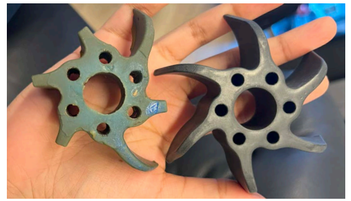
Partners for Production Challenges

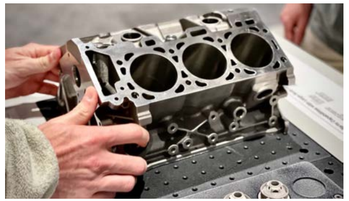
Desktop Metal

Metal | Polymer | Ceramic | Foam

- Minimize Supply Chain Risks
- Meet High Performance Requirements
- Replace Critical Parts Faster
- Deliver Lightweighting Improvements
- Deliver Complex Designs Efficiently
- Consolidate Parts for New Efficiency Gains
- Simplify Processing of Challenging Materials
- Innovate Competitive New Product Designs

AM2.Production

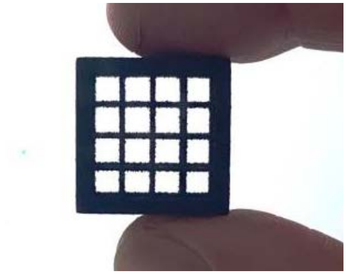


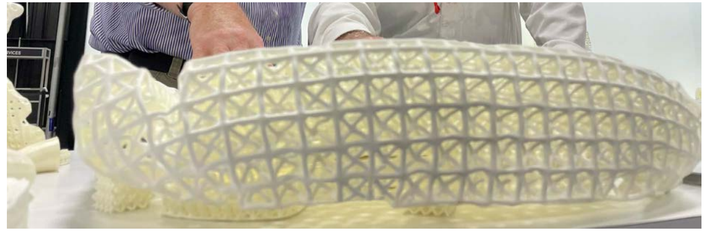


We deliver complex, production-ready additive

Whether your goal is to improve performance, minimize weight, or operate more sustainably, we help customers optimize and scale our AM 2.0 technologies to high-volume production for polymers, metals, and ceramics.

The pictures on this page represent some of our customers' production challenges, from 3D printed precious metals to silicon carbide collimators and foam automotive seats.





We know shifting from traditional manufacturing to additive processes can still be viewed risky. That's why you need a partner.

Our AM2.Production team is here to ensure your success, both technically and economically

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 other materials into the AM 2.0 serial production future.

Our strategy for delivering on this future has three legs.

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

Binder jetting (BJT) and digital light processing (DLP) are two area-wide technologies we view as critical in this endeavor.

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. We also routinely work with manufacturers to develop unique materials and properties.

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 production-grade 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 from Desktop Heath, 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.

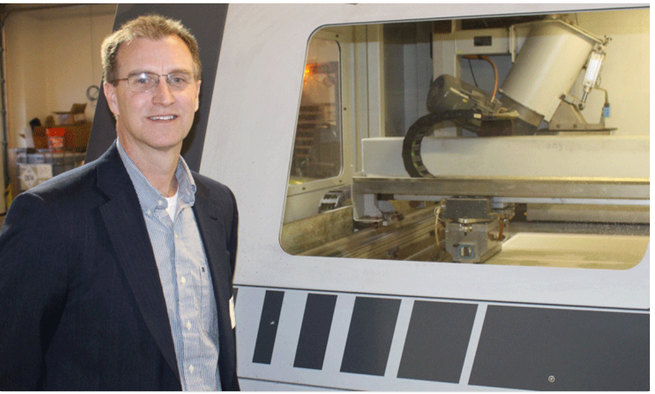
At the same time we're delivering on these legs, we know shifting from traditional manufacturing to additive manufacturing can still be viewed as risky within many organizations.This is where our AM2.Production adoption services come in.

AM2.Production is a custom program we develop with you to ensure your success, both technically and economically. We're delighted to offer these services because we passionately believe in the efficiency, sustainability, and performance benefits that we know only AM 2.0 can deliver.

Learn more about our seasoned team leaders and program options in this guide.

Metal and Ceramic Solutions

Based in Massachusetts, Pennsylvania, and Germany, the metal and ceramic AM2.Production team is actively transitioning binder jet 3D printing technology—already been proven robust for serial production sandcastings by the BMW Group and other high-volume manufacturers—to the production floor with metal and ceramic powders



Under the guidance of Rick Lucas, the Desktop Metal technical ceramic and metal binder jetting teams partner with leading manufacturers to tailor 3D printing solutions to toughest production challenges; from mass production on scalable manufacturing cells to out-of-this-world space innovations with silicon carbide.

Lucas' tenure with Desktop Metal began with the 2021 acquisition of ExOne, where he served as Chief Technology Officer for nearly a decade. Overseeing the development of future markets and advanced applications since, Lucas has led a team of engineers who act as an extension of our customers' teams to develop critical applications and material breakthroughs.

While Desktop Metal's binder jetting systems can unleash a multitude of benefits, from lightweighting to part consolidation, getting there is rarely as easy as *just press print*. Lucas' team specializes in tailoring production solutions to the unique challenges found in a range of industries including automotive, defense, and space.

