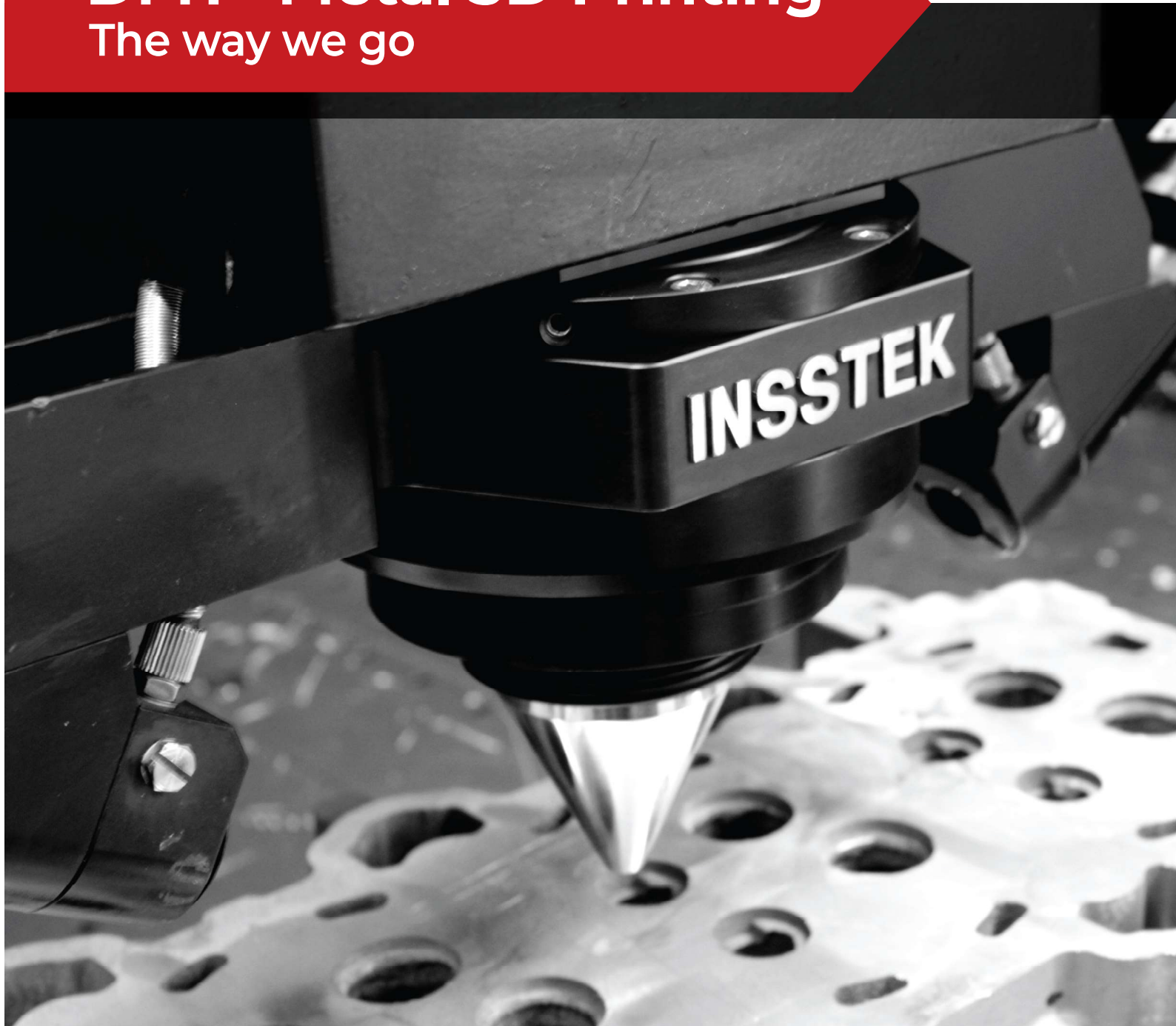


DMT® Metal 3D Printing

The way we go



2018

Jan.

Selected as Top 100 Future Technologies by The National Academy of Engineering of Korea

2017

Mar.

Design, development and manufacture of industrial metal 3D printer certified to ISO 9001:2015

Feb.

Market expansion into South America

MX-600 was sold to an Argentine Science Organization

2016

Oct.

MX printer for material development was sold to a university in Germany

Sep.

World's largest metal 3D printer

in DED MX-Grande was sold to Europe

2015

Jun.

Appointed as one of the most high-tech companies in Korea by Ministry of Science, ICT and Future Planning

Mar.

Market entry into Japan

Sold MX-450 to a leading electronic company in Japan

2012

May.

