FALL 2022

Easy-to-use Additive Manufacturing 2.0 solutions for industrial and healthcare production—delivering transformative value

Desktop Metal®

In 2015, Desktop Metal was founded with an audacious goal that had long eluded the 3D printing industry: mass production

We call this next era of digital production, and all the benefits that come with it, Additive Manufacturing 2.0

In 2021, our team was incredibly excited to welcome several new technologies and brands into Team DM, so that we could drive this new era of affordability, quality, and ease of use across even more materials than metal. Today, we're also launching polymer, sand, and wood into the AM 2.0 future.

Our strategy for delivering on this future has three legs.

The first of those is **production-capable 3D printing technologies** that can deliver a combination of speed, tolerances, surface finish and material properties to truly qualify as high-volume production tools at a cost that competes with conventional manufacturing.

Binder jetting (BJT) and digital light processing (DLP) are two technologies we view as critical in this endeavor. Our first two years of selling and installing Shop Systems has been a big success—the Shop is now the No. 1 selling metal binder jet printer in the world, with customers delighted by the affordability, quality and ease of use of this turnkey system.

Secondly, we're pairing these production technologies with exceptional and **durable materials for end-use parts.** As leaders in metal 3D printing, we're delivering high-quality standard and premium metals, from stainless and tool steels to precious metals and exotic alloys.

At the same time, our new portfolio of exclusive photopolymers is unmatched, and you can easily see new value being unleashed when you pair our ETEC Xtreme 8K, the world's largest DLP system, with our all-new DuraChain™ category of resilient and durable photopolymers. Meanwhile, our new biocompatible Flexcera™ resins, printable on the Einstein™ desktop DLP printer, are already being used for high-volume production of dentures with industry-leading properties.

Finally, we're pairing our printers and materials with **high-volume applications** that can leverage the most benefit from 3D printing at scale, from valves and pumps to dentures and crowns.

At Team DM, we believe we have the most ambitious goals and R&D team in additive manufacturing, and we're determined to deliver on this AM 2.0 future with the best software and customer service in the industry.

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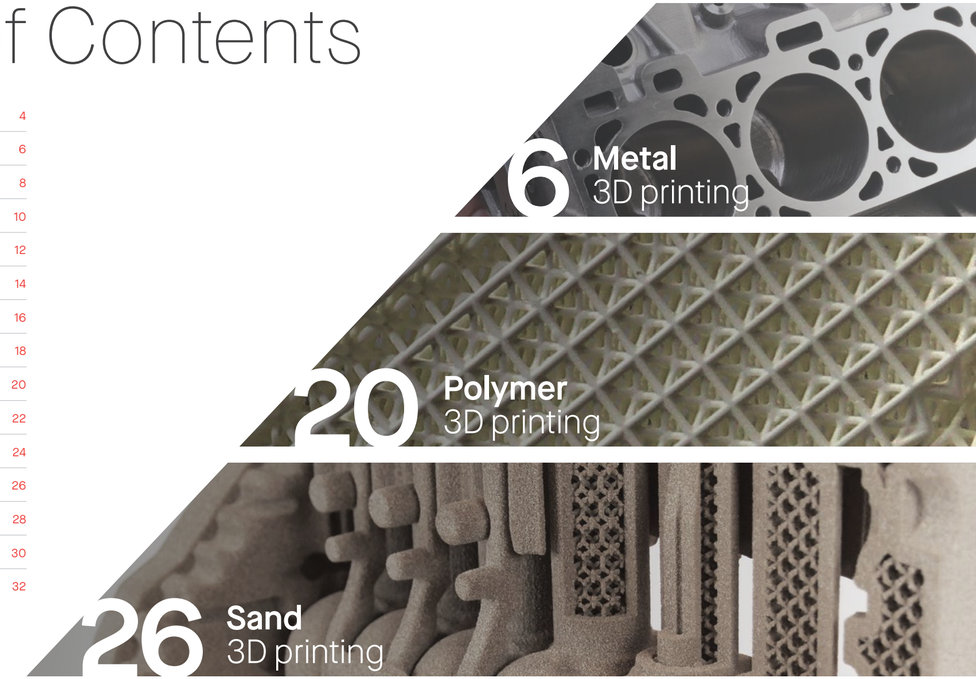
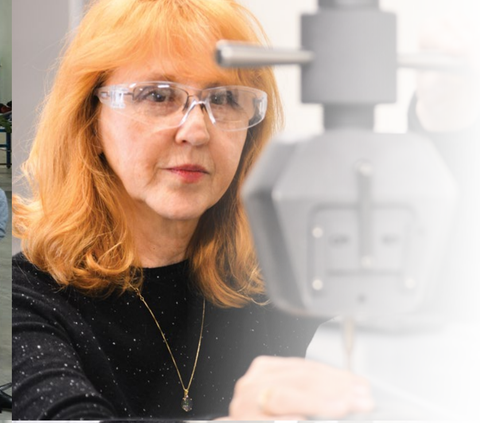




Team DM Aims Higher

World-leading experts passionate about delivering the benefits of Additive Manufacturing 2.0

At Desktop Metal, our portfolio of Team DM brands brings together the brightest minds in Additive Manufacturing to drive the future of AM 2.0, or production-volume 3D printing.

Achieving this goal requires delivering speeds and costs that compete with conventional manufacturing, as well as durable end-use materials that can be used for value-added, high-throughput applications. We also know that customers need unparalleled reliability and uptime in 3D printing in order to make the jump to real AM 2.0 production.

Our team is on a mission because we're passionate that AM 2.0 technologies can deliver more advanced parts and products that can truly change the world at high, meaningful volumes. Team DM is trying to lift AM—and manufacturing—higher.

Follow **#TeamDM** on LinkedIn to learn more.