With a portfolio of 3D printing platforms specialized for various manufacturing scenarios and feedstocks, Lucas and his team help customers understand the best solution to match their production challenge. From scalable application development with qualified materials to customized workflows and new material research, our AM2.Production team has the process and industry experience to ensure binder jetting is an in-house success for a range of use cases.

Binder jetting has already been successfully adopted for research, batch, and volume production by innovative manufacturers around the world. Lucas' team is dedicated to helping even more companies unlock the benefits of of this AM 2.0 area-wide technology.

Rick Lucas
Senior Vice President, Metal+
rick.lucas@desktopmetal.com

See the Video!
Watch how BMW uses Team DM technology in serial production

TeamDM.com/BMW

Polymer and Foam Solutions

Based in Texas, the AM2.Production polymer team is transitioning Digital Light Processing (DLP) technology to high-throughput prouduction polymer applications enabled by new approaches to DLP that unleash our breakthrough DuraChain™ elastomeric resins, such as FreeFoam™

Led by Walter Voit, Ph.D., Director of the Center for Engineering Innovation at the University of Texas, Dallas, Desktop Metal's polymer team is currently working with global manufacturers and health care systems on exciting production projects in footwear, seating, critical sealing, and other applications.

His leadership at Desktop Metal began with the 2021 acquisition of Adaptive3D, a company Voit founded on the material he invented through the course of a Defense Advanced Research Projects Agency (DARPA) funded project.

While Desktop Metal's DLP hardware, sold under the ETEC and Desktop Health brands, processes a wide range of hard, heat-resistant, castable, biocompatible, and other polymers, Voit's AM2.Production team specializes in a proprietary reaction chemistry that imparts elongation and toughness to photopolymeric resins that can withstand end use in demanding environments such as footwear, transportation, oil& gas and industrial settings.

These formulations deliver high-performance materials that are easy to process because they are one pot, one part, pot-stable chemistries.

DLP has already been proven for high-volume production in batch production for years through the dental and hearing aid sectors, where fleets of thousands of machines have been deployed globally for years. Voit's team is now scaling these DLP systems in new ways that leverage his DuraChain resins for even higher throughput serial applications.

Voit's team can guide customers interested in footwear, seating and cushioning, toys, and sealing applications — or any application where additive manufacturing of elastomers could be helpful.

Walter Voit
Senior Vice President, Polymer Materials
walter.voit@desktophealth.com

Learn More!
Watch FreeFoam expand and get the specs for this innovative resin

TeamDM.com/FreeFoam

AM2.Production Partnership

Solutions for complex problems

Every manufacturer has challenges. Whether it's getting new products to market faster on budget, delivering on tougher new performance requirements, improving your sustainability footprint, or delivering on once-impossible advancements.

Desktop Metal's AM2.Production team can help you solve it. We're home to the world's leading team of additive manufacturing experts in metals, ceramics, and polymers, including elastomers and foams.

Our team has been successfully using binder jetting and digital light processing technologies to help solve complex challenges for global companies for decades now. That includes automakers, medical device, industrial, and consumer goods companies, as well as government and defense agencies.

Our process includes a complete discovery and intake of your challenges and an analysis of your requirements for design and geometry, material properties, accuracy, and functional performance. We lead a detailed discussion of your business challenges, such as time to market, supply chain constraints, and part cost requirements.

We will collaborate with you to determine if one of our technologies can deliver a solution for your production challenges.

Our Partnership Process

Adopting cutting-edge technology can feel risky compared to just doing it the same old way. Our production adoption process helps to ensure your success following a low-risk model. We help you make an informed decision whether binder jetting or DLP is right for your application — from both a technical and business perspective — and we partner with you for the whole journey.

1 BENCHMARK & INITIAL QUALIFICATION

SAMPLE OR CUSTOM PART

Evaluate a free sample or your custom part for a fee

Discussion of key requirements:

- Design & Geometry
- Material Properties
- Accuracy
- Functionality

2 STATEMENT OF WORK

SCOPE PROJECT

Process optimization for parts

Our expert team optimizes our process for your part requirements, providing key details on timing, materials, recipe settings, etc. with complete testing

3 VALIDATE TECHNICAL & BUSINESS CASE

FEE-BASED SERVICES AS AGREED

Comprehensive executive report

A complete executive report and timeline is provided with details needed to validate both the technical and business case to proceed

4 START OF PRODUCTION & DELIVERY PROCESS

Production option selected, begins

- We can produce your parts long-term
- Or, proceed with purchase of printing systems and customized work cells. We can print your parts until installation.

5 WHITE-GLOVE WORK CELL DELIVERY

Installation of complete system

In line with final agreement, we install complete systems and execute first test runs. After acceptance is complete, we continue to support your operations and success.

Co-Location For the Win

Whether you want to print metal, ceramics, or polymers at production volumes, co-location has proven to be a critical success factor

What is co-location? Simply put, we run your machine in our facilities during a period of optimization and post-processing to prove-out of the processes for your parts.

During this time, you can engage with us with a full, minimal, or custom hybrid support package to ensure you and your team are ready to take the keys to your AM2.Production work cell. A minimum engagement typically runs three months and usually not longer than six months to a year, depending on the platform and material.

