

Phenix PX™

Direct Metal Production 3D Printers



3DSYSTEMS®

Manufacture Fully Functional Metal Parts in Hours

- Precision laser melting—patented and proven
- Increased productivity, repeatability and flexibility
- Access to a wide range of metals and alloys
- Unmatched design and manufacturing freedom
- Efficient materials and energy management



www.3dsystems.com

MANUFACTURING *THE* FUTURE

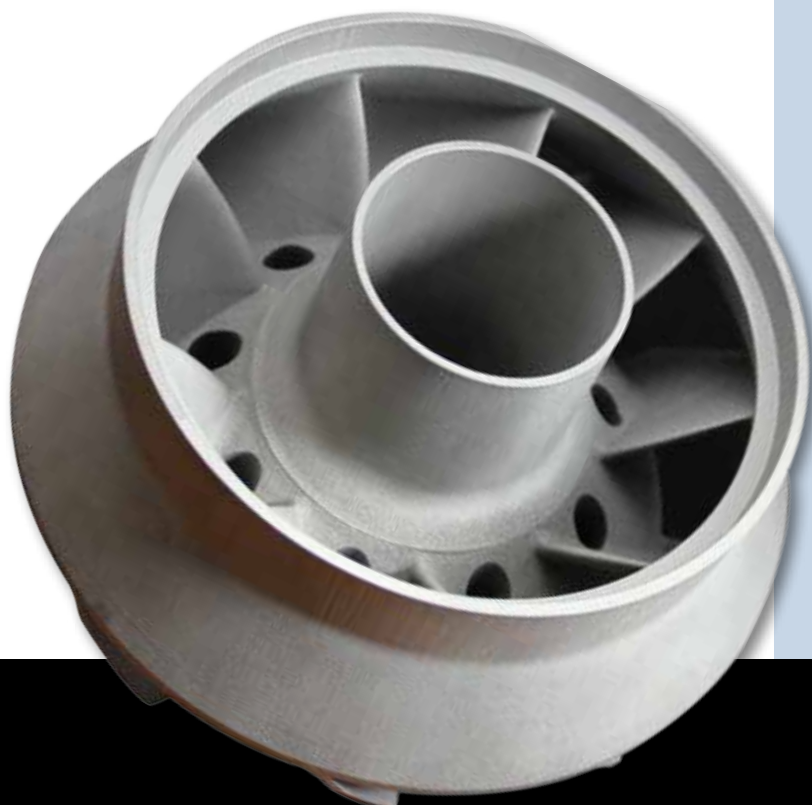
Turn market pressure into competitive advantage

Patented and Proven Standard in Direct Metal 3D Printing

Phenix PX™ production 3D printers are the proven industry standard. You benefit from our experience in addition to:

- Robust manufacturing floor platform
- Patented powder layering system guarantees outstanding quality
- Exceptional surface finish and resolution
- Excellent accuracy and repeatability
- Fully dense parts with superior mechanical properties
- Fast build speeds

Our truly global product support team, with dedicated service and application engineers, allows us to meet your rigorous quality requirements at facilities around the world. In addition we offer a back-up manufacturing service for our customers to handle overflow.



The Process:

The Phenix direct metal process builds up fully dense, chemically pure metal parts from 3D CAD data by melting fine powder with a laser beam, layer by layer.

With layer sizes ranging from 5–30 microns, there are no limitations to part complexity.

The 3D Systems PX line of Direct Metal production 3D printers supports particle sizes as low as 5 microns, resulting in better part accuracy, surface finish and feature detail resolution.

Depending on your requirements choose between the following build volumes:

Phenix PXL: 250 x 250 x 300 mm
(9.8 x 9.8 x 11.8 inches)

Phenix PXM: 140 x 140 x 100 mm
(5.5 x 5.5 x 3.9 inches)

Phenix PXS: 100 x 100 x 80 mm
(3.9 x 3.9 x 3.1 inches)

Applications:

When complex metal parts are needed fast, our Phenix portfolio of direct metal solutions turns market pressure into competitive advantage in industries like:

- **Aerospace and defense**
- **Engine/component manufacturing**
- **Medical technology**
- **Patient-specific implants (PSI)**
- **Dental applications**
- **Conformal cooling in tooling inserts**
- **Jewelry & objects d'art**

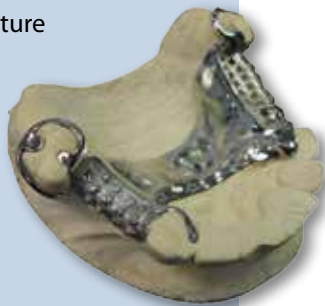
Seamless and intuitive 3D printing software

Software:

Phenix PX™ Processing: Open and intuitive software enables users to precisely define all key manufacturing parameters and track essential production data.