MPC development for medical application

Developed a customized system for porous coating for artificial hip & knee joint with approval from Ministry of Food and Drug

2010

Dec.

Industrial application of DMT®

Succeeded in industrial application of Direct Metal Tooling® (DMT) to home appliances and aerospace industries

2008

Sep.

US, Japan and EPO Patents

Obtained patents of real-time monitoring and controlling the intensity of laser power

2007

Dec.

Provided solutions with DMT® for automotive application

2003

Jun.

Registration of DMT® trademark

2001

Nov.

Completion of the standard DMT® 3D printer MX-1

Aug.

Company Foundation

InssTek was established with metal 3D printing technologies for the 1st time in South Korea

We offer customer-oriented systems and services

Metal 3D Printing Systems

Standard Model

MX-300

MX-600

MX-1000

MX-Grande



Custom Model

MPC

* MPC : Machine for Porous Coating

Services

Manufacturing, Remodeling, and Repair:

3D conformal cooling channels for mold and die cores

High-performance multi-metal parts

Repair of damaged molds and machine parts

Special porous coating and surface modification

Large-scale parts fabrication

DMT®

Direct Metal Tooling, the most precise DED technology

Features

Highly functional component production, re-modeling, repair and special coatings

Excellent mechanical properties

Using commercially available metal powders

Enables to manufacture of complex shapes structure

Enables to repair parts

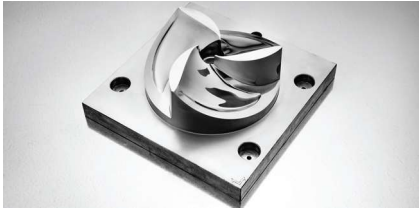


Technical Data

	MX-300	MX-600	MX-1000	MX-Grande
Laser type Ytterbium Fiber Laser	Max. 500W	Max. 1,000W	Max. 2,000W	Max. 3,000W
DMT® Motion XYZ Linear Gantry + AC Rotary stage X / Y / Z Stroke A / C Stroke	300 × 300 × 200 -100 ~ +5° / 360°	450 × 600 × 380 -100 ~ +5° / 360°	1000 × 800 × 600 -100 ~ +5° / 360°	4000 × 1000 × 1000 -100 ~ +5° / 360°
DMT® Module Standard DMT® Module	SDM500	SDM800/1200	SDM800/1200	SDM1200/1800
Deposition Rate	1.5 ~ 42cm ³ /h			
Layer Thickness	0.15 ~ 0.75mm/layer			
Control System	PC-based Control System with Touch Screen DMT® Closed Loop Feedback Control system			
Options	Ar Chamber Structure Atmosphere Controlled System w/Chamber - Gas : Argon (>99.999%)			

Creating innovative solutions for challenges in commercial industries

Examples of industry applications



Home Appliance

A fan mold made by 3D cooling channels : Improvements in cooling efficiency and noise reduction



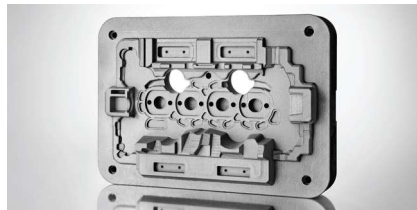
Aerospace & Defense

Air seal repair : cost reduction and life cycle enhancement compared to the original



Aerospace & Defense

Jet engine part repair : longer life cycle and reduction of delivery time



Automotive

30% life cycle enhancement by printing corrosion-resistant material



Automotive

Headlamp mold remodeling: lead time improvement and cost reduction

DMT® enables multi-material 3D printing

Multi-material 3D printing can maximize performance through wear resistance, heatproof, and thermal conductivity enhancement.

Advantages

- Cost reduction by depositing alloys to the right place where functional properties are required
- Able to apply for a new concept product development
- Functionally gradient materials that enables to have high density and excellent mechanical properties



Excellent mechanical properties

Printing metal parts by DMT® has superior mechanical properties, high density and fine microstructures.



H13 Substrate

H13 Printed by DMT®

Materials		UTS (MPa)	YS (MPa)	Elongation	Hardness (HRC)	
H13 (SKD 61)	DMT®	Vertical	1,927	1,400	5%	54
		Horizontal	1,998	1,477	5%	
	Forging Part		1,821	1,385	9%	51

* The data represents the condition with no heat treatment

MPC

Machine for Porous Coating

DMT® Metal 3D Printing System designed for the Industrial Production of Orthopedic Implants

Custom Model

MPC for Medical Application

MPC (Machine for Porous Coating) is developed to apply for orthopedic implant surface coating.

