

InnoventX™

Compact, Powerful Metal 3D Printing

Material flexibility with the
world's most-researched
binder jetting system





FLEXIBLE ENTRY-LEVEL BINDER JET 3D PRINTING

Launched in 2016, the InnoventX™ is designed to reliably produce functional parts in a variety of materials, including metal, ceramics, and composites by selectively binding thin, cross-sectional layers of fine powder. Patented Triple ACT technology employed on X-Series binder jetting systems combines dispensing, spreading, and compacting processes critical for consistent, high-quality prints. With each successive pass of the printhead, more of the object is bound until a near-net shape print is completed and the green part undergoes the standard processes for removing the binder and sintering the remaining metal into a part with a final sintered density (97-99% for most metals) that meets or exceeds metal injection molding standards.

More binder jet 3D printing research has been done on the InnoventX than any competing binder jet platform. With an open control system and various printhead sizes (80, 30, or 10 picoliters), you're in full control of the output in an easy-to-manage build volume. Using feedstock from powder injection molding processes that are widely available and relatively low cost compared to many custom-made metal powders for 3D printing makes the system affordable to operate for education, research, prototyping, rapid product development, and short-run production of small components.

Compact and affordable

It's easy to get started with an InnoventX, and it's even easier to manage. With build dimensions of 160 x 65 x 65 mm (6.3 x 2.5 x 2.5 in), it only takes a 10-pound bag of standard MIM powder to get started. We've had users tell us: "It's the perfect size."

Amazing quality and surface finish

Patented Triple Advanced Compaction Technology (ACT) dispenses, spreads, and compacts powders with precision to deliver industry-leading part density and repeatability. By printing ultra-fine MIM powders with a piezoelectric printhead, the InnoventX achieves intricate features and surface-finish results as low as 4 µm Ra that routinely meet final post-sintering dimensional tolerances of ±1%.

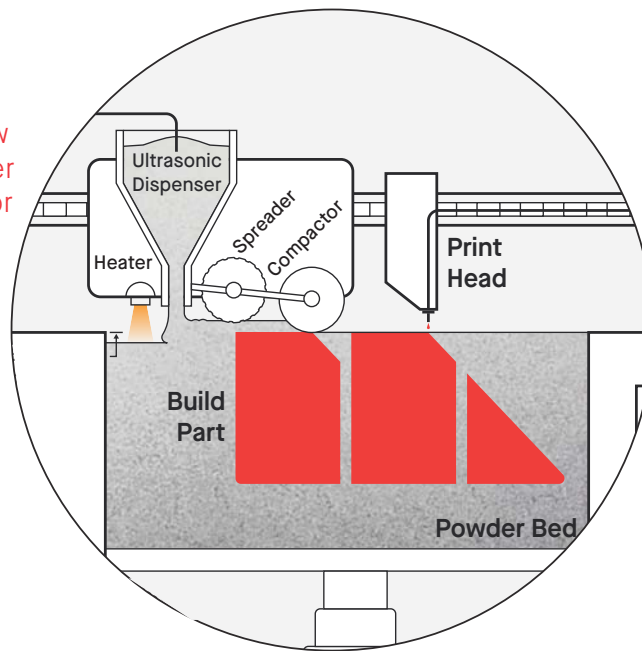
Multi-material genius

The InnoventX was built for material changeovers. Try your hand at more than two dozen metal, ceramic, and composite materials with a variety of binders. A key feeder system into binder jetting technology, the InnoventX is perfect for educating students, researching in a lab, or getting started with application development with the ability to scale for manufacturing.

Easy to use

Intuitive software. Simple to load powder. Easy-to-move components. The system comes equipped with an ultrasonic recoater for simplified changeover and safety features including dust control that allows the compact machine to comfortably run in a wide range of environments.

Triple ACT features an ultrasonic dispensing system for consistent flow of fine powders with a spreading roller system and counter-rolling compactor for high green strength



Removable build box can be lifted out of the machine for nimble transitions through the 3D printing workflow



Easily-managed binder and waste containers



Image courtesy of TECNALIA

MATERIAL VERSATILITY

An open platform, the InnoventX is perfect to research new materials, test applications for development, or source cost-efficient powders for educational settings. Developed with an open powder architecture in mind, the powerful platform has the ability to process metal and ceramics, including sands.

