



Additive Manufacturing for the industry 2024

Our Customers

LEONI



COMMSCOPE®



FOXCONN



• **A P T I V** •

BOYD
CORPORATION



Our 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)

CNC machining

- 3 axis CNC milling (stainless, aluminum, titanium, tool steel...)

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



3D Scanning



Formlabs Form 3



HAAS VF2 3-axis



Nabertherm
NA 250/85

Metals AM @ 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

Materials

- Steels [316L* 17-4PH 1.2709...]
- Aluminum [ALF357 ALSi10Mg]
- Nickel [IN718 HX...]
- Titanium [Ti64...]
- Cobalt Chrome



*316L readily available

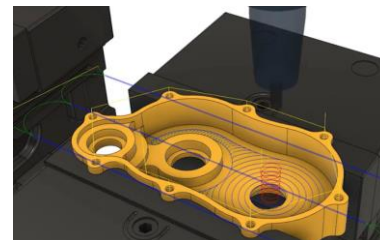
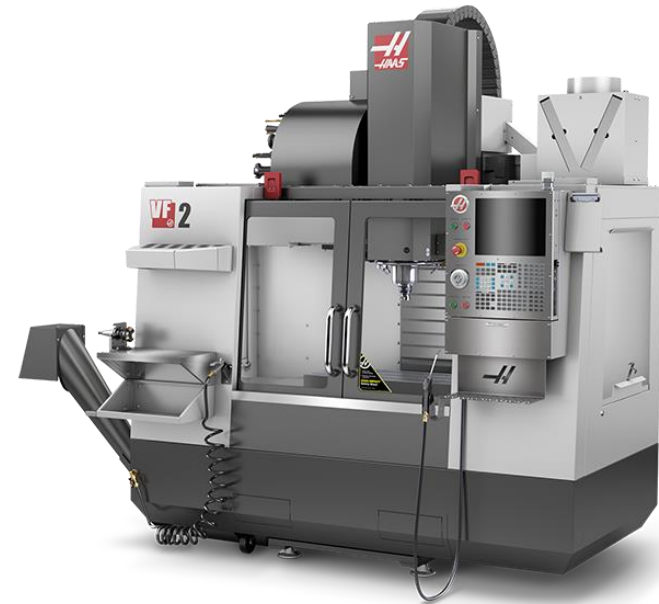
CNC machining @ Border Prototypes

HMAS VF2

- [760x 400y 508z]mm axis travel
- 3 axis, with 4th and 5th axis available prior consultation

Materials we handle

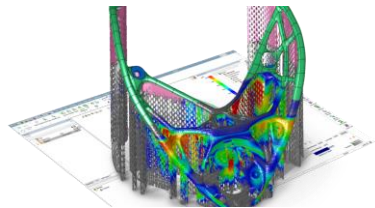
- Stainless & tool steels
- Aluminum alloys
- Titanium alloys
- Plastics [POM]



Metals AM at Border Prototypes

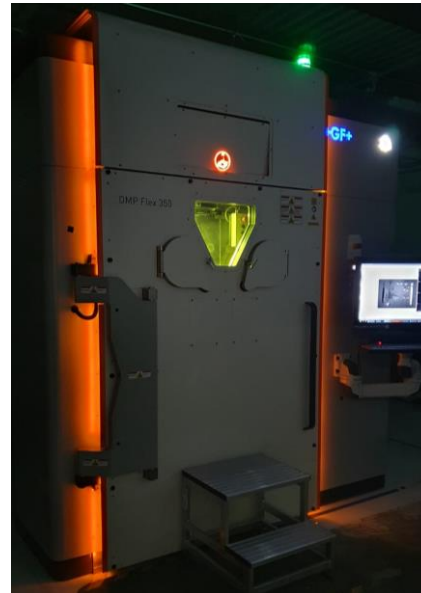
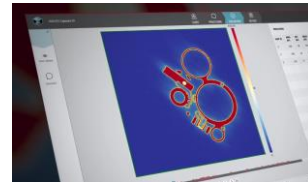
Pre-processing

CAD, FEA Thermal & Mechanical simulation and print preparation



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]	± 0.025 mm High Accuracy 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, PM2, PA6
Stratasys F370		[355 254 355]	End user, high repeatability production grade parts	
Makerbot Method X		[152 190 193]	± 0.200 mm High accuracy specialty materials	
Modix Big 120x		[1200 600 600]	± 0.600 mm LARGE build volume, many materials	
3DSystems DMP Flex 350	DMP	[275 275 420]	$\pm 0.1\%$ with features as small a 0.200mm High accuracy production metal parts	316L Stainless steel More materials available
HAAS VF2	CNC	[760 400 500]	3 axis (4 and 5 available prior consultation), typical accuracy \pm	Stainless & tool steels, aluminum, titanium, POM



Contact

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