The strongest metal backbone in AM

Whether you want to print metal safely in the office or cost-competitively on the production floor, you won't find better options or experts anywhere, period

Launched in 2015 as a metal 3D printing company, Desktop Metal now offers a variety of trusted metal 3D printers to meet most every need, from easy-to-use bound metal printers such as the Studio System to high-throughput binder jetting solutions such as the Production System P-50, the fastest way to 3D print metal parts at scale.

Binder jetting is one of the seven methods of additive manufacturing recognized by ASTM. Widely regarded as one of the fastest and most flexible 3D printing methods, binder jetting rapidly processes each layer by passing a gantry of printheads over a print bed to deposit liquid binding agent that bonds powder particles together. Because binder doesn't melt metal together during printing, it's also extremely flexible in the types of powders it can print—from metals to ceramics—delivering a wide range of other benefits compared to other additive and subtractive technologies.

Today, Desktop Metal has the most experienced team of metal binder jetting and sintering experts in the world, delivering the best and broadest range of scalable printing systems.

- Metal 3D printing customer success stories
- Production systems for high-volume, cost-competitive manufacturing
- Turnkey metal printers for easy, plug-and-play adoption
- Binder jetting for specialty materials

Metal Success Stories

Agile manufacturing solutions with metal 3D printing

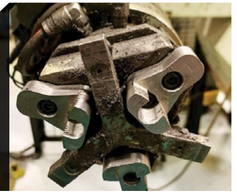
From big-name brands to local machine shops, manufacturers around the world use our portfolio of 3D printers to produce parts and products on demand, circumventing supply chain challenges and offering advanced, complex parts with ease. From pre-production parts such as tooling and prototypes to batch and serial production, Desktop Metal is the trusted leader in metal 3D printing from the office to the factory floor.

FREEFORM

Reducing costs and cutting lead times with digital production

FreeFORM Technologies provides engineering and manufacturing services for many customers familiar with metal injection molding (MIM). The Production System P-1 delivers finished parts without the high investment cost and long lead times of traditional MIM molds.

EATON



Rapid tooling and MRO parts on demand

Eaton, a major automotive supplier, turned to the Studio System for fast retooling options to speed the development and prototyping of custom parts, and to quickly and inexpensively produce maintenance, repair, and operations (MRO) parts to keep manufacturing lines up and running.

CHRISTIAN TSE

Unlocking design potential and increased speed to market

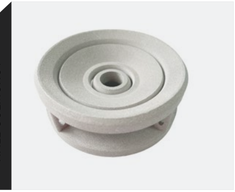
Christian Tse is a private label jewelry manufacturer for global luxury brands known for precision and quality parts. Binder jetting on the Production System P-1 enables the company to develop designs not possible with traditional methods that can be printed the same day.

AZOTH 3D

Take One Make One lean supply chain strategy

Azoth 3D uses the Shop System for the production of complex metal parts, empowering its customers to convert physical to digital inventory. Employing a Take One Make One (TOMO) strategy, supply chain disruptions are eliminated with qualified production of metal components on demand.

WALL COLMONOY



Fast iterations for data-driven product optimization

Wall Colmonoy supports a variety of industries with manufacturing solutions and uses metal 3D printing to accelerate product improvements. Using the Shop System, the company prints and tests new design iterations in-house to quickly produce data validating performance improvements.

Download the details

See our library of complete case studies with videos
TeamDM.com/MetalSuccess

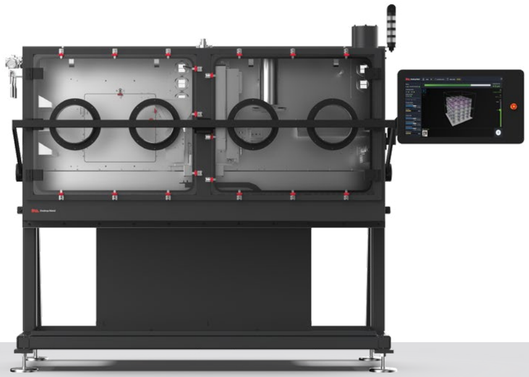
Production System™

P-1 | Research & development for scaling to production

Print > Crosslink > Depowder > Sinter > Recycle

Designed to bridge the gap between bench-top development and mass production, the Production System P-1 is an open platform binder jetting solution for process and materials development as well as serial production of small, complex parts.

The P-1 supports both non-reactive and reactive metal powders using the same Single Pass Jetting™ technology leveraged across the Production System family of products, combining mass production-level quality and consistency with enhanced process flexibility to support serial production or direct process transfers to the Production System P-50.



Key benefits

- Patent-pending Single Pass Jetting technology
- Constant wave spreading enhances print bed uniformity and density
- Patented anti-ballistics technology drives printhead longevity and part quality
- Inert build chamber provides reactive metal support and powder consistency
- Real-time optical bed inspection
- Open material platform

Print technology	Single Pass Jetting	**Max build rate**	1,350 cc/hr (82 in³/hr) at 65 µm layer thickness
Build envelope (L × W × H)	200 × 100 × 40 mm (7.9 × 3.9 × 1.6 in)	**Print resolution**	Native 1,200 dpi
Build volume	1L		

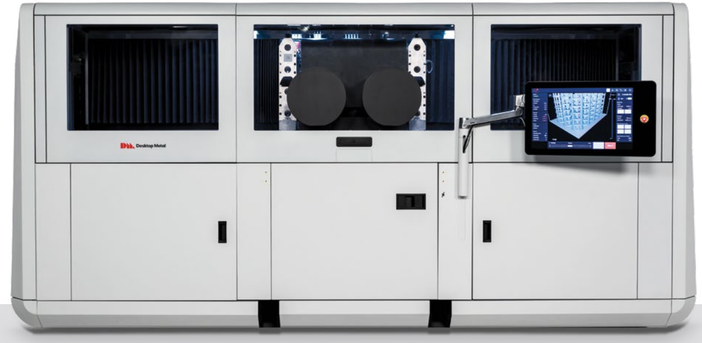
P-50 | High-speed metal 3D printing for mass production

Designed to be the fastest way to 3D print metal parts at scale, the Production System P-50 leverages Desktop Metal's patent-pending Single Pass Jetting™ (SPJ) technology and bi-directional printing to achieve speeds up to 100 times those of laser powder bed fusion technologies.*

The P-50 is an open material system that leverages low-cost MIM powders and produces parts in volumes and at costs competitive with conventional mass production techniques. Featuring a state-of-the-art print bar with native 1,200 dpi, an inert processing environment, and constant wave spreading for print bed uniformity, the P-50 offers the quality, reliability, and economics required for high-volume end-use applications.