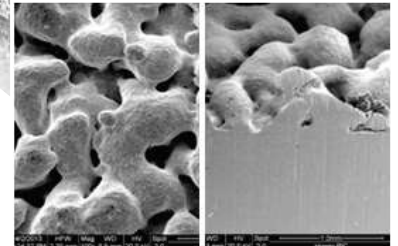
The system is currently being used for artificial knee & hip joint coating.



Technical Data

Laser type	Ytterbium Fiber Laser Max. laser power : 300W
MPC Motion	XYZ Linear Gantry + Tilt, Rotate Motion X/Y/Z Stroke : 300 × 300 × 230 mm A/C Stroke : -100 ~ +5° / 360° 2 Plane Tables for product
MPC Module	SPM200 (Special Porous coating Module)
Control System	PC-based Control System with Touch Screen Ar Gas(99.999%)
Gas Requirement	Ar Gas(99.999%)
Environmental Control	Chamber(Globe box) Structure

Creating innovative solutions for challenges in medical industries



SEM of Porous Coating by MPC:
MPC provides excellent mechanical properties and porosity fulfilling industrial production requirements.

Examples of industry applications

IDEAL POROSITY

Surface roughness ensured with porosity higher than 60% and ideal porosity (pore size: 100-400um) that strengthens interfacial bonding between coating layer and substrate as well as biological fixation with bones

SUPERIOR CUSTOMIZATION

Entirely customizable for cups, knees, shoulders, ankles and more as needed

EXCELLENT MECHANICAL PROPERTY

The lowest oxygen index with an environmental chamber and MPC enables exceptionally high mechanical properties

USER FRIENDLY INTERFACE

Simple coating procedure with easy step and easily controllable pore shape, thickness, roughness

ECONOMICAL ADVANTAGE

Cost effective compared with the conventional method and rapid fabrication

MINIMIZED HEAD MODULE

Minimized head module to avoid the interference with the objects and optimized coating parameters including Ti alloy

COMPLEX PARTS PRODUCTION

Porous coating possible using the simultaneous 5-axis motion



Medical Application

Porous coating of artificial hip Joint and Knee Replacement

Complex product manufacturing and supply chain simplification

Our services include :



Manufacturing

DMT® metal 3D printers enable manufacture of **high-performance** and **multi-material parts** that are composed of **two or more different alloys**.

- Extending product life cycle
- Reducing manufacturing cost
- Manufacturing complex shaped parts
- Applied for new product development such as thermal conductive molds

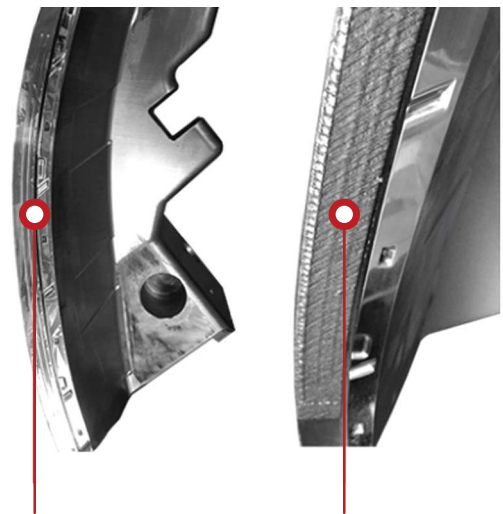
Remodeling

Remodeling by DMT® technology enables enhancement of operational effectiveness including low cost and time reduction.

- Using reverse engineering to repair molds
- Removing unnecessary shapes and remodeling molds
- Able to apply to large-sized test jobs

Headlamp Mold Remodeling

- It was originally required to manufacture new mold for headlamp
- Remodeling by DMT® metal 3D technology
- Customer could have operational effectiveness:
 - Lead-time simplification
 - Material cost reduction



Mold Remodeling: 2 to 4 stripes

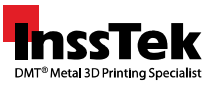


Repair

Mechanical properties of repaired parts are same as or superior to original.

- No visual distinction between original and repaired parts by using alloy powders with the same composition
- Have better mechanical properties compared to original parts

Headquaters



InssTek, Inc.

154 Sinseong-ro, Yuseong-gu, Daejeon, 34109, Korea
T +82.42.935.9646 F +82.42.935.9649 E sales@insstek.com

GlobalPartners



GLM-Service u. Vertrieb GmbH & Co. KG

Umstraße 6, 47929 Grefrath, Germany



DIPAUL Company

197101, 5B Rentgena str. Saint-Petersburg, Russia



SIU System

Rochdelskaya Street, 15 строение 23, Moskva, Russia, 123022



KEYTEK Teknoloji Danışmanlık

Next Level 16. Kat No3A-81 Çankaya/ANKARA

To find your local distributor, please visit: www.insstek.com