Direct Metal

Production 3D Printers

HK 3D SOLUTIONS

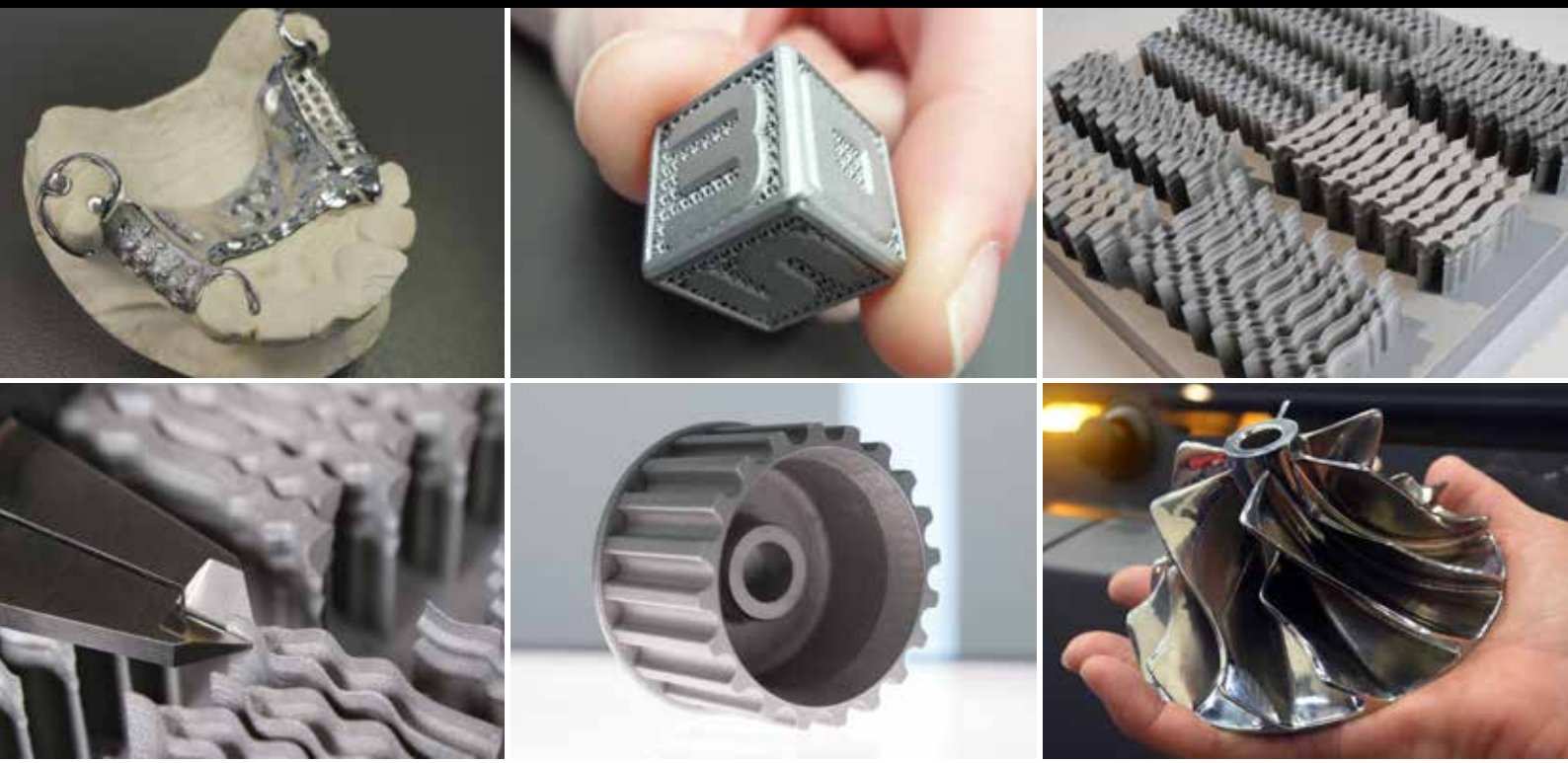
Manufacture Fully Functional Metal Parts in Hours

- 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

MANUFACTURING*THE* FUTURE

www.HKH3D.com

Turn market pressure into competitive advantage



Patented and Proven Standard in Direct Metal 3D Printing

Direct Metal 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 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 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:

ProX™ 100: 100 x 100 x 80 mm (3.9 x 3.9 x 3.1 in)
ProX™ 200: 140 x 140 x 100 mm (5.5 x 5.5 x 3.9 in)
ProX™ 300: 250 x 250 x 300 mm (9.8 x 9.8 x 11.8 in)
ProX™ 400: 500 x 500 x 500 mm (19.7 x 19.7 x 19.7 in)

Applications:

When complex metal parts are needed fast, our 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**

Versatile Metal and Ceramic Materials:

Benefit from the materials flexibility of our 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 utilising direct metal 3D printing to produce a more cost-effective workflow in the development and production of new products.

Seamless and intuitive 3D printing software:

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

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

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.

Direct Metal

Production 3D Printers

HK 3D SOLUTIONS

Maximum reliability and repeatability

ProX 100

ProX 200

ProX 300

ProX 400

	ProX 100	ProX 200	ProX 300	ProX 400
Specifications				
Laser power/type	50 W/Fiber laser	300 W/Fiber laser	500 W/Fiber laser	2 fiber lasers / 2 x 500 W (1 KW optional)
Laser wavelength	1070 nm	1070 nm	1070 nm	1070 nm
Layer thickness range	Adjustable, min 10 µm max 50 µm			min 10 µm max 100 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)	500 x 500 x 500 mm (19.69 x 19.69 x 19.69 in)
Metal material choice	Stainless steels, tool steels, non-ferrous alloys, super alloys and others			
Ceramic material choice	Cermet (Al_2O_3; TiO_2) and others	Cermet (Al_2O_3; TiO_2) and others	Cermet (Al_2O_3; TiO_2) and others	
Repeatability	x=20 µm, y=20 µm, z=20 µm			
Minimum detail resolution	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)	**Manufacturing module:** 300 x 300 x 300 cm (118.11 x 118.11 x 118.11 in) **Powder unit:** 250 x 250 x 250 cm (98.43 x 98.43 x 98.43 in)
Weight uncrated	1000 kg (2200 lbs)	approx. 1500 kg (3300 lbs)	approx. 5000 kg (11000 lbs)	**Manufacturing module:** 13607 kg (30000 lbs) **Powder unit:** 4535 kg (10000 lbs)
Electrical Requirements	230 V / 2.7 KVA / single phase	400 V / 8 KVA / 3 phase	400 V / 15 KVA / 3 phase	400 V - 480 V / 3 phase + ground
Compressed Air Requirements	6-8 bar			
Control System & Software				
Software tools	Processing - Manufacturing			
Control software	PX Control			
Operating system	Windows XP	Windows XP	Windows XP	Windows XP
	STL, IGES, STEP			
Network type and protocol	Ethernet 10 /100, RJ-45 Plug			
Accessories				
Recycling system	Optional external system (PX BOX)	Optional external system (PX BOX)	Automatic	Automatic in the powder module
Other accessory				Build chamber transfer tool
Material Handling				
Loading system	Manual	Semiautomatic	Automatic	Automatic
Certification	CE marked	CE marked	CE marked	CE marked

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