Parking Shift Bracket

Material	17-4 PH	**Parts per build**	342
Cost per part	$4.71	**Throughput per year**	542,826



Print technology	Single Pass Jetting	**Max build rate**	12,000 cc/hr (732 in³/hr) at 65 µm layer thickness
Build envelope (L × W × H)	490 × 380 × 260 mm (19.2 × 15.0 × 10.2 in)	**Print resolution**	Native 1,200 dpi
Build volume	48L		

* Based on published speeds of single laser, mid-range laser powder bed fusion systems available as of May 6, 2022 and using comparable materials and processing parameters as applicable.

See the full list of printable materials, p. 32

Production System™ Benefits

Excellent part quality

High-resolution 3D printing and a uniform print bed allow the P-Series to produce dense, high-quality parts capable of performing in the most demanding applications.

High-resolution printing

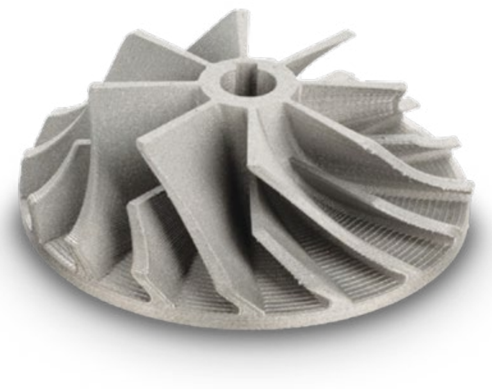
With a native resolution of 1,200×1,200 dpi and layer heights as small as 50 μm, the P-Series can 3D print parts with excellent surface finish and incredibly fine features.*

Uniform print bed

Proprietary constant wave spreading technology enhances density uniformity across the powder bed, delivering greater part consistency in each build and from build to build.

Fully dense parts

Produces end-use parts with densities up to or exceeding 99% with properties similar to castings, suitable for demanding applications. No infill or solvent debinding step needed.



Best-in-class repeatability

The P-Series offers robust repeatability through anti-ballistics technology, print bar redundancy, and live optical print bed inspection, so you can print with confidence.

Print reliability

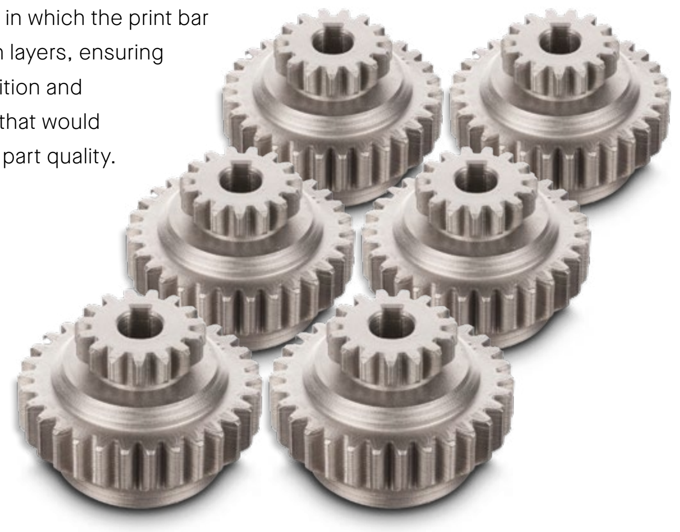
Patented anti-ballistics technology, engineered to reduce powder bed disturbance, reduces variability in the 3D printing process while increasing the longevity of the print bar.

Print bar redundancy

Full print bar redundancy is achieved using an anti-banding strategy in which the print bar is re-aligned between layers, ensuring reliable binder deposition and suppressing defects that would otherwise affect final part quality.

Real-time print bed inspection

An overhead camera monitors each layer using multi-angle lighting and imaging to detect print defects and nozzle performance during printing, facilitating part inspection and build audits critical to deploying AM in production environments.



* [illegible] 2022 and using comparable materials and processing parameters as applicable.

Wide material compatibility

The P-Series inert environment, open material platform, and selection of Desktop Metal-engineered binders enable 3D printing with a wide variety of metals, including everything from stainless steels to reactive metals and high-performance alloys.

Inert, closed-powder environment

A closed-powder environment, inerted to < 2% Oxygen, safely supports a range of non-reactive and reactive metals. Isolation from ambient conditions produces powder with consistent characteristics and quality, facilitating part uniformity and repeatability.

Open material platform

The P-50 features an open material platform that allows customers to source the same metal powders used in the MIM industry or custom alloys from their supplier of choice, keeping costs low and ensuring compatibility with bulk sintering processes.

Desktop Metal engineered binders

Our proprietary binders are formulated to support an array of alloys and maximize success through every stage of the binder jetting process, ensuring jettability during printing, green part strength during depowdering, and clean burn off prior to sintering.

Competitive cost per part

Within the P-Series, the P-50 delivers part costs competitive with traditional manufacturing technologies through the use of low-cost metal injection molding (MIM) powders, high-speed printing, and the ability to densely nest many parts in a single build.

