

DMP Flex 350

Single laser metal printing, Oqton's 3DXpert[®] software and advanced materials





DMP Flex 350

High precision, high throughput

DMP Flex 350 is a mid-frame printer that offers fast build turnaround times in demanding serial production environments. It provides maximum flexibility to switch between materials.

INTEGRATED METAL PRINTING

DMP printers, Oqton's 3DXpert software and materials are fine-tuned for process reliability and repeatability.

SUPERIOR METALLURGICAL PROPERTIES

Industry's lowest O₂ content during builds (<25 ppm) for exceptionally high-quality parts of high chemical purity.

EXTENSIVELY TESTED MATERIALS

Thousands of hours of parameter optimization ensure predictable and repeatable print quality with a broad range of materials.

Typical DMP Flex 350 Applications

AEROSPACE & DEFENSE

Radiofrequency waveguides, filters, antennas, heat exchangers, lightweight brackets, fuel injectors, swirlers, mixers, stator vanes, impellers

MEDICAL

Spinal cages, tibial knees, hip cups, dental partials, surgical guides

TRANSPORTATION

Conforming cooling tools, heavy duty tool inserts, structural components (e.g. brackets, drive train housings), heat exchangers, manifolds

CARBON CAPTURE

Gas contactors, heat exchangers, gas condensers

SEMICONDUCTOR

Wafer tables, fluid manifolds, linear stage coolers

ENERGY

Stator vanes, impellers, turbine blades, blisks and other components

The Benefits of Direct Metal Printing



CONFORMAL COOLING

Direct integration of conformal cooling channels into this blow mold increases efficiency by 30%.



SIMPLIFIED ASSEMBLIES

Bearing housing redesign concept in collaboration with Eureka and NAMI. Re-engineered cooling consolidating 23 parts into one.



REDUCED WEIGHT

Complex lattice structures allow significant weight reduction for this combustion chamber.



ENHANCED FLUID FLOW

For this turbine inlet guide vane, computational fluid dynamics simulation predicts a 70% reduction in shock intensity.



TOPOLOGY OPTIMIZATION

Topology optimized aerospace bracket reduces weight by 35%.



MASS CUSTOMIZATION

Designed to perfectly fit the obstructed zone, this reconstruction corrects the patient's facial asymmetry.

DMP Flex 350 Printer Specifications

Laser Power Type	DMP Flex 350: 500W/Fiber laser ¹	
Laser Wavelength	1070 nm	
Single Build Volume (X x Y x Z) Height inclusive of build plate	275 x 275 x 420 mm (10.82 x 10.82 x 16.54)	
Layer Thickness	Adjustable, minimum 5 µm, typical values: 30, 60, 90 µm	
Metal alloy options for single laser configurations:	LaserForm Ti Gr1 (A) ² LaserForm Ti Gr5 (A) ² LaserForm Ti Gr23 (A) ² Certified Tungsten (A) ² Certified A6061-Ram2 (A) ³ Certified CuNi30 (A) ³ LaserForm AlSi10Mg (A) ³ LaserForm AlSi7Mg0.6 (A) ³ LaserForm Ni625 (A) ³ LaserForm Ni718 (A) ³ LaserForm 17-4PH (A) ³	LaserForm 316L (A) ³ LaserForm CoCrF75 (A) ³ LaserForm Maraging Steel (A) ³ Certified Scalmalloy (A) ³ Certified M789 (A) ³ Certified HX (A) ³ Certified CuCr2.4 (A) Certified GRCop-42 (A) ³ Certified CuCr1Zr (A) ³ Certified C-103 (A) ³ *GRX-810 ³
Material Deposition	Soft blade recoater	
Repeatability	Δx (3σ) = 60µm, Δy (3σ) = 60µm, Δz (3σ) = 60µm	
Minimum Feature Size	200 µm	
Typical Accuracy	± 0.1-0.2% with ± 100 µm minimum	
Build Platform Heating	250°C	

SPACE REQUIREMENTS

Dimensions, uncrated (WxDxH)	2360 x 2400 x 2870 mm (93 x 95 x 113 in) ⁴
Weight, uncrated	Approx. 4200 kg (9240 lbs)

