



## Studio System

The Desktop Metal DM Studio System is the world's first affordable, office-friendly metal 3D printing system. Safe and simple to use, the DM Studio System was designed to bring metal 3D printing to the shop floor by allowing engineering and design teams to make metal parts faster, without the need for special facilities or dedicated operators.

### The Desktop Metal difference

The DM Studio System is a complete solution designed around the premise that metal 3D printing should be easier, less expensive and more accessible for design and engineering teams.

It's built on a cloud-based software architecture, the DM Studio System enables the user to go directly from CAD to part. By having one software platform across the system, designers and engineers can work with one digital file for a metal part throughout its entire lifecycle instead of needing to use 3rd party equipment and software to get a final part.

### Affordable

- Up to 10x less expensive than comparable laser-based systems
- The only complete metal 3D printing system that is cost-effective for prototyping

### Safe and simple:

- By eliminating lasers and powders, the DM Studio System is safe for any facility

- Unlike other systems, there is no third-party equipment, external ventilation or special facilities required – just power and an internet connection

### **Separable Supports**

Existing systems weld parts to supports, requiring extensive machining or wire EDM to remove the part. An industry first, proprietary separable supports make it possible to remove support structures by hand. Metal post-processing challenges are virtually eliminated

### **Precise, high quality parts:**

The DM Studio System's precision ensures high quality parts, with densities between 96-99%, depending on the alloy, with parts performing similar to wrought.

## The printer

The DM Studio printer is similar to the safest and most widely used 3D printing process, Fused Deposition Modeling (FDM). Unlike laser-based systems, the DM Studio printer extrudes bound metal rods – similar to how plastic FDM printers work. This eliminates safety and facility requirements associated with traditional metal 3D printing, while enabling new features like closed-cell infill for lightweight strength.

- The DM Studio System produces near-net-shape metal parts, delivering the resolution and accuracy needed for functional prototyping. Sophisticated software constructs print and sinter plans for every build and material—automatically generating supports and control parameters to ensure a seamless, simple experience from printing through sintering.
- The system is able to print up to 24 cubic inches per day. Maximum resolution is 50um.
- We used encoded ball screws rather than belts for our motion control system. Combined with automated bed-leveling and a heated build area, the DM Studio printer delivers excellent geometric fidelity and build success.

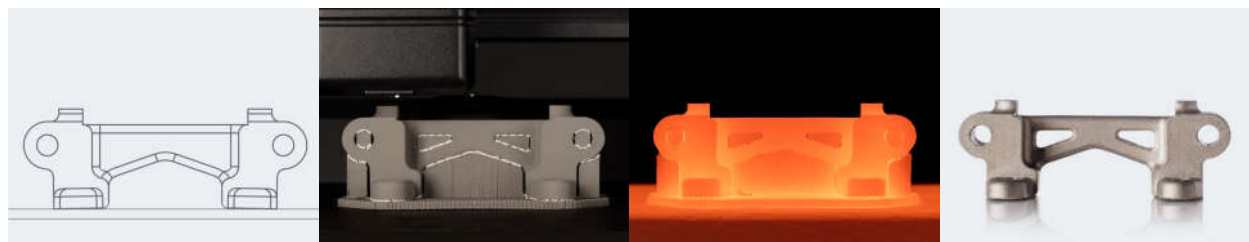
## The Furnace

- Desktop Metal designed the first office-friendly sintering furnace with a peak temperature of 1400° C, allowing for the sintering of a wide range of metals. Fully automated with closed looped thermal control and sized to fit through an office door, the furnace delivers industrial-strength sintering in an office-friendly package.

- Cloud-connected, the furnace has temperature profiles that are tuned to every build and material. It uniformly heats parts to just below their melting point, removing binder and fusing metal particles to form fully dense parts without the residual stresses introduced in laser-based systems.
- The DM Studio printer and furnace were designed together, making it possible to vastly simplify printing and post-processing through the integration of software, hardware, and materials science innovations.

**How It Works**

The DM Studio System was designed as a complete workflow. Each stage of the process is fully automated and managed by sophisticated software, making it simple to go from CAD to part. The entire DM Studio process is controlled and monitored from the cloud, ensuring a seamless, simple experience.



1 PREP

2 PRINT

3 REBIND & SINTER

4 POST PROCESS

**Digital model**

The software accepts a variety of formats—not just STL. Web-based, it runs on a remote or local server so that it is possible to manage jobs from any device securely.

**Green part**

Similar to FDM, the Studio printer shapes a “green” part layer-by-layer by heating and extruding specially formulated bound metal rods. The green part can be easily sanded by hand.

**Sintered part**

A portion of the plastic binder is first removed. The furnace then heats the part to temperatures near melting, causing the metal powder to densify to 96–99.8%.

**Finished part**

Apply optional finishing methods such as machining or bead blasting for critical tolerances and finishes. Supports are removed by hand.

**Materials**

- Designed with the world’s foremost metallurgists, the DM Studio System combines unique materials profiles with part data to construct exact print and sinter plans for every part. Bulk sintering and careful process controls enable mechanical properties similar to traditional metalworking processes.
- By enabling the use of metal powders from the MIM industry, our system has access to a wide range of existing materials, from steels and aluminum to superalloys and titanium. More than 200 materials are compatible, compared to approximately 15 materials offered by laser-based systems.

- While changing materials in a laser-based system poses safety risks and can take a week or more, the DM Studio printer was designed with safe-to-handle, swappable media cartridges and quick release print heads for seamless material changes.