Low cost MIM powders

Both the P-1 and P-50 use low-cost MIM industry powders, a trusted powder supply chain that can scale to volume production. Up to 99% or more of the powder recovered during the process can also be recycled, driving further cost efficiencies while reducing waste.

High-speed printing

Up to tens of thousands of parts per day† can be 3D printed with the P-50's SPJ technology, delivering print speeds of up to 100x those of laser powder bed fusion systems.‡

Dense 3D nesting

By densely nesting parts in the build box, customers can efficiently deliver high-throughput builds. What's more, tooling-free binder jetting means parts are supported by loose powder and don't require welding to a build plate—or removal.

† Management estimates as of December 7, 2020.

‡ Based on published speeds of single-laser, mid-range laser powder bed fusion systems as of August 25, 2020.

Shop System™

Plug-and-play metal 3D printing using binder jetting

Print > Crosslink > Depowder > Sinter > Recycle

We've taken the most promising 3D printing technology for speed and mass production and packaged it in an easy-to-use, plug-and-play package. The Shop System is an ideal solution for anybody who wants to produce metal products quickly with an outstanding surface finish and resolution at scale, such as MIM houses and service bureaus.

With production rates up to hundreds of green parts per day, the Shop System produces parts up to 10x faster than laser powder bed fusion. Employing a ~1 pL droplet size, the Shop System achieves superior surface finish, bleed control, and rich feature detail at high speed. The Shop System is your doorway into the future of metal production.

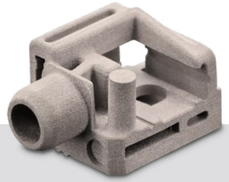
Key benefits

- Turnkey system, from printing through sintering and powder recycling
- High-resolution printhead with 1600 dpi
- 5x print redundancy
- Configurable build envelope
- Quality-controlled, turnkey powder solutions
- Flexible production, from low-volume batches through mid-volume production

Print technology	Binder Jetting
Build envelope (L × W × H)	
4L	350 × 222 × 50 mm (13.8 × 8.7 × 2.0 in)
8L	350 × 222 × 100 mm (13.8 × 8.7 × 3.9 in)
12L	350 × 222 × 150 mm (13.8 × 8.7 × 5.9 in)
16L	350 × 222 × 200 mm (13.8 × 8.7 × 7.9 in)
Max build rate	800 cc/hr at 75 µm layer thickness
Print resolution	Native 1,600 dpi

Real parts that reduce costs, shorten lead times, and increase revenue

Manufacturers across a range of industries use the turnkey Desktop Metal Shop System for mid-volume metal 3D printing production. These fully dense, high-resolution parts are made without tooling, shortening production time and producing 3D printed metal at a fraction of the cost of other additive technologies.



Sensor holder

Material	17-4 PH	**Parts per build**	186
Cost per part	$11.59	**Throughput per week**	1,511

Connector

Material	17-4 PH	**Parts per build**	26
Cost per part	$35.97	**Throughput per week**	358

Shower spindle

Material	17-4 PH	**Parts per build**	397
Cost per part	$5.65	**Throughput per week**	2,933

See the full list of printable materials, p. 32

Studio System™ 2

Office-friendly metal 3D printing with two steps and eight materials

Print > Sinter

The easy-to-use Studio System leverages proprietary Bound Metal Deposition™ (BMD), an extrusion-based metal additive manufacturing process where metal rods—metal powder held together by wax and polymer binder—are heated and extruded onto the build plate, shaping a part layer by layer. Once printed, the binder is removed via the debind process, and then sintered, causing the metal particles to densify.

The Studio System 2 is even easier to use than ever before with new material formulations allowing printed parts to be placed directly into the furnace without the need for a solvent debind. The result is a streamlined two-step process with a nearly hands-free experience. Eight materials are available, including a range of steels, copper, and nickel and titanium alloys.

Key benefits

- Easy, two-step processing
- User-friendly software-controlled workflow
- Patented smart Separable Supports™ technology for quick post-processing
- Qualified for eight materials
- Designed for office-friendly printing
- A trusted system used worldwide with success

Print technology	Bound Metal Deposition	**Layer height**	50–300 µm
Build envelope (L × W × H)	300 × 200 × 200 mm (12 × 8 × 8 in)	**Nozzle diameter**	250–400 µm

Simplified metal part production using safe-to-handle bound metal rods

The Desktop Metal Studio system creates metal parts for functional prototypes, tooling, jigs and fixtures, and low-volume production applications with expert metallurgy built-in. Easily produce difficult-to-machine parts featuring complex geometries like undercuts and internal channels to optimize metal components in an office setting.

Gear lab coupling fixture

Material	17-4 PH	**Desktop Metal cost**	$110.00
Traditional cost	NA	**Savings**	62%

UHT atomizer

Material	316L	**Desktop Metal cost**	$124.20
Traditional cost	$1,089.00*	**Savings**	89%

*Not possible to machine, DMLS cost.

Herringbone gears

Material	4140	**Desktop Metal cost**	$40.67
Traditional cost	$153.43†	**Savings**	73%

†Economy price from Xometry.

See the full list of printable materials, p. 32

X-Series

Binder jetting for specialty materials with Triple ACT

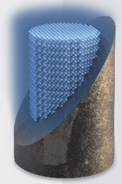
The Desktop Metal X-Series offers scalable binder jet 3D printing of specialty materials, including metals and ceramics, with high density and repeatability for precision end-use parts, and tooling in a range of build areas. These open material systems feature industrial printheads and patented Triple ACT advanced compaction technology, which dispenses, spreads, and compacts ultra-fine powders independently with tight control.

Triple ACT enables the use of both high- and low-flow materials with large and small particle sizes. The X-Series is used to process stainless steels, tool steels, nickel alloys, aluminum and titanium alloys, and metal composites as well as technical ceramics such as silicon carbide and aluminum-infiltrated boron carbide (B_4C).