For most customers, we know that production with AM methods is still a cutting-edge transition, and we want you to be prepared with a full knowledge transfer before you connect 3D printing to your production operations. During this time, your system will usually have a dedicated or shared technical resource, and we can provide Design for Additive Manufacturing (DfAM) support as needed.

Your team will have the opportunity to work alongside our skilled operators to learn how to be successful with AM2.Production equipment.

- Metal or ceramic printers may be installed at one of several locations in the U.S. or Germany, depending on expertise required
- Polymer production systems will be located in Richardson, Texas

Learn More!
Watch the video from our polymer co-location center in Texas

TeamDM.com/CoLocation

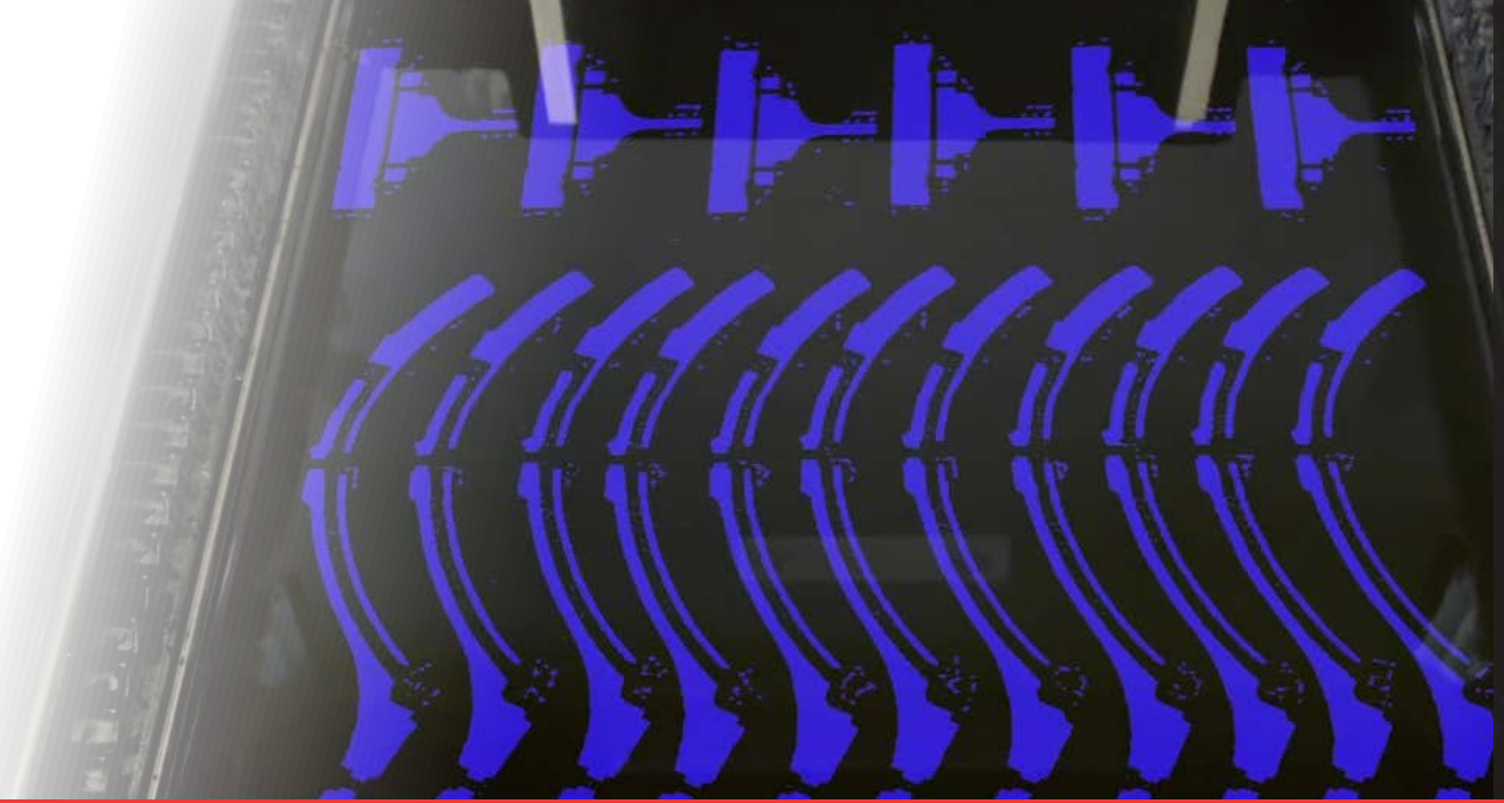
Our Area-Wide Technologies

Production-ready processes that unlock the next era of digital manufacturing - AM 2.0

Whether binder jetting technology (BJT) or digital light processing (DLP), area-wide 3D printing translates to speed. Entire layers are completed in one fast step, whether through the jetting of binder across a powder bed or illumination of a projector light into a vat of resin. Each area-wide layer takes exactly the same amount of time regardless of how many parts are in the build. As a result, the print time is less dependent on the quantity of parts in a build and more dependent on the height of a build, which determines how many layers will be needed to complete the job.

