Dubai, inaugurated a 1,500-m² (16,150-ft²) facility in Dammam, Saudi Arabia. The facility will serve customers in the oil, gas, and petrochemical industries in the region. The company has invested \$15 million in the new facility.
- Chinese system manufacturer Bright Laser Technologies invested in the expansion of its Xi'an manufacturing facility. The expansion will include metal powder production capabilities. The company also opened a research and development center in Shanghai.
- Nikon established a global advanced manufacturing business in California called Nikon Advanced Manufacturing. Nikon is building its AM capabilities through acquisitions, which includes system manufacturer SLM Solutions and service provider Morf3D.
- Castheon spent more than \$20 million to expand its facility for printing refractory alloys.
- Würth Additive launched a digital inventory platform for on-demand AM part manufacturing. The company is part of the German Würth Group, a global distributor of industrial products.
- GE Aerospace has budgeted \$54 million for its plant in Auburn, Alabama for additional AM capacity. An additional budget allotment includes investments in AM systems in the Cincinnati area. The investments are part of a global investment of \$650 million in manufacturing facilities and supply chain in 2024.
- Chinese company Jiangsu Vilory Advanced Materials Technology Co., Ltd. is constructing a new powder production facility. It raised \$50 million from Chinese government-owned investment funds to finance the expansion. Part of the powders produced by the company are for AM.
- Boeing will invest in establishing Space Foundation's AM space lab at its Discovery Center in Colorado Springs, Colorado.

What to expect in 2024

Major players seek accretive growth, which may drive industry consolidation. Continued mergers and buyouts are likely across machine manufacturers and material providers. Service providers will aim for greater flexibility and an increased share of the AM market. Any acquisition that creates an advantage in specific application spaces or industries will take priority. Company CEOs realize they must play a role in growing the market.

Stratasys is a candidate to be one of the companies driving consolidation, with two major deals coming close to fruition in 2023. GE's corporate breakup was in full motion in the first few months of 2024. It leaves AM and the high-performing aerospace business under one roof, with more freedom to operate. Formlabs and Markforged are poised to make strategic moves as private investors show high confidence in their businesses. Nikon SLM Solutions and 3D Systems have plenty of options to strengthen their offerings through acquisitions. Meanwhile, Nano Dimension and Nexa3D are openly pursuing acquisition strategies.

Traditional manufacturers may also enter the M&A conversation as supply chains become a security and economic viability issue. Similarly, several manufacturing-focused private equity groups have cash reserves and are waiting for interest rates to level out. They include American Industrial Partners, Cerberus, Core Industrial, and KPS Capital. Expect AM companies to be acquired to form vertical solutions that drive growth. Planning for future initial public offerings (IPOs) in the next five years has already commenced.

Macroeconomic turmoil means we will see both winners and losers in the 3D startup space. This will likely drive a multi-year wave of consolidations, reminiscent of the dotcom bubble burst, which led to mergers and even more startups.

Some startups and corporations used AM to help reduce pandemic-driven supply chain challenges. They are now adding AI and automation to their advanced manufacturing offerings. Many of these structural changes favor increasing the use of AM. Companies are using AM, software, deep tech, and business innovation to drive outcomes. This is a generally positive signal toward growth to come.