Next-generation nuclear fuel with 3D printed silicon carbide

Ultra Safe Nuclear binder jets the heat-resistant technical ceramic silicon carbide in unique geometries that can safely surround nuclear fuel. The Desktop Metal X-Series enables scalable production of this innovation that is changing the paradigm of nuclear safety.

Read the story at TeamDM.com/usnc



InventX™

In production since 2016, this compact, easy-to-use system produces high-quality small parts

- Education and research
- Prototyping and rapid product development
- Short-run or batch production without tooling

Print technology	Triple ACT binder jetting	**Max build rate**	54 cc/hr at 65 µm layer thickness
Build envelope (L × W × H)	160 x 65 x 65 mm (6.3 x 2.5 x 2.5 in)	**Print resolution***	400 µm
Build volume	0.676 l (41 in^3)		

See the full list of printable materials, p. 32

X25Pro™

This flexible, mid-sized binder jet system can produce a wide range of geometries and help businesses scale from low to mid-volume production

- Research
- Prototyping and rapid product development
- Scalable batch or bridge production without tooling

Print technology	Triple ACT binder jetting	**Max build rate**	1,200 cc/hr at 65 µm layer thickness
Build envelope (L × W × H)	400 x 250 x 250 mm (15.75 x 9.84 x 9.84 in)	**Print resolution***	400 µm
Build volume	25 l (1,526 in^3)		

*Print resolution is based on using a 10 picoliter printhead and 30 µm layer. Results may vary on system configuration and materials used.

X160Pro™

The largest commercially available binder jetting platform for the production of large parts and specialty materials

- World's largest binder jet build volume
- Prototyping and rapid product development
- Large or high-volume part production without tooling

Print technology	Triple ACT binder jetting	**Max build rate**	3,120 cc/hr at 65 µm layer thickness
Build envelope (L × W × H)	800 x 500 x 400 mm (31.5 x 19.7 x 15.8 in)	**Print resolution***	400 µm
Build volume	160 l (9,763 in^3)		

Breakthrough DLP printers and materials

ETEC and Desktop Health are tightly focused on meeting the goals of general manufacturing and patient-centric applications

With an all-new category of proprietary DuraChain™ photopolymers that produces tough, rubber-like elastomers and FDA Class II-cleared Flexcera™ material that goes right into the mouth for demanding ceramic-like dentures, we're elevating the game in polymer 3D printing.

Desktop Metal's new polymer printing brands — ETEC for general manufacturing and Desktop Health for healthcare manufacturers — are rooted in the 2021 acquisitions of EnvisionTEC and Adaptive3D. Together, they're delivering breakthrough new value focused on delivering more reliable, easy-to-use technology paired with groundbreaking materials, with even more exciting, production-minded innovations on the horizon.

Our portfolio of photopolymers for industrial and health care applications includes hard and high-temperature plastics, biocompatible resins, castable clean-burnout resins, and elastomers, including our new DuraChain innovations, such as FreeFoam™ expandable 3D printed foam and Elastic ToughRubber™. Trusted third-party resin providers, such as Loctite, are also qualified on many of our systems.

- The world's largest, production-grade DLP system
- Premium desktop DLP for industrial customers
- Elastomer and foam parts on demand
- Designed-for-dental 3D printing

ETEC

Industrial-grade DLP printing with high throughput, precision, and performance

Established from Desktop Metal's 2021 acquisition of EnvisionTEC, the original inventor of digital light processing (DLP) technology, ETEC has long roots in the additive manufacturing industry. Today, ETEC has one of the most advanced portfolios of precision photopolymer printers and materials in the market, with a strong reputation for extreme levels of accuracy and surface finish.

ETEC professional and production-grade printers are the only systems in the market that support proprietary breakthrough DuraChain™ resins, an all-new category of resilient and durable photopolymers that includes Elastic ToughRubber™ and FreeFoam™, as well as print a range of industrial photopolymers from widely trusted brands, such as Loctite.

Ohio-based Aerosport Additive 3D prints Elastic ToughRubber™ parts on Xtreme 8K

Aerosport Additive is a premium service bureau for 3D printed and other types of polymer, metal and fiber-reinforced parts for prototypes and production. Aerosport uses two ETEC Xtreme 8K top-down DLP systems to produce elastomeric parts with Elastic ToughRubber™ material, such as the flexible automotive wire guide to the right 3D printed in ETR 90.

Read the story at TeamDM.com/Aerosport

Desktop

D4K

Desktop production of high-resolution, polymer end-use parts

Print technology	Digital Light Processing (DLP)
Build envelope (L×W×H)	148×83×110 mm (5.8×3.3×4.3 in)
XY resolution	25 µm (with patented pixel tuning)
Z resolution	25–150 µm (material dependent)

Desktop

Envision One

Rapid production of strong, fully isotropic end-use parts

Print technology	Continuous Digital Light Manufacturing (CDLM)
Build envelope (L×W×H)	180×101×330 mm (7.09×3.98×13 in)
XY resolution	60 µm (with patented pixel tuning)
Z resolution	50–150 µm (material dependent)

See the full list of printable materials, p. 32

Production

P4K

Lights-out, 24/7 production of ultra-high resolution end-use parts

Print technology	Digital Light Processing (DLP)
Build envelope (L×W×H)	From 90×56×180 mm (3.5×2.2×7.1 in) to 233×141.5×180 mm (9.1×5.7×7.1 in)
XY resolution	23–59 µm (with patented pixel tuning)
Z resolution	25–150 µm (material dependent)

Production

Xtreme 8K

A top-down DLP printer with two projectors for high-volume production of large end-use parts or high throughput of smaller parts