While many other additive technologies trace out geometries with a single point, or multiple individual points, area-wide printing is simply a more effective strategy for processing layers with the speed to deliver the throughput and costs the manufacturers require to use 3D printing for volume production.

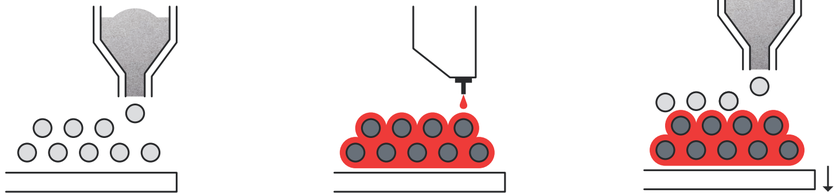
- Binder jetting technology for metals, ceramics, sands, and upcycled powdered materials
- Digial light processing technology for polymer resins



Area-Wide Additive Manufacturing

Binder Jetting

- Digital File Prep
- Machine & Material Prep
- 3D Printing



Powder layer

The recoater applies the first thin layers of metal powder in the print area or job box.

Liquid binder

A gantry of inkjet industrial printheads selectively applies binder to the powder to bind particles together where desired. Different binders work with different materials to achieve desired results.

Lower & recoat

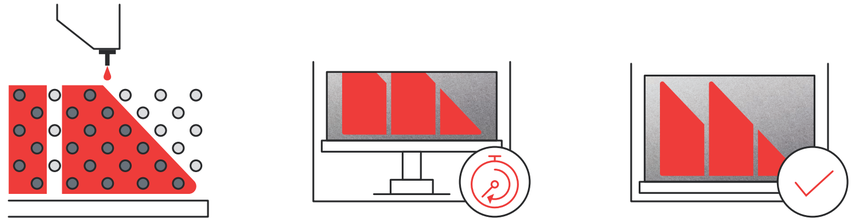
After each layer, the bed lowers for the next layer to be applied. Recoating is a critical step in binder jetting, as the consecutive powder layers must be precisely and compactly applied to deliver a high-quality precision part. Whether using coarse or fine particles, powder handling is a critical element of successful binder jetting.

Binder Jet Technology

Developed at MIT, commercialized by Desktop Metal and its Team DM brands, including ExOne. Fast and flexible, from materials to output types. Binder jetting is a method of 3D printing in which an industrial printhead quickly deposits a liquid bonding agent onto a thin layer of powdered particles, such as metals, foundry-grade silica, or ceramics. The process is repeated layer by layer using a map from a digital design file, until the object is complete.

Learn More!
Download the Ultimate Guide to Binder Jetting

TeamDM.com/BJTguide



Repeat steps

Once the next powder layer has been applied to the print area, the stage has been set for the next layer of binder to be selectively deposited. This recoating-and-binding sequence is repeated until the part is complete.

Fast layer speed

With a full sweep of printheads, a binder jet 3D printer can complete a full layer very quickly. This is one of the core benefits of binder jetting compared to other additive manufacturing methods.

Printing complete

Once the print job has finished, parts can be removed from the print area or job box. Depending on the material and binder used, additional curing and post-processing steps may be necessary. Metal parts typically require curing and sintering.

Next steps depend on application and specific materials. For metals

- Curing
- Depowder
- Debind & sinter

Digital Light Processing

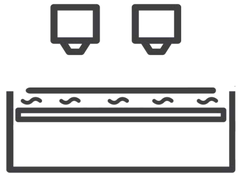
- Digital File Prep
- Machine & Material Prep
- 3D Printing

DLP Technology

Digital Light Processing, or DLP, harnesses the power of light from a video projector to cure photosensitive liquid resins into parts layer-by-layer, one quick flash at a time. A thin layer of photopolymer resin is cured during light exposure by the projector. Platforms traditionally operate with a bottom-up design that places the projector below the vat. The next-generation ETEC Xtreme 8K features two industrial overhead projectors stationed above the resin, which allows it to offer the largest DLP build area among commercially-available, production-grade DLP printers, as well as enabling printing of new, innovative materials.

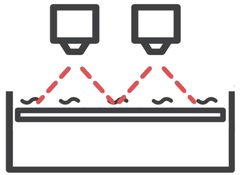
Learn More!
Download the Ultimate Guide to DLP 3D Printing

TeamDM.com/DLPguide



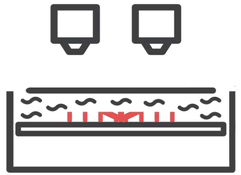
Start layer

Dependening on the DLP technology used, a recoater may smooth a layer of resin across the vat (top-down, as depicted), or the build plate moves vertically along the z-axis, creating a thin layer of resin between the build plate and the bottom of the vat (bottom-up).



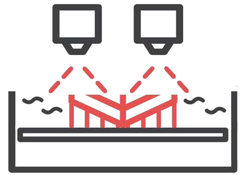
Illuminate projector

UV light selectively projected by one or more DLP chips cures the photosensitive liquid resin in one quick flash.



