



Additive Manufacturing for the industry 2025

Our Customers



Our Manufacturing Services

3D Printing

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

CNC Milling

- HAAS VF2 3 axis vertical milling center

Engineering consulting

- 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



HP JetFusion 4200



HAAS VF2



Modix BIG-120X



Formlabs Form 3



Nabertherm
NA 250/85



3D Scanning

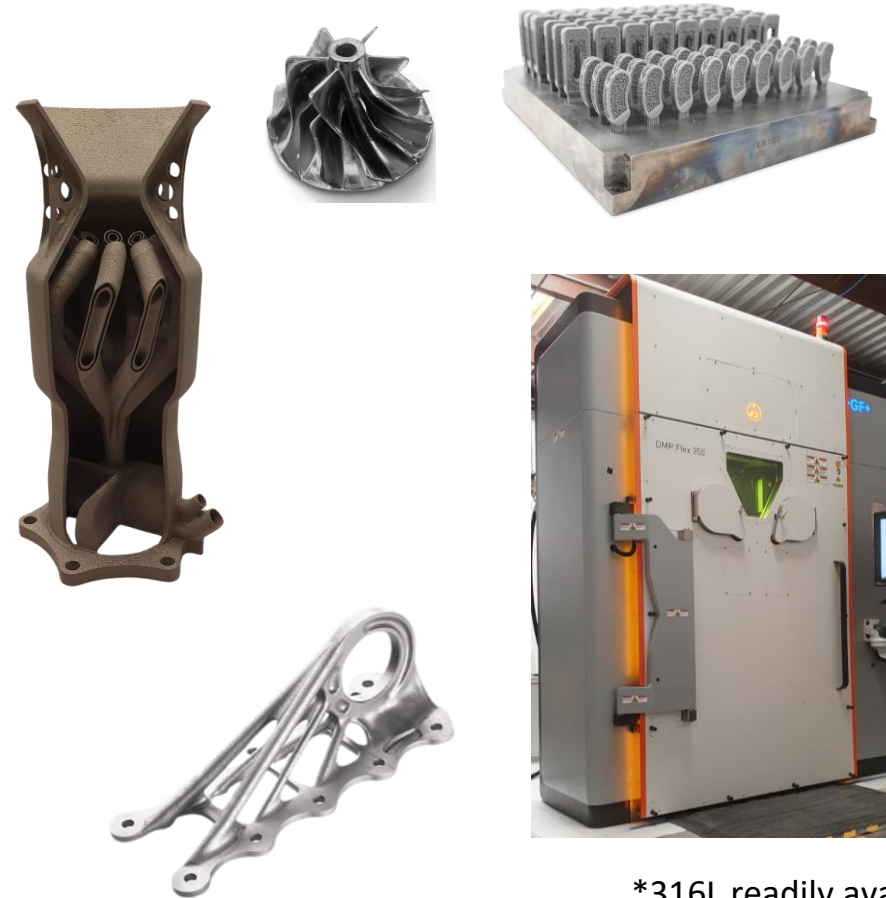
Metals AM @ Border Prototypes

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

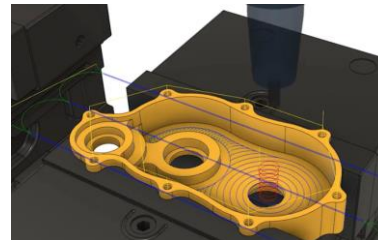
CNC machining @ Border Prototypes

HAAS 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

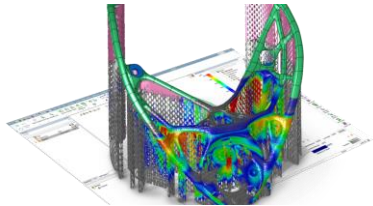
Pre-processing

CAD, FEA Thermal & Mechanical simulation and print preparation

 **SOLIDWORKS**

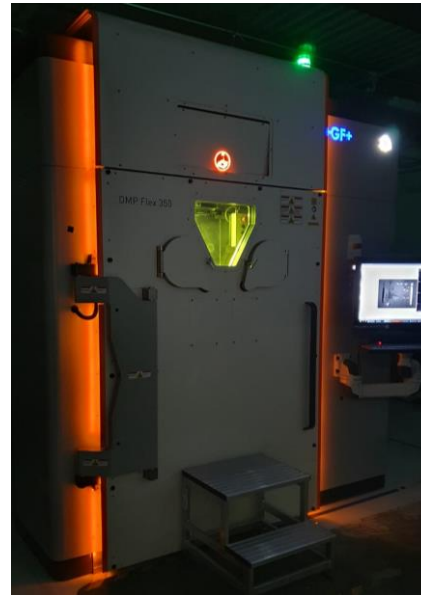
 **AUTODESK® FUSION 360™**

 **3DXpert**



3D Direct Metal Printing

In-situ Optical tomography quality assurance process monitoring



State of the art 3DSYSTEMS
DMP 350 Flex

Post Processing

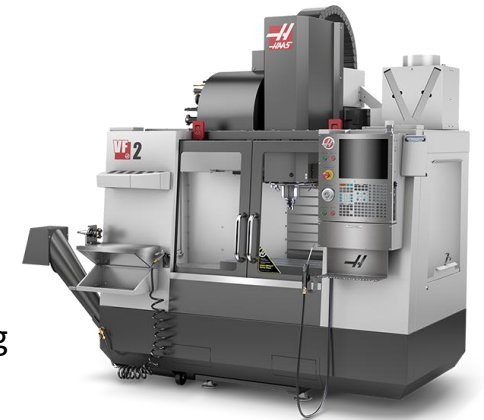
Inert gas Heat treatment



Sanding/polishing



Coming soon!
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

HP Jet Fusion Systems

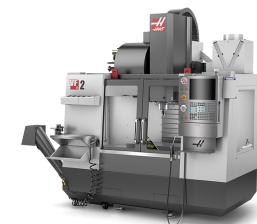
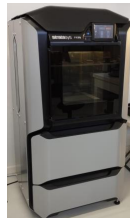
- HP Jet Fusion 4200 (Prototyping, End User production, low to mid volume production)
- Nylon 11 and Nylon 12

SLS (Powder) 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]	<u>±0.025 mm</u> <u>High Accuracy</u> 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 <u>production grade</u> parts	
Makerbot Method X		[152 190 193]	±0.200 mm High accuracy <u>specialty materials</u>	
Modix Big 120x		<u>[1200 600 600]</u>	±0.600 mm <u>LARGE</u> 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	316L Stainless steel More materials available



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3DSYSTEMS DMP Flex 350	DMP	[275 275 420]	±0.1% with features as small a 0.200mm High accuracy production metal parts	316L Stainless steel More materials available
