



Additive Manufacturing for the industry  
2024

# Our Customers

LEONI



COMMSCOPE®



FOXCONN



• APTIV •

BOYD  
CORPORATION



# Our Additive Manufacturing Services

## 3D Printing

- **METAL** Direct Metal Printing
- FDM (filament) and SLA (resin)
- Serialized production and prototyping
- Training and counseling

## Mechanical design

- Fixture, tooling, mold, mechanisms, machines
- FEA analysis (mechanical simulation)

## Reverse engineering

- 3D scanning and CAD model generation

## Metals & Plastics Heat treatment

- Stress relief
- Aging
- Annealing



3DSystems DMP Flex  
350



Stratasys F170 & F370



Modix BIG-120X



Formlabs Form 3



Nabertherm  
NA 250/85



3D Scanning

# Metals AM at Border Prototypes

## 3DSystems DMP Flex 350

- [275 275 420]mm build volume
- Dimensional accuracy up to  $\pm 0.1\%$  with features as small as 0.200mm

## 316L\* Stainless Steel 3D printing on demand next day delivery

- High Corrosion/acid/chemical resistance even at elevated temperatures ( $+600^{\circ}\text{C}$ )- Ideal for clean rooms
- High tensile strength (660MPa)
- Excellent fatigue, creep, pitting, impact resistance
- High toughness makes an excellent material for clean/controlled environments where contamination is not desired
- Non magnetic
- Excellent thermal conductivity
- Great for serialized production of highly complex geometries

*More metals available upon consultation [Aluminum – Steel - Nickel super alloys – Copper - Titanium]*



\*Fe, <0.03% C, 16-18.5% Cr, 10-14% Ni, 2-3% Mo, <2% Mn, <1% Si, <0.045% P, <0.03% S

# Metals AM at Border Prototypes

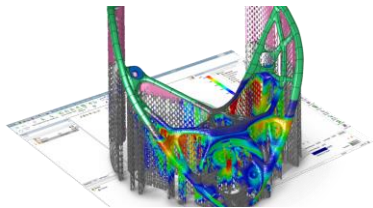
## Pre-processing

CAD, FEA Thermal & Mechanical simulation and print preparation

 **SOLIDWORKS**

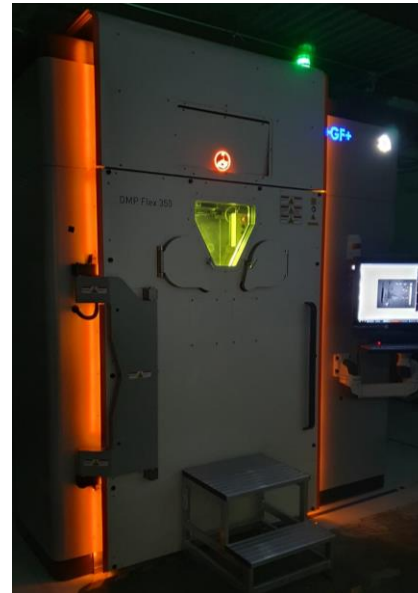
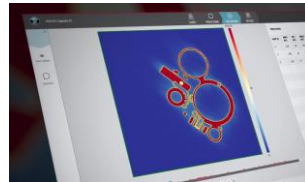
 **AUTODESK® FUSION 360™**

 **3DXpert**



## 3D Direct Metal Printing

In-situ Optical tomography quality assurance process monitoring



State of the art 3DSYSTEMS  
DMP 350 Flex

## Post Processing

Inert gas Heat treatment



Sanding/polishing



Machining  
finishing/tapping



*End to end processing in-house*



# Plastics AM at Border Prototypes

## FDM Systems

- Stratasys F170 & F370 (End User Production)
- Modix Big 120x (Large Format FDM)
- Ultimaker Method X (Prototyping, custom materials)

*FDM Materials [ABS ABS-CF ABS-PC ASA PLA PA12 PA6-CF]*



## SLA Systems

- Formlabs Form 3+ fleet (Prototyping, End User production, low to mid volume production)
- Formlabs Form 3B (Medical)

*All Formlabs Resins available and in stock*



*SLS (Powder) and MFJ printing services available prior consultation*

# Equipment specs summary

Machine	Technology	Build Volume [x y z] (mm)	Accuracy	Materials
Formlabs Form3 (5x)	SLA	[145 145 185]	<b><u>±0.025 mm</u></b> <b><u>High Accuracy</u></b> end user parts	Draft, Tough, Flexible, Rigid, High Temp, Biomed (FDA compliant), Standard (clear, colored)
Stratasys F170	FDM	[254 254 254]	±0.200 mm	PLA, ASA, ABS, ABS/CF, TPU 92A, Diran 410Mf07, ABS-ESD, PC-ABS, PA12, PA6
Stratasys F370		[355 254 355]	End user, high repeatability <b><u>production grade</u></b> parts	
Makerbot Method X		[152 190 193]	±0.200 mm High accuracy <b><u>specialty materials</u></b>	
Modix Big 120x		<b><u>[1200 600 600]</u></b>	±0.600 mm <b><u>LARGE</u></b> build volume, many materials	
3DSystems DMP Flex 350	DMP	[275 275 420]	±0.1% with features as small a 0.200mm High accuracy production metal parts	<b>316L Stainless steel</b> More materials available
Makerbot Method X				



# Contact

For more information we are pleased to help you at:

[sales@borderproto.com](mailto:sales@borderproto.com)

Web:

[Borderproto.com](http://Borderproto.com)