Recoat resin

After each layer, the build plate lowers and is passed with a recoater (top-down) or lifts up in the z-axis, pulling the cured layer off the floor of the vat allowing the next layer of liquid resin to seep under the build plate for the next layer (bottom-up).



Repeat steps

Once the next resin layer has been prepared in the print area, the stage has been set for the next layer of resin to be selectively cured. This sequence is repeated layer-by-layer until the part is complete.

Fast layer speed

With a single flash of a projector, a DLP 3D printer can complete a full layer very quickly. This is one of the core benefits of area-wide digital light processing compared to other additive manufacturing methods.

Printing complete

Once the print job has finished, parts can be removed from the print area. Depending on the material used, additional curing, cleaning, and post-processing steps may be necessary.

Next steps depend on application and specific materials. Often:

- Support removal
- Wash
- UV Cure

Materials we've developed together with customers

- Alumina
- Aluminum
- Carbon
- Copper
- Glass
- Gold
- Silcon carbide
- Silver
- Titanium
- Tungsten carbide
- Wood

This aluminum 6061 engine block model demonstrates the high resolution and geometric control produced in a patented binder jet 3D printing and sintering process developed in partnership with Ford Motor Co.

Binder Jetting of Metals, Ceramics, Sand, and Upcycled Materials

With a variety of binder jetting technologies and platforms, Desktop Metal's experts are uniquely positioned to help customers tailor their production process. With over two decades of leading industry-focused research teams, Rick Lucas and our engineers partner with the most innovative companies to deliver production-ready binder jetting applications in a range of materials, from reactive metals to technical ceramics.

While 3D printing has been around for a while, we recognize that moving to binder jetting for production is still new for most manufacturers.

Our team is trained to help unleash all the benefits of 3D printing — geometric freedom, lightweighting, part consolidation, waste reduction, and more — while minimizing the risk that comes with a major shift in production strategies.

We've honed a process that gives your team critical technical and business checkpoints that de-risks your move to binder jetting. We know what it takes to get it right, and we're committed to making your move a success.

We don't just sell production binder jet 3D printers — we sell a complete solution crafted by a team that's been binder jetting for more than 20 years. We become an extension of your team and partners in your success, no matter where you operate around the world.

How we can help

We support manufacturers from benchmarking services to work cell development to ensure their success with binder jet 3D printing

- Delivering a business case analysis and cost modeling
- Engineering services
  - Process capability studies and alpha printing
  - Design for Additive Manufacturing (DfAM)
  - Work cell and facility planning
- Ramp-up and bridge production services
- Application qualification
- Material development
- Third-part material qualification
- R&D and joint development programs in the Americas, Europe, and Asia

Rick Lucas
Business Leader,
Metals and Ceramics

Infiltrated Sand Tooling for the Production of Plastic, Composite, or Metal Parts

We recognize the potential of sand to offer a cost-effective tooling solution with rapid turnarounds. With ExOne binder jetting machines at its core, the process takes advantage of the fast output and large-scale capabilities of the S-Max® family of machines to quickly create complex shapes that are transformed into tooling for a variety of sandcasting and forming applications.

Explore how we can help you transform your tooling landscape with 3D printed sand durable enough to produce metal, plastic, and composite end-use parts.

We offer benchmarking and complete systems to help

- Get to market faster without long lead times
- Design freedom for fast iterations and product variations
- Cost-effective, local tooling to de-risk supply chains

Binder jet technology on Desktop Metal brand ExOne sand 3D printing machines provides the speed of on-demand production with the nimbleness of local, digital tooling. Shorten lead times, lower tooling costs, and improve design flexibility with a range of 3D printed solutions for virtually any challenge.

X1 SandCast

ExOne's market-leading sand 3D printers quickly and accurately produce even the most complex sandcasting molds and cores. Trusted for more than 20 years, ExOne premium machine tools deliver innovative designs faster with organic geometries and consolidated assemblies that improve the quality and increase the complexity of cast products.

X1 ThermoForm

On-demand tooling for thermoforming, vacuum forming, or other compression tooling applications delivers tools more durable than other low-cost options that are able to withstand high temperatures, multiple hits, or even allow for full vacuum to be pulled in the forming process, all without delamination or failure.

X1 Layup

Get to composite layup faster with our patented infiltrated sand solutions. Whether low-cost prototyping or premium production tools, X1 Layup molds delivers complex geometries durable enough to withstand the temperatures and pressures of autoclave with a CTE comparable to aluminum and fast turnaround times.

X1 Washout

Eliminate the expense, lead time, and manufacturing challenges associated with production of composite parts with trapped geometries. X1 Washout creates a sacrificial 3D printed sand core for hollow objects that washes away with tap water after standard layup and autoclaving.

Automotive seats 3D printed in innovative FreeFoam™ photopolymer resin that can be expanded in an oven after printing. Left showcases the material after 3D printing, while the seat on the right shows the fully expanded seat after a quick trip through an oven.

DLP Printing for Foams, Elastomers, and More

Based in Richardson, Texas, Desktop Metal's Polymer Center of Excellence is led by Walter Voit, Ph.D., also Director - Center for Engineering Innovation at the University of Texas at Dallas. He is leading the company's vision to deliver breakthrough, production-caliber AM 2.0 solutions for polymers through a combination of material, hardware, and software innovations.