FACILITY REQUIREMENTS

Electrical Requirements	400 V/15 KVA/50-60Hz/3 phase
Compressed Air Requirements	6-10 bar
Gas Requirements	Argon, 4-6 bar
Water Cooling	Chiller supplied with printer

QUALITY CONTROL

DMP Monitoring	Optional
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CONTROL SYSTEM AND SOFTWARE

Software Tools	Oqton's 3DXpert all-in-one software solution for metal additive manufacturing
Control Software	DMP Software suite
Operating System	Windows 10 IoT Enterprise
Input Data File Formats	All CAD formats, e.g. IGES, STEP, STL, native read formats incl PMI data, all Mesh formats
Network Type and Protocol	Ethernet 1 Gbps, RJ-45 plug

ACCESSORIES

Interchangeable Build Modules	Optional secondary Removable Print Modules (RPMs) for fast material changeover
Volume Reduction Kit on removable print module with 275 x 275 x 420 mm build volume	Optional

POWDER MANAGEMENT

Powder Management	Optional external
Material Loading	Manual

CERTIFICATION

CE, NRTL

¹ Maximum laser power at powder layer is typical 450W for 500W lasers ² Set up A ³ Set up B ⁴ Height exclusive of signal tower *Only for evaluation purposes through AIG Services in the United States

Metal Alloys for the DMP Series

3D Systems' broad range of ready-to-run LaserForm materials is formulated and fine-tuned specifically for 3D Systems' DMP printers to deliver high part quality and consistent part properties. 3D Systems provides a print parameter database that has been extensively developed, tested and optimized with materials in 3D Systems' part production facilities. These facilities hold the unique expertise of printing over one million challenging metal production parts in various materials year over year.



Heat exchanger with complex cooling channels in LaserForm AlSi10Mg (A)



Minireactor for scale testing built in LaserForm 17-4PH (A)



Gas burner with integrated cooling channels in LaserForm Ni718 (A)



Dental partials, copings and bridges in LaserForm CoCr (C)



High corrosion resistant impeller in LaserForm 316L (A)



Blow mold with conforming holes in LaserForm Maraging Steel (B)



Turbine vane with corrosion resistance at high temperatures in Certified HX (A)



High thermal heat transfer heat exchanger in Certified CuCr2.4 (A)

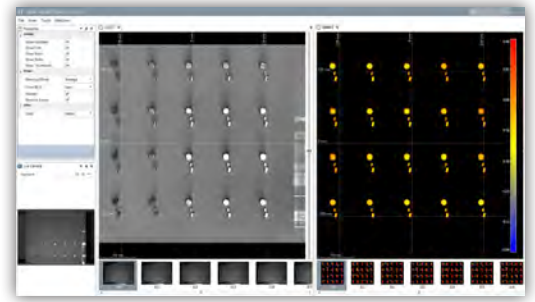


Short wavelength EMS collimator in Certified Tungsten (A)



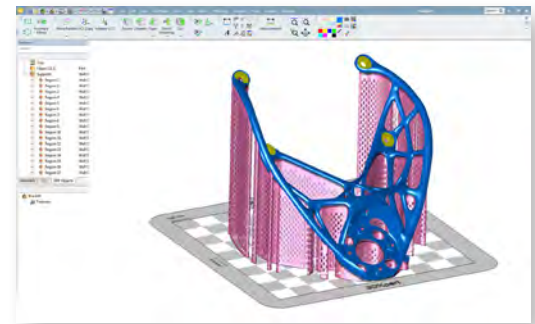
Belled end reducer in Certified CuNi30 (A)

* Availability varies by printer model



DMP MONITORING FOR REAL-TIME PROCESS MONITORING

Advanced manufacturing requires close monitoring of process variables. DMP Monitoring is a process monitoring and non-destructive quality control system, providing a wealth of data for informed decisions on product quality and also serving as process traceability and documentation for highly regulated industries.



FASTER DATA PREPARATION AND EXCEPTIONAL BUILD OPTIMIZATION

Oqton's 3DXpert precision metal printing software is delivered with every DMP printer. Benefit from intelligent design tools and fast build preparation, relying on the extensively tested build parameter database for your material of choice. No other software lets you localize print strategies for increased precision of metal parts.

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