Piezoelectric printheads provide the InnoventX with the flexibility to process a variety of binders. From targeted green-strength performance to the ability to process high-temperature, non-metallic carbides, tailored binders are available to meet the needs of a range of manufacturing challenges.

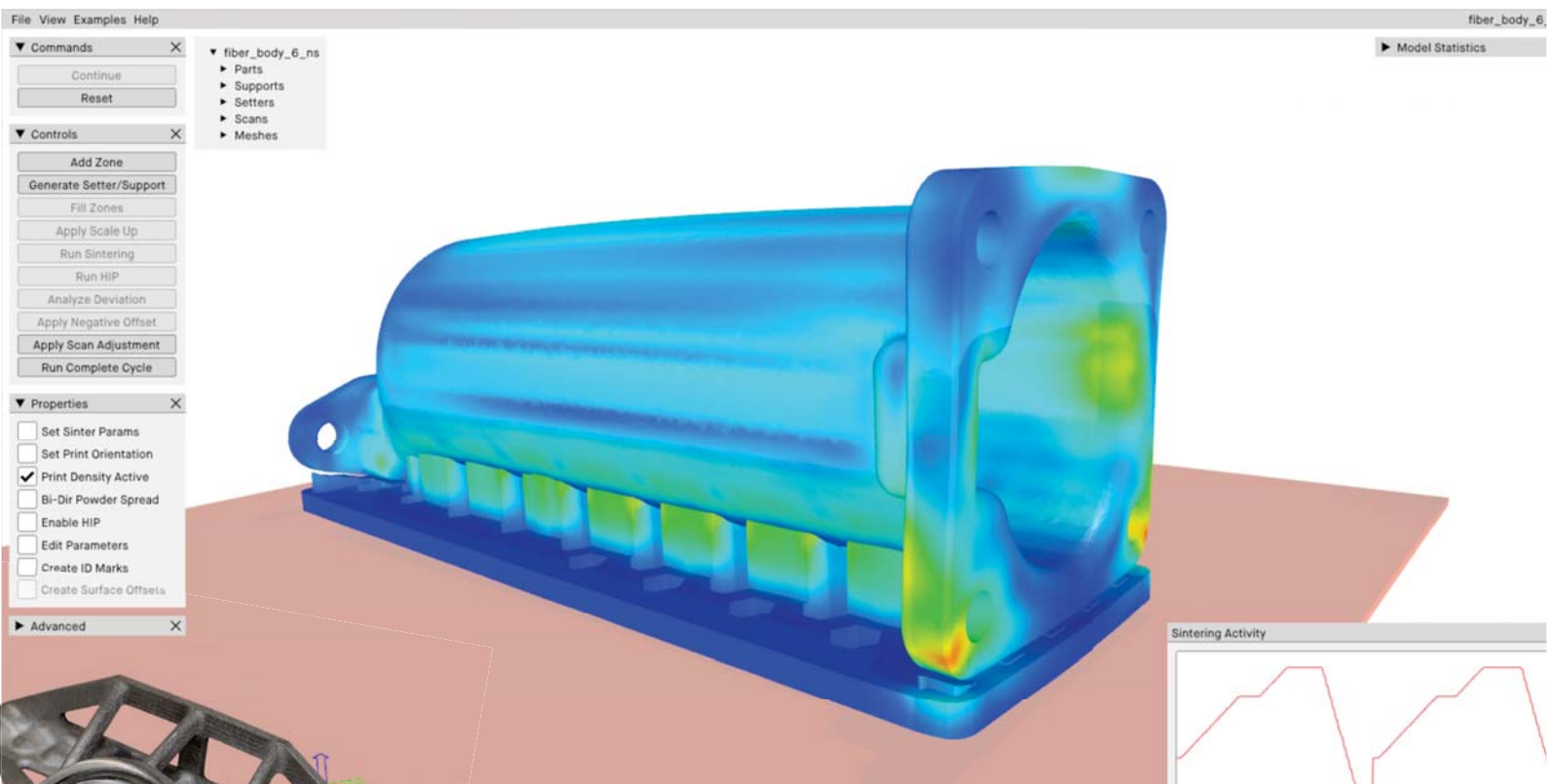


Metal and Ceramic Compatibility*

- 17-4 PH Stainless Steel
- 304L Stainless Steel
- 316L Stainless Steel
- 4130 Low-Alloy Steel
- 4140 Low-Alloy Steel
- 4340 Low-Alloy Steel
- 8620 Alloy Steel
- Alumina
- Aluminum Nitride
- Aluminum 6061
- Boron Carbide
- Bronze
- Carbon
- Cobalt-Chrome
- Copper
- CM247
- Glass
- Gold
- H13 Tool Steel
- Hastelloy
- Haynes 282
- M2 Tool Steel
- Mar 247/CM247
- Nickel Alloy IN625
- Nickel Alloy IN718
- Nickel-Free Austenitic Stainless Steel
- Silicon Carbide
- Silicon Nitride
- Sterling Silver
- Titanium (Ti64)
- Tungsten
- Tungsten Carbide Cobalt
- Tungsten Heavy Alloy
- TZM Molybdenum

Binders

- CleanFuse: For low-carbon metals like 316L
- AquaFuse: For compliance with stringent EH&S requirements
- FluidFuse: Excellent general purpose properties for a variety of materials, including reactive powders
- PhenolFuse: For high-temperature non-metallic carbides



SINTERING SUCCESS