In 2014, Voit founded Adaptive3D, a leader in photo curable elastomeric polymers, which was acquired by Desktop Metal in 2021.

Voit's experienced innovation team has led the successful invention and commercialization of an all-new category of DuraChain™ materials, which now includes several 3D printable, production-quality materials like Elastic ToughRubber™, Soft ToughRubber™ and revolutionary expanding FreeFoam™.

The team is already leading several large-scale AM2.Production projects, including one with the U.S. Department of Veterans Affairs to develop, test, and manufacture a variety of 3D printed healthcare products with FreeFoam™, as well as projects with major manufacturers in the automotive, bedding, and footwear industries.

How we can help

We support manufacturers from benchmarking services to work cell development to ensure their success with DLP additive manufacturing

- Remote and on-site trainings
- Engineering services
  - Process capability study
  - Business case development
  - Latticing and Design for Additive Manufacturing (DfAM)
  - Work cell and facility planning
- Ramp-up production services
- Application development
- Application qualification
- Material development
- Third-part material qualification
- R&D and joint development programs

Walter Voit, Ph.D.
Business Leader,
Polymer and Foams

Customer Service Committed to Making the Most of Your Machines

Beyond delivering reliable printing platforms, we work to offer the most comprehensive customer service and support program in the additive manufacturing industry. We understand you want to run your business, not worry about how to keep your equipment up and running.

Our goal is to deliver the same level of reliability and support manufacturers expect from traditional machine tools so we can achieve our ambitious mission of 3D printing for production.

When you need support, our global team of experts provide fast answers from experienced field support employees located around the globe. Local support in worldwide markets systems are serviced quickly while the Desktop Metal Knowledge Base and Academy are available 24/7 with troubleshooting tips and training on-demand.

Whether you're just getting started with additive manufacturing or already a pro, we offer comprehensive global service with support programs tailored to your needs.

How we can help

We support manufacturers from installation to maintenance and trouble shooting services to ensure their success with binder jetting and DLP

- White glove delivery and installation around the world
- On-site and digital education and training
  - Advanced training
  - Production ramp-up training
  - Customized to meet your specific needs, from job prep and Live Sinter™ to third-party powder implementation
- On-site and digital service and support
- Optional remote support and monitoring

Maor Ben-David
Executive Vice President
Customer Service

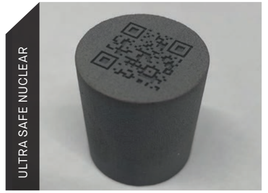
Customer Success Stories

Success stories from AM 2.0 adopters

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 3D printing and partnering with customers to get them to production with additive technologies.

Metal binder jetting for serial production

The ability to develop and scale customer applications across one platform of machines was a key reason why DSB Technologies chose to invest with Desktop Metal. We work closely together to ensure the technology fits the company's production needs.

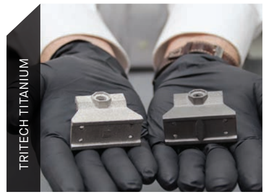


3D printing a new nuclear future with silicon carbide

Ultra Safe Nuclear uses binder jetting to 3D print highly pure, crystalline, nuclear-grade SiC into bespoke shapes to safely surround nuclear fuel particles, enabling Fully Ceramic Microencapsulated (FCM®) innovations. We helped the team get the process right for their critical application.

DLP 3D printing transforms footwear with speed and innovation

Made Plus uses DLP technology on the to develop innovative designs in elastomeric material. Our team partnered with Made Plus to develop its application and provide bridge production until its system was installed in-house.



Binder jetting with reactive titanium powder

TriTech Titanium operates the first production titanium binder jet 3D printer, printing near net shape precision parts with a high strength-to-weight ratio, without the cost or lead time of tooling. Our team worked closely to ensure the 3D printing atmosphere and material were successful.

Pioneering digital sheet metal forming

Saltworks installed the first fleet of Figur G15 digital sheet forming systems. Adopting the new technology will help the company capture new market share and Team DM made adoption a breeze with assistance from benchmarking to knowledge transfer for a successful installation.

Download the details

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

Team DM AM 2.0 machine tools

At Desktop Metal, we understand additive manufacturing can involve complex processing and infrastructure investments. Our Team DM AM2.Production consultants make it easy for manufacturers to assure that deployment of digital technologies will be successful to meet their unique requirements.

Our expert team take the guesswork out of adoption to make it easy to understand the process and where it fits for your application, material, and manufacturing workflow. We make is easy for even zero-risk industry partners to find their AM 2.0 solution through de-risked adoption partnerships.

Find the Right Fit

AM2.Production Consultancy helps manufacturers assess and deliver digital technologies for specific applications and goals in a low-risk process that delivers cost and technical data to make informed adoption decisions.

We understand that benchmark parts don't always answer all your questions, so our team can help with everything from developing a business case and cost modelling to evaluating lifecycle analysis or planning pre-production manufacturing.Our experts are here to hlep with your toughest manufacturing challenges.