Print technology	Top-Down Digital Light Processing
Build envelope (L×W×H)	450×371×399 mm (17.72×14.61×15.71 in)
XY resolution	100 µm (with patented pixel tuning)
Z resolution	100–175 µm (material dependent)

Desktop Health

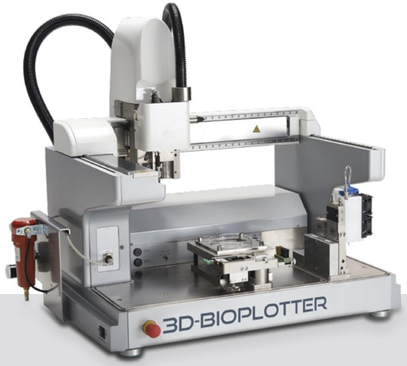
High-performance DLP printers and materials for demanding medical and dental applications

Desktop Health is focused on accelerating the growth of additive manufacturing solutions for medical and dental applications with high requirements for biocompatibility, accuracy, and durability.

Backed by 20 years of research and development, more than 1,400 published papers, and 3D-Bioplotter and DLP technology, coupled with industry-leading FDA Class II cleared Flexcera resins for permanent dental restorations, Desktop Health is leveraging proven technologies to create breakthrough, patient-specific healthcare products.

3D-Bioplotter Systems

	Starter Series	Developer Series	Manufacturer Series
Build envelope (L×W×H)	260×220×70 mm (10.24×8.66×3.15 in)	200×220×140 mm (7.87×8.66×5.51 in)	200×220×140 mm (7.87×8.66×5.51 in)
Print heads	Supports up to 2 fixed heads	Supports up to 3 modular heads	Supports up to 5 modular heads
Needle tip calibration accuracy (XY)	30 µm	30 µm	9 µm
Platform height control	Not available	Optional	Included
High definition camera	Not available	Not available	Included



3D-Bioplotter®

The 3D-Bioplotter is the most researched biofabrication printer in the industry, and one of the most durable and long-lasting nameplates in all of 3D printing.

Einstein™ + Flexcera™

Launched in 2021, the all-new Einstein desktop printer delivers exceptional accuracy with speeds up to 50 percent faster than its predecessor. Equipped with Hyperprint™ technology to harness the power of heat, closed-loop sensors, and software, the Einstein is an affordable and fast tool that's easy to use for dental clinicians or labs.

What's more, the Einstein prints the new Flexcera family of dental materials, which includes Flexcera Base, Smile, and Smile Ultra+, a set of ceramic-strong materials that have high fracture resistance and a beautiful aesthetic and fit.

With the Einstein and Flexcera, dental providers can now print same-day smiles, including crowns, bridges, veneers, and full and partial dentures with an easy-to-use package of solutions.

Einstein

Print technology	Digital Light Processing (DLP) with HyperPrint™
Build envelope (L×W×H)	190×107×101 mm (7.48×4.21×4 in)
XY resolution	65 µm (with patented pixel tuning)
Z resolution	25–150 µm (material dependent)

Pioneering digital metalcasting

ExOne printing systems produce sandcasting molds and cores for foundries and manufacturers without traditional tooling, unleashing new innovations and value

Around the world, ExOne sand 3D printers deliver valuable, modern technology that is transforming the centuries-old method of sandcasting. By eliminating the time and cost of traditional hard tooling, ExOne printers help foundries and manufacturers stay competitive by directly producing sand molds and cores for castings of any volume, usually within days.

The benefits don't stop there. While casting prototypes or end-use production parts with digital casting gets products to market faster, the technology also enables part consolidation and organic designs that deliver meaningful weight savings to new products, as well as innovative new designs that were once impossible. Foundries are using ExOne systems to print consolidated cores, reducing assembly labor, and incorporate previously impossible rigging features into molds that help deliver done-in-one pours.

- Binder jetting systems for every foundry
- Growing business with fast production
- Working efficiently with less labor
- Increasing yield with reduced core assemblies

Sand Success Stories

Real foundries, real binder jet solutions

Foundries around the world use our binder jet 3D printing technology to deliver meaningful solutions to their customers and their bottom line. From eliminating the need for hard tooling and operating more efficiently in the absence of labor to consolidating core assemblies and innovating lightweight designs, ExOne customers are revolutionizing metalcasting with digital sand production.

See Alpha Foundry in action at TeamDM.com/AlphaFoundry

Reduced core assembly increases yield at lower costs

Xylem used ExOne binder jetting to enable just-in-time production of an impeller casting and cut lead times by 70%. The four-piece assembly was reduced to a single core using the freedom of design of 3D printing eliminating the need for assembly delivering higher quality at a lower cost.

Lightweighting with digital sand

Ventana showcases the design possibilities of digital sand core production for lightweight components. With topology optimization and a 3D printed sand core, this cast magnesium aircraft door hinge was 40% lighter than the traditional aluminum component.

Two-shift productivity in one shift with lights-out 3D printing

One of the largest producers of critical cast-iron components in the U.S., Grede recognized that advanced processes like binder jet 3D printing was key to their future growth. Its two ExOne systems enable them to do more with less, consolidating core assemblies and decreasing delivery times.

Rapid prototyping of top-quality castings

With nine decades of experience in sandcasting innovation and ten ExOne 3D printers around the world, Kimura Foundry places sand binder jetting at the core of its business to deliver top-quality rapid prototypes without tooling in ceramic sand to eliminate veining and other casting defects.

Eliminating traditional tooling enables production design iterations

Hoosier Pattern recognized the coming change to the foundry industry and embraced 3D printing to open new business opportunities. Complex 3D printed cores that replace traditional core boxes allow continuous iteration of serial production designs in value-adding ways.