Desktop Metal's software connects you with the lifeblood of your digital manufacturing systems - data - in new ways that simplify and deliver value. Sintering remains one of the main challenges of metal binder jetting technology and our advanced simulation software team has worked to eliminate the trial and error required to achieve high-accuracy parts via powder metallurgy-based additive manufacturing processes.

Live Sinter™

Live Sinter software is a powerful, multi-physics sintering simulation application that delivers final parts with tight tolerances.

Rather than printing a part straight to have it warp out of spec, Live Sinter prints a negative offset that will sinter to meet dimensional tolerances. It enables unique distortion compensation to help manufacturers not only reduce costs, but enable sintering to be successfully applied to a wider range of applications.

After scan-based adjustments, Live Sinter enables correcting for complex distortion effects, yielding parts that consistently fall within 1% of target dimension with as low as $\pm 0.3\%$ deviation, avoiding distortion, warping, and other common sintering challenges.

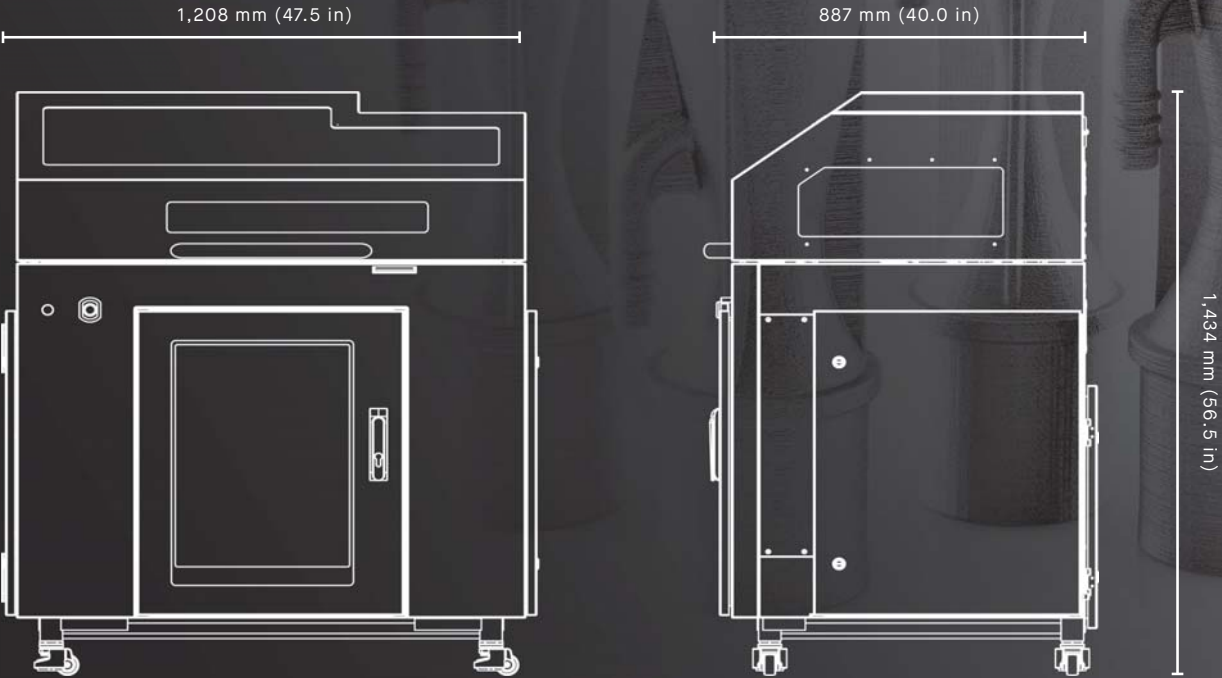
Live Sinter simulates part behavior during the sintering processing, including shrinkage and distortion. top. The software generates a negative offset geometry that prints and sinters to compensate for these effects, bottom.



