Xometry

When to Select Stereolithography (SLA) 3D Printing

LIVE WEBINAR

Xometry

Today's Presenters

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AGENDA

- What's new at Xometry?
- Why SLA?
  - The strengths of SLA
  - Choosing SLA over other processes
  - Our SLA materials
- Open Q&A
- Xometry's Online Resources
  - Design Tips
  - FAQ/Live Engineering Support

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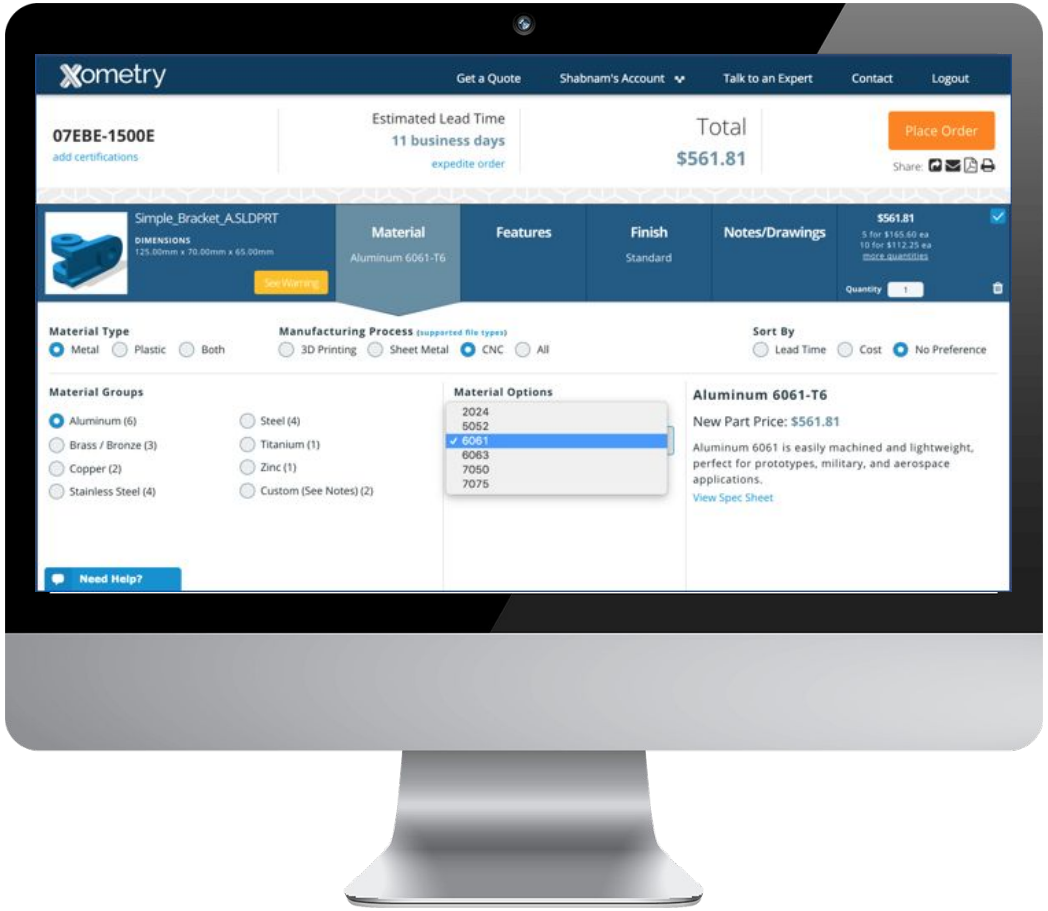
XOMETRY INSTANT QUOTING ENGINE℠



Manufacturing On Demand

- Instant pricing and quoting
- Manufacturability Analysis
- Dynamic Pricing & Lead Times
- Guaranteed High-Quality Parts

[Watch a demo of the quoting process]