Download the details

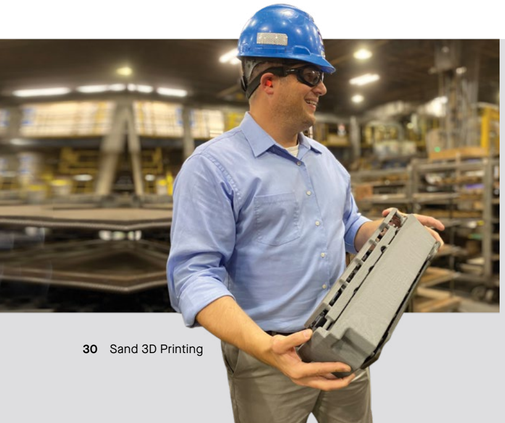
See our library of complete case studies with videos
TeamDM.com/SandSuccess

ExOne

Digitally optimizing sandcasting for complex, quick-turn metal parts

ExOne's family of sand 3D printers is the most popular in the world for digital manufacturing of sand cores and molds for sandcasting, solving production challenges for applications across a variety of industries. Our trusted machines support prototyping, serial production, and parts on demand, enabling foundries to go from design to metalcasting in hours or days instead of weeks and months.

No more patterns needed for sand molds. No more core boxes needed for blowing cores. No jigs or fixtures needed for core assembly. Print complex cores in one piece. This is how cores were meant to be made.



S-Max® Flex

Robotic system to provide faster payback and easy integration into digital casting

- User-friendly design
- Fast, flexible production
- Robust scalable architecture

Job box (L×W×H)	1,900×1,000×1,000 mm (74.8×39.3×39.3 in)	**Dimensional accuracy**	± 0.5 mm
Max throughput	115 l/hr	**Print media**	Silica sand
Layer thickness	0.28–0.5 mm	**Binder system**	Furan

S-Max®

The original S-Max for trusted, reliable core and mold production

- Rapid product development
- Short-run production
- Optional second job box

Job box (L×W×H)	1,800×1,000×700 mm (70.9×39.4×27.6 in)	**Dimensional accuracy**	± 0.5 mm
Max throughput	125 l/h	**Print media**	Silica and ceramic sands
Layer thickness	0.2–0.5 mm	**Binder system**	Furan, phenolic

S-Max® Pro

Our fastest and smartest system for core and mold production with the widest range of binders, including inorganic

- Remote monitoring options
- Interchangeable job box
- 24/7 production

Job box (L×W×H)	1,800×1,000×400/700 mm (70.9×39.4×27.6/15.8 in)	**Dimensional accuracy**	± 0.5 mm
Max throughput	145 l/h	**Print media**	Silica and ceramic sands
Layer thickness	0.2–0.5 mm	**Binder system**	Furan, phenolic, inorganic

Team DM master materials list

At Desktop Metal, we offer more than metals now. Our materials library spans virtually every category, from metals and polymers, to ceramics, composites, and even upcycled materials such as wood.

In an effort to drive production 3D printing to the masses, our qualified materials are designed to ensure that you can 3D print with success and deliver the high-quality parts you need for end-use production. In fact, you won't find a more flexible Additive Manufacturing partner for the long term.

Our materials have been developed by an in-house team of world-leading materials scientists, as well as leading industry partners. Explore our portfolio.

Qualified
Printing and sintering profiles developed by Desktop Metal, with fully characterized material and mechanical properties.

Customer Qualified
Printing and sintering profiles developed by or in partnership with customers and/or partners, with material and mechanical properties suitable for customer/partner applications.

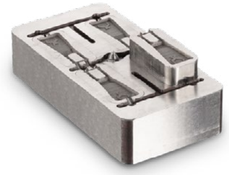
R&D
Initial testing completed by Desktop Metal demonstrating binder and process compatibility. Printing and sintering profiles under final development.

Metal

Industry standard metals trusted by manufacturers	Desktop Metal			
	Studio System	Shop System	X-Series	Production System
17-4 PH Stainless Steel	Qualified	Qualified	Qualified	Qualified
304L Stainless Steel		R&D	Qualified	
316L Stainless Steel	Qualified	Qualified	Qualified	Qualified
4140 Low-Alloy Steel	Qualified		R&D	Qualified
420 Stainless Steel			R&D	
440C Stainless Steel				Qualified
4340 Low-Alloy Steel			R&D	
4605 Low-Alloy Steel			R&D	
Aluminum 6061			R&D	R&D
Bronze			R&D	
Cobalt Chrome		Qualified*	Customer Qualified	
Copper	Qualified		Customer Qualified	Qualified
D2 Tool Steel	Qualified			Qualified
DM HH Stainless Steel				Qualified
Gold			Customer Qualified	Customer Qualified
H13 Tool Steel	Qualified		Customer Qualified	R&D
Hastelloy			R&D	
Haynes 230			R&D	
Iron-Chrome-Aluminum			R&D	
M2 Tool Steel			Qualified	
Nickel Alloy Inconel 625	Qualified	R&D	Customer Qualified	Qualified
Nickel Alloy Inconel 718		R&D	Qualified	Qualified
Panacea (Ni-free Stainless Steel)			R&D	
S7 Tool Steel				Qualified
Silver			Customer Qualified	Qualified
Titanium (Ti64)	Qualified		R&D	R&D
Tungsten			R&D	
Tungsten Carbide Cobalt			Customer Qualified	R&D
Tungsten Heavy Alloy			Customer Qualified	
TZM Molybdenum			R&D	

*Not currently qualified for medical applications.
Material availability as of May 2022. Subject to change.



Images (left to right):
Silver rings
17-44 PH golf club putter
IN625 gears
H13 injection mold

Ceramic

Technical and natural ceramics	Desktop Metal		ExOne			
	X-Series	Production System	S-Max Flex	S-Print	S-Max	S-Max Pro
Alumina	R&D					
Aluminum Nitride	R&D					
Carbon	Qualified			Qualified		
Glass	Qualified					
Natural Sands			Qualified	Qualified	Qualified	Qualified
Silicon Carbide	Customer Qualified					
Synthetic Sands				Qualified	Qualified	Qualified
Tungsten Carbide Cobalt	Customer Qualified	R&D				

Ceramic material is not fully qualified for medical applications.