HP Jet Fusion 4200	MJF	[380 284 380]	±0.300 mm End user, high repeatability <u>production grade</u> parts	Nylon 11 & Nylon 12
HAAS VF2	CNC Mill	[760 400 500]	3 axis (4 and 5 available prior consultation), typical accuracy ±0.013mm (±0.005in)	Stainless & tool steels, aluminum, titanium, POM



Software capabilities

Multiple CAD formats
accepted (client provided)

- .sldprt
- .step .stp
- .prt
- .3mf
- .dwg .dxf
- .ipt .iam
- .catpart
- .igs
- .stl
- .x_t
- .3dm
- .par



Analysis,
design/re-design



Pre-processing/Slicing



3DXpert



Materials available ON DEMAND

SLA

- Draft (cost effective prototyping)
- Clear (general purpose resin)
- Tough 2000 (end use components)
- High temp (+200°C applications)
- Rigid 10k (High tensile modulus)
- Specialty materials
- FDA approved Tough 1500
- Colored general purpose resins
- Flexible & elastic resins
- Biomedical and dental resins

***25µm [X Y] and up to 25µm [Z] resolution with
a maximum build volume of
14.5*14.5*18.5cm***



FDM

- PLA (cost effective prototyping)
- ABS (end use components)
- ABS ESD (static discharge safe)
- ABS/PC (higher mech. Resistance vs ABS)
- PA6 (general purpose nylon, abrasion resistant end use components)
- PA12/CF (Highest strength to weight ratio nylon with carbon fiber reinforcement)
- ASA (UV resistant end use components)

Specialty materials

- ABS/Glass fiber (higher strength and thermal stability than ABS)
- PTEG (High chemical resistant, food safe components)
- PA6/Glass Fiber (Highest thermal stability, abrasion resistance)
- Flame retardant ABS (UL94 V-0 rated)
- TPU (flexible Shore 90A material)

***Resolutions available from 200µm [X Y] and
127µm [Z] with a maximum build volume of
1200*600*600mm***

Benefits of using a dedicated 3D printing supplier

- Expert personnel + Industrial grade equipment
 - Dimensional accuracy +/- 0.200 mm or 0.008 in.
- Speed to market, materials in stock (SLA, FDM & DMLS)
- Low volume and high mix capabilities.
- Avoid capital expenses on equipment- setup, training, operations and floor space.

Contact

For more information we are pleased to help you at:

larecco@borderproto.com
Mobile +52 (656) 107-1706

Web:

Borderproto.com