Binder Jet Technology (BJT) - Metal Alloys & Technical Ceramics

Desktop Metal

PLATFORM	MATERIALS PROCESSED	BUILD ENVELOPE	MAX BUILD RATE	PRINT RESOLUTION
Shop System	Metals, Wood	350 x 222 x 50-200 mm	800 cc/hr at 75 µm layer thickness	Native 1,600 dpi
InnoventX	Metals, Technical Ceramics	160 x 65 x 65 mm	55 cc/hr at 65 µm layer thickness	400 - 800 dpi
X25Pro	Metals, Technical Ceramics	400 x 250 x 250 mm	1,200 cc/hr at 65 µm layer thickness	400 - 800 dpi
X160Pro	Metals, Technical Ceramics	800 x 500 x 400 mm	3,120 cc/hr at 65 µm layer thickness	400 - 800 dpi
Production System P-1	Metals, Reactive materials	200 x 100 x 40 mm	1,350 cc/hr at 65 µm layer thickness	Native 1,200 dpi
Production System P-50	Metals	490 x 380 x 260 mm	12,000 cc/hr at 65 µm layer thickness	Native 1,200 dpi

Digital Sheet Forming (DSF) - Sheet Metal

Figur

PLATFORM	MATERIALS PROCESSED	FORMING AREA	FORMING FORCE	FORMING SPEED
G15	Sheet Metal	1,450 x 1,200 mm	2,000 lbs X, Y, & Z	1 m/s

Binder Jet Technology (BJT) - Metalcasting Sands, Ceramics, & Infiltrated Tooling

ExOne

PLATFORM	MATERIALS PROCESSED	BUILD ENVELOPE	MAX THROUGHPUT	DIMENSIONAL ACCURACY
S-Max Flex	Silica	1,750 x 850 x 700 mm	73 l/hr	± 0.5 mm ± 0.15% over 500 mm
S-Max	Silica, Synthetic Media	1,800 x 1,000 x 700 mm	145 l/hr	± 0.5 mm
S-Max Pro	Silica, Synthetic Media	1,800 x 1,000 x 400/700 mm	145 l/hr	± 0.5 mm

Digital Light Processing (DLP) - Photopolymers

ETEC

PLATFORM	MATERIALS PROCESSED	BUILD ENVELOPE	NATIVE PIXEL SIZE
Envision One	Traditional Photopolymers (Proprietary & Third-Party)	180 x 101 x 175 mm	93 µm
Pro XL	Traditional Photopolymers (Proprietary & Third-Party)	249 x 140 x 165 mm	65 µm
Xtreme 8K	Traditional Photopolymers + Proprietary DuraChain Elastomers	450 x 371 x 399 mm	150 µm

Metal 3D Printers

The Desktop Metal Shop System™, Production System™ P-1, and Production System™ P-50

Ceramic 3D Printers

Choosing a Ceramic 3D Printer

D50 Particle Range

5 µm — 300 µm

Desktop Metal X-Series Printers

ExOne Sand 3D Printers

X-Series binder jet 3D printers, the InnoventX™, X25 Pro™, and X160 Pro™ are currently printing ceramic materials for customers worldwide. Even if your material not on our list, our experts can help develop the printing parameters for your ceramic project.

Choosing the right system for your ceramic project depends on your part size and throughput requirements, as well as the grain size of the ceramic powders you wish to process. Another consideration is the type of binder compatible with your powder, and how frequently you may wish to change materials.

Sand 3D Printers

The ExOne S-Max® Flex, S-Max®, and S-Max® Pro

Digital Sheet Forming

The Figur G15

Polymer 3D Printers

The ETEC Envision One, Pro XL, and Xtreme 8K

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
TECHNOLOGY	POWDER-LESS BOUND METAL DEPOSITION	EASY-ADOPT BINDER JETTING	BINDER JETTING WITH TRIPLE ACT	BINDER JETTING WITH SINGLE PASS JETTING
17-4 PH Stainless Steel	Qualified	Qualified	Qualified	Qualified
304L Stainless Steel		Qualified	Qualified	
316L Stainless Steel	Qualified	Qualified	Qualified	Qualified
4130 Low-Alloy Steel			R&D	
4140 Low-Alloy Steel	Qualified		R&D	Qualified
420 Stainless Steel				Qualified
440C Stainless Steel				Qualified
4340 Low Alloy Steel			R&D	
8620 Alloy Steel			R&D	
A2	Qualified			
Aluminum 6061			Customer Qualified	R&D
Bronze			R&D	
C18150				Qualified
Cobalt Chrome		Qualified*	Customer Qualified	
Copper	Qualified		R&D	Qualified
CM247		R&D	R&D	
D2 Tool Steel	Qualified			Qualified
DM HH Stainless Steel				Qualified
Gold			Customer Qualified	Customer Qualified
H13 Tool Steel	Qualified		Customer Qualified	Qualified
Hastelloy			R&D	
Haynes 282			R&D	
M2 Tool Steel			Qualified	
Nickel Alloy IN625	Qualified	Qualified	Qualified	Qualified
Nickel Alloy IN718		Qualified	Qualified	Qualified
Nickel-Free Austenitic Stainless Steel			R&D	Qualified
Platinum				Customer Qualified
S7 Tool Steel				Qualified
Silver			Customer Qualified	Qualified
Titanium (Ti64)	Qualified		Customer Qualified	Customer Qualified
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 January 2024. Subject to change.