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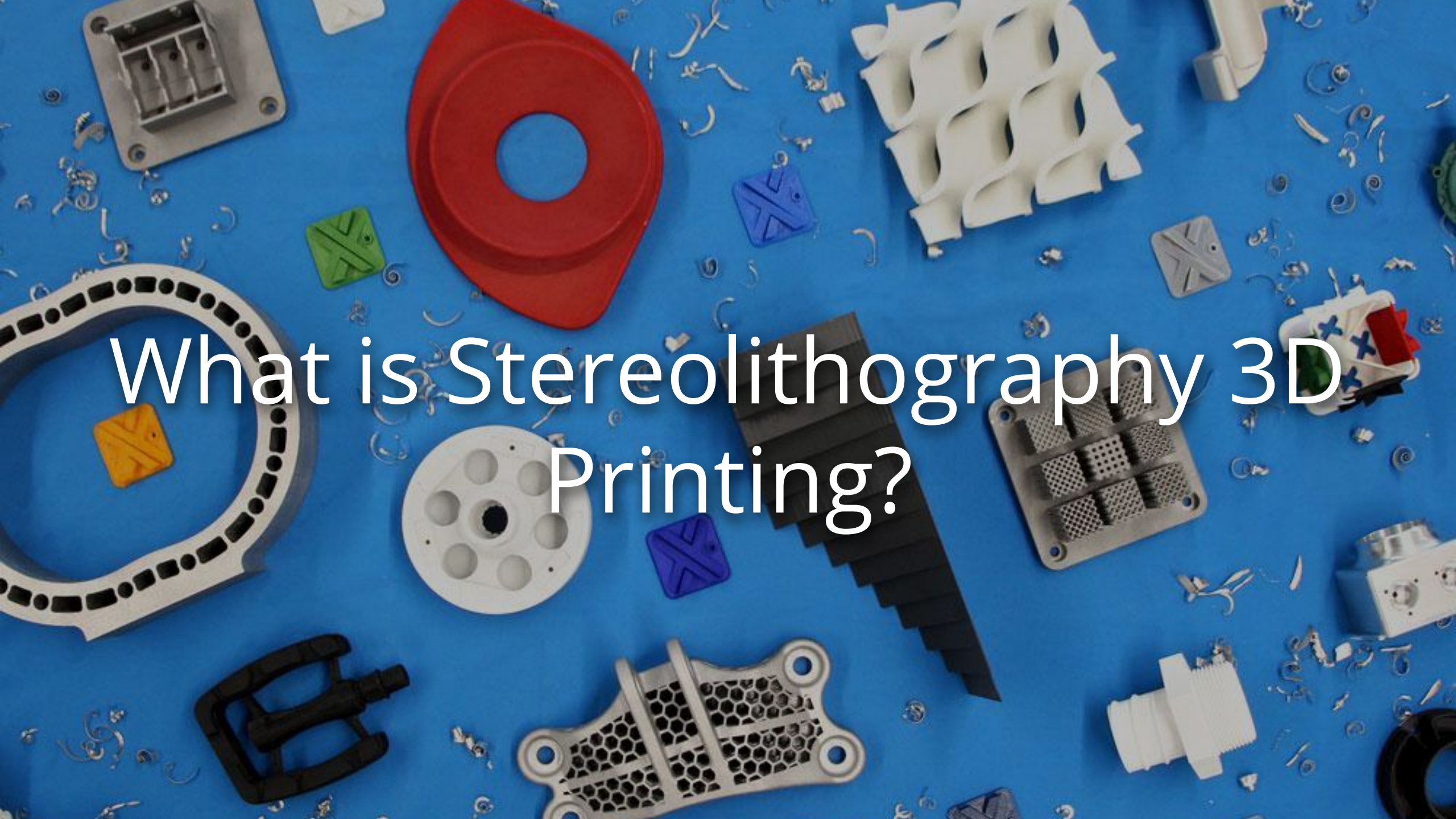
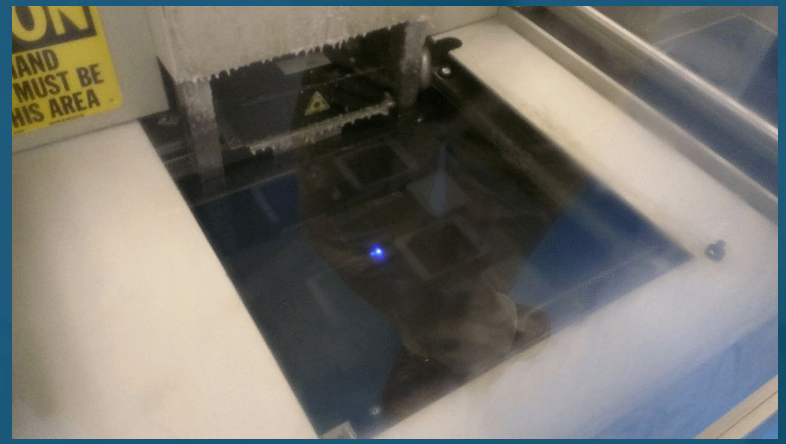


What is Stereolithography 3D Printing?