Polymer

Exclusive resins developed by ETEC and Adaptive3D as well as trusted providers such as Loctite	ETEC				
	Vida	Envision One	D4K	P4K	Xtreme 8K
CASTABLE RESINS					
Easy Cast 2.0	Qualified	Qualified			
EPIC			Qualified	Qualified	
PIC 100	Qualified		Qualified	Qualified	
WIC100 Series			Qualified	Qualified	
ELASTOMERS					
Adaptive3D Elastic ToughRubber™ 70 Black					Qualified
Adaptive3D Elastic ToughRubber™ 90 Black					Qualified
Adaptive3D Soft ToughRubber™ 30					Qualified
FreeFoam™					R&D
Loctite IND 402		Qualified			
HARD PLASTICS					
E-Clear		R&D		R&D	
INFINAM ST 6100 L				Qualified	
E-Guide Soft		Qualified	Qualified	Qualified	
E-Rigid Form		R&D	R&D	R&D	R&D
E-Shell Pink				Qualified	
E-Tough Flex		Qualified	Qualified	Qualified	
Loctite 3172 Black		R&D			
Loctite 3843 Black		Qualified			Qualified
Loctite IND 405 Clear		Qualified			Qualified
Loctite Med 413		Qualified			
RC70			Qualified	Qualified	
RC90			Qualified	Qualified	
HIGH TEMPERATURE					
E-Perform				Qualified	
E-Mould		R&D	R&D	R&D	
HTM 140		R&D	R&D	R&D	
Loctite 3955 HDT 280 FST					
Loctite IND 147		Qualified			
Loctite IND 406		Qualified			

		Desktop Health
	Envision One	D4K	Einstein
DENTAL / MEDICAL			
E-Guard	Qualified	Qualified	Qualified
E-Guide	Qualified	Qualified	Qualified
E-Gum	Qualified	Qualified	R&D
E-IDB	Qualified	Qualified	R&D
E-Keysplint Soft	Qualified	Qualified	R&D
E-Model Beige	Qualified	Qualified	R&D
E-Model Light	Qualified	Qualified	R&D
E-OrthoShape	Qualified	Qualified	R&D
E-Tray	Qualified	Qualified	R&D
Flexcera™ Base	Qualified	Qualified	Qualified
Flexcera™ Smile	Qualified	Qualified	Qualified
Flexcera™ Smile Ultra+	Qualified	Qualified	Qualified
Model X	Qualified	Qualified	Qualified
Model Z	Qualified	Qualified	Qualified
Press-E-Cast	Qualified	Qualified	R&D

Composite

CF Carbon Fiber **FG** Fiber Glass

	Desktop Metal	
	Fiber	X-Series
+CERAMIC		
Boron Carbide i/w Aluminum		Customer Qualified
Silicon Carbide i/w Silicon		Customer Qualified
+METAL		
316i		Qualified
420i		Qualified
Iron i/w Bronze		R&D
Tungsten i/w Bronze		Qualified
Tungsten i/w Copper		R&D
Tungsten i/w Invar		R&D
+POLYMER		
Nylon + Chopped CF	Qualified	
Nylon + Continuous CF	Qualified	
PEEK + Chopped CF	Qualified	
PAEK + Continuous CF	R&D	
PEKK + Chopped CF	R&D	
Nylon + Chopped FG	R&D	
Nylon + Continuous FG	R&D	

Biofabrication

HT High Temperature
LT Low Temperature

RG Research Grade
MG Medical Grade
TG Technical Grade

		Desktop Health
		3D-Bioplotter
2K Silicone 50A RG	Soft tissue materials	Qualified
LT Hydroxyapatite RG	Bone/cartilage materials	Qualified
HT PCL 45K RG	Bone/cartilage materials	Qualified
HT PCL 80K MG	Bone/cartilage materials	Qualified
HT PCL 120K MG	Support materials/other	Qualified
HT Support RG	Bone/cartilage materials	Qualified
LT Silicone TG	Support materials/other	Qualified
LT Support RG	Support materials/other	Qualified
LT TissueInk RG	Soft tissue materials	Qualified
UV Silicone 60A MG	Soft tissue materials	Qualified

Wood

Rematerializing wood waste to produce beautiful end-use products.

Please visit **Forust.com** for more information.

Images (left to right):
Complete dentures 3D printed and assembled in Flexcera™ Base and Flexcera™ Smile.
The black shroud of the DustBuddie from Dustless® Technologies is 3D printed in Elastic ToughRubber.
Propeller blades binder jet 3D printed from sawdust and bio-epoxy resin in a variety of finishes.

Additive Manufacturing 2.0

Metal | Polymer | Ceramic | Composite | Wood

3D printing solutions with the speed, quality, and repeatability suitable for mass production.

Desktop Metal is accelerating the transformation of manufacturing with an expansive portfolio of 3D printing solutions, from rapid prototyping to mass production. Founded in 2015 by leaders in advanced manufacturing, metallurgy, and robotics, the company is addressing the unmet challenges of speed, cost, and quality to make additive manufacturing an essential tool for engineers and manufacturers around the world.

Desktop Metal was named one of the world's 30 Most Promising Technology Pioneers by the World Economic Forum, included on MIT Technology Review's list of 50 Smartest Companies, and awarded the 2021 Fast Company's Innovation by Design Award in materials and Next Big Thing in Tech Award for sustainability.

Printer platforms

Desktop Metal

Desktop Health

ETEC

ExOne

Materials

ADAPTIVE3D

FORUST

Applications and more

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