Images (left to right):
Silver rings
17-4 PH golf club putter
IN625 gears
H13 injection mold

Ceramic & Composite

	Desktop Metal		ExOne			
	X-Series	Production System	S-Max Flex	S-Print	S-Max	S-Max Pro
TECHNICAL AND NATURAL CERAMICS						
Alumina	R&D					
Aluminum Nitride	R&D					
Carbon	R&D			Customer Qualified		
Glass	R&D					
Natural Sands			Qualified	Qualified	Qualified	Qualified
Silicon Carbide	Customer Qualified			Customer Qualified		
Synthetic Sands				Qualified	Qualified	Qualified
Tungsten Carbide Cobalt	Customer Qualified	R&D				
+CERAMIC						
Boron Carbide i/w Aluminum	R&D					
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

Exclusive resins developed by ETEC and Adaptive3D as well as trusted providers such as Loctite	ETEC					Desktop Health			
	Vida	Envision One	D4K	ProXL	Xtreme 8K	Envision One	D4K	Einstein	Einstein Pro XL
CASTABLE RESINS									
Easy Cast 2.0	Qualified			Qualified					
EPIC	Qualified		Qualified						
PIC 100	Qualified		Qualified	Qualified					
WIC100			Qualified						
ELASTOMERS									
DuraChain™ Elastic ToughRubber™ 70 Black					Qualified				
DuraChain™ Elastic ToughRubber™ 90 Black					Qualified				
DuraChain™ Elastic ToughRubber™ 90 White					Qualified				
DuraChain™ Soft ToughRubber™ 30 Black					Qualified				
DuraChain™ Chemical ToughRubber™					R&D				
DuraChain™ FreeFoam™					R&D				
LOCTITE® IND 402 Black		Qualified							
HARD PLASTICS									
E-Rigid Form Charcoal		R&D	R&D	Qualified	R&D				
LOCTITE® 3843 Black		Qualified		Qualified	Qualified				
LOCTITE® IND 405 Black		Qualified			Qualified				
LOCTITE® IND 405 Clear		Qualified		Qualified					
LOCTITE® MED 413 Clear		Qualified							
Q-View	Qualified		Qualified						
RC70									
RC90									
HIGH TEMPERATURE									
Ultracur3D® RG 3280				Qualified					
INFINAM® ST 6100 L				Qualified	Qualified				
HTM 140			R&D	Qualified					
LOCTITE® IND 147 Black		Qualified			R&D				
LOCTITE® IND 406 Black		Qualified							
DENTAL APPLIANCES									
E-Guard						Qualified	Qualified	Qualified	Qualified
E-Guide						Qualified	Qualified	Qualified	Qualified
E-IBD						Qualified	Qualified	R&D	R&D
E-Tray						Qualified	Qualified	Qualified	Qualified
Flexcera™ Base						Qualified	Qualified	Qualified	Qualified
Flexcera™ Smile						Qualified	Qualified	Qualified	Qualified
Flexcera™ Smile Ultra+						Qualified	Qualified	Qualified	Qualified
Keysplint Soft						Qualified	Qualified	Qualified	R&D
SmileGuard™						Qualified	Qualified	Qualified	Qualified
MEDICAL MODELS									
E-Gum						Qualified	Qualified		
E-Model Beige						Qualified	Qualified		
E-Model Light						Qualified	Qualified	Qualified	Qualified
E-OrthoShape						Qualified	Qualified		
Model X						Qualified	Qualified	Qualified	Qualified
Model Z						Qualified	Qualified	Qualified	Qualified
Press-E-Cast						Qualified	Qualified	Qualified	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 50K 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

Sheet Metal

Digital Sheet Forming technology to eliminate the need for a traditional stamping or tooling.
Please visit **TeamDM.com/Figur** for more information.

Wood

Rematerializing wood waste to produce beautiful end-use products.
Please visit **TeamDM.com/Forust** for more information.

Images (left to right):
Complete dentures 3D printed and assembled in Flexcera™ Base and Flexcera™ Smile.
A bicycle helmet 3D printed in LOCTITE® IND 405 on the Xtreme 8K.
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 | Foam

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

Desktop Metal (NYSE:DM) is driving Additive Manufacturing 2.0, a new era of on-demand, digital mass production of industrial, medical, and consumer products. Our innovative 3D printers, materials, and software deliver the speed, cost, and part quality required for this transformation. We're the original inventors and world leaders of the 3D printing methods we believe will empower this shift, binder jetting and digital light processing. Today, our systems print metal, polymer, sand and other ceramics, as well as foam and recycled wood. Manufacturers use our technology worldwide to save time and money, reduce waste, increase flexibility, and produce designs that solve the world's toughest problems and enable once-impossible innovations.

Printer platforms

Desktop Metal

Desktop Health

ETEC

ExOne

FIGUR

Materials

ADAPTIVE3D

FORUST

Applications and more

aidro
Desktop Metal Company

Desktop Labs

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