[Watch a demo and learn more about Desktop Metal Live Sinter: TeamDM.com/LiveSinterWebinar](https://www.teamdm.com/LiveSinterWebinar)



TECHNICAL SPECIFICATIONS

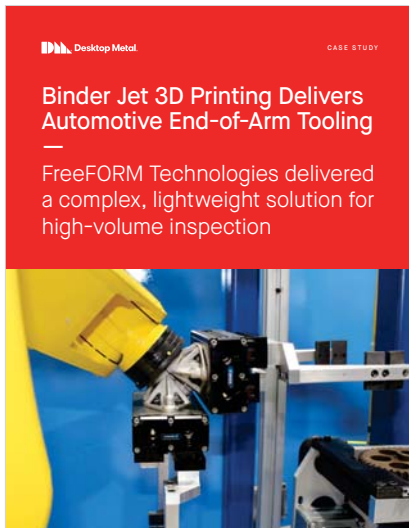


Print technology	Triple ACT binder jetting
Build envelope (L x W x H)	160 x 65 x 65 mm (6.3 x 2.5 x 2.5 in)
Maximum throughput	54 cc/hr (3 in³) at 65 µm layer thickness
Layer thickness	30 - 200 µm
Print resolution (printhead dependent)	
80pL Printhead	400 DPI
30pL Printhead	600 DPI
10pL Printhead	800 DPI
Binder jetting module	1 piezo-electric printhead (256 nozzles)
External dimensions (L x W x H)	120.8 x 93.5 x 143.4 cm (47.5 x 36.8 x 56.5 in)
Weight	500 kg (1,100 lbs)
Electrical requirements	120 VAC, 60 Hz, 1-phase 230 VAC, 50 Hz, 1-phase

Being able to demonstrate scalability is important. We've used the InnoventX for years for prototyping concepts for several of our businesses... focusing on scaling a few of the most promising product designs.

Nicholas Orf, Principal Scientist
and Additive Manufacturing Group Leader
Saint-Gobain Research North America

CUSTOMER SUCCESS STORIES



FREEFORM TECHNOLOGIES

Lightweight metal 3D printed EOAT

FreeFORM Technologies delivered a complex end-of-arm tooling solution in 17-4PH stainless steel for a high-volume automotive inspection process using binder jet 3D printing technology on the InnoventX. Generative software produced a lightweight design and binder jet 3D printing was one-fourth the price of laser powder bed fusion. Final materials met MPIF standard 35 and customer requirements.

TeamDM.com/FreeFormInnoventX



TECNALIA RESEARCH & INNOVATION

Advancing Cutting Tool Designs

Spain's leading research and technological development center transforms knowledge into business opportunities for companies. The team uses specialty material binder jetting to create unique designs and shorten lead times of WC-Co and M2 cutting tools. 3D printed parts on the InnoventX had densities comparable to the traditionally manufactured commercial components but could easily integrate features like cooling channels.

TeamDM.com/Tecnalia

Learn more about the InnoventX and find more customer success stories at

TeamDM.com/MetalSuccess

Additive Manufacturing 2.0

Metal | Polymer | Ceramic | Composite | Wood

SolidManufacturing
3D Manufacturing Solutions
a SolidWorld Group company



DESKTOPMETAL.COM

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. Learn more about Desktop Metal and our #TeamDM brands at DesktopMetal.com

Printer platforms



Desktop Health™



Materials



Applications and more



Desktop Labs