Phenix PX™ Manufacturing : Engineered specifically for the low- to mid-volume production of complex metal or ceramic parts.

Phenix PX™ Dental: A high-performance solution for managing the manufacture of fixed and removable dental prostheses. The user is guided from dental file import to the creation of the manufacturing files; it is seamless and intuitive.



Versatile Metal and Ceramic Materials:

Benefit from the materials flexibility of our Phenix PX Direct Metal production 3D printers, including reactive metals and ceramics. Tell us your requirements and our application engineers will define the best material solution for you. We offer a wide choice of standard metal alloys and ceramics, including steel, CrCo, Inconel, Al and Ti alloys.



3D Systems offers software tools specifically designed to ensure your successful direct metal or ceramic manufacturing process.

When it comes to additive manufacturing, the printing system is only one part of the equation. Software integration with the manufacturing process is an important factor when utilizing direct metal 3D printing to produce a more cost-effective workflow in the development and production of new products.



Phenix PX™

Direct Metal Production 3D Printers



Maximum reliability and repeatability

PXS™

PXM™

PXL™

Specifications

Laser power/type	50 W/Fiber laser	300 W/Fiber laser	500 W/Fiber laser
Laser wavelength	1070 nm	1070 nm	1070 nm
Layer thickness range	Adjustable, min10 µm max 50 µm		
Build envelope capacity (X x Y x Z)	100 x 100 x 80 mm (3.94 x 3.94 x 3.15 in)	140 x 140 x 100 mm (5.51 x 5.51 x 3.94 in)	250 x 250 x 300 mm (9.84 x 9.84 x 11.81 in)
Metal material choice	Stainless steels, tool steels, non-ferrous alloys, super alloys and others		
Ceramic material choice	Cermet (Al ₂ O ₃ ; TiO ₂) and others	Cermet (Al ₂ O ₃ ; TiO ₂) and others	Cermet (Al ₂ O ₃ ; TiO ₂) and others
Repeatability	x=20 µm, y=20 µm, z=20 µm	x=20 µm, y=20 µm, z=20 µm	x=20 µm, y=20 µm, z=20 µm
Minimum detail resolution	x=100 µm, y=100 µm, z=20 µm	x=100 µm, y=100 µm, z=20 µm	x=100 µm, y=100 µm, z=20 µm

Space Requirements (W x D x H)

Dimensions uncrated	120 x 77 x 195 cm (48 x 31 x 77 in)	120 x 150 x 195 cm (48 x 59 x 77 in)	240 x 220 x 240 cm (95 x 87 x 95 in)
Weight uncrated	1000 kg (2200 lbs)	approx. 1500 kg (3300 lbs)	approx. 5000 kg (11000 lbs)

Electrical Requirements

230V / 2.7 KVA / single phase	400V / 8 KVA / 3 phase	400V / 15KVA / 3 phase
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Compressed Air Requirements

6-8 bar CE	6-8 bar CE	6-8 bar CE
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Control System & Software

Software tools	Phenix Processing - Phenix Manufacturing*		
Control software	PX Control	PX Control	PX Control
Operating system	Windows XP	Windows XP	Windows XP
Input data file format	STL, IGES, STEP	STL, IGES, STEP	STL, IGES, STEP
Network type and protocol	Ethernet 10 /100 , RJ-45 Plug	Ethernet 10 /100 , RJ-45 Plug	Ethernet 10 /100 , RJ-45 Plug

Accessories

Recycling system	Optional external system (PX BOX)	Optional external system (PX BOX)	Automatic
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Material Handling

Loading system	Manual	Semiautomatic	Automatic
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Certification

CE marked	CE marked	CE marked
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