The Strengths of Stereolithography 3D Printing

- Superior surface finish
- High resolution and definition
- Highly accurate to CAD
- Engineered to mimic different thermoplastics
- One of the strongest processes for prototyping



Selective Laser Sintering

- High complexity w/o supports
- Scalable
- More strength
- Higher impact resistance

- Less detail
- Difficult to finish

Fused Deposition Modeling

- Thicker parts
- Panels

- Need for actual thermoplastics
- Sweats the small details

Direct Metal Laser Sintering

- Real, solid, metal
- Decent detail

- Grainy surface finish
- Very difficult to finish
- Design for the process

Stereolithography

- Smooth surface finish
- High accuracy and detail
- Engineered material simulants
- Excellent balance of form/fit/function

- Limited life span

PolyJet 3D Printing

- Faster lead time
- Multi-material
- Rubber-like prototypes

- Small details or channels may be damaged in post processing

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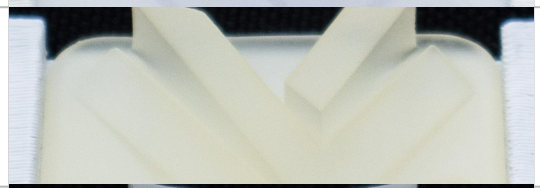
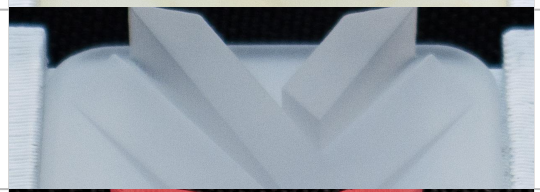
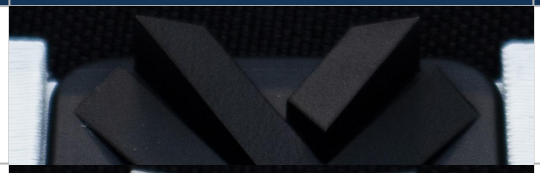
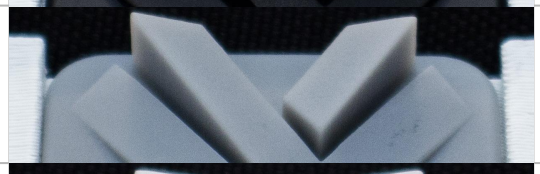
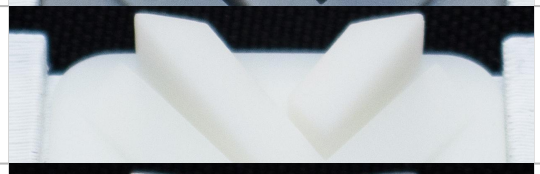
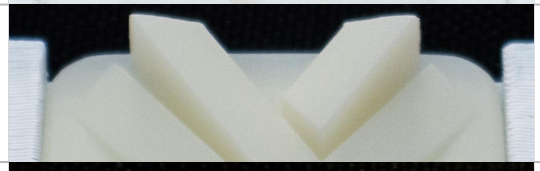
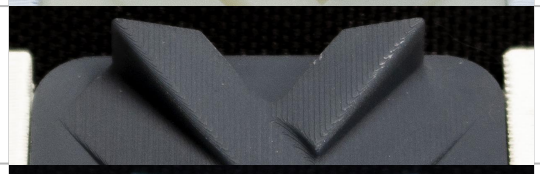
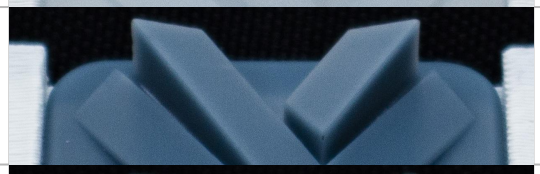
Performs-like	Materials	Appearance	High Resolution
Polypropylene-like	Accura 25		Available
	Somos NeXt		Available
Polycarbonate-like	Accura ClearVue		Available
	Accura 48HTR		
	Accura 60		Available
	Somos ProtoTherm 12120		
	Somos WaterClear Ultra 10122		

Performs-like	Materials	Appearance	High Resolution
ABS-like	Accura ABS Black (SL 7820)		Available
	Accura Xtreme Grey		Available
	Accura Xtreme White		Available
	Somos ProtoGen 18420		
	Somos Taurus		
	Somos Watershed XC 11122		Available
Ceramic-filled Composite	Accura Bluestone		
	Somos PerFORM		

Stereolithography

- Can hit higher detail than many other 3D printing processes
- High resolution options
- Can print fairly large (up to 58” in extreme cases)
- Printed materials can be flexible, rigid, or even “ceramic” stiff

Urethane Casting

- Master patterns made with SLA due to high accuracy and ability to easily finish surface
- High temp materials used for patterns
- Pre-cast prototyping

Injection Molding

- SLA is the best prototyping method for IM
- Many materials available to simulate plastic behavior
- Some mold shops are experimenting with rigid composite SLA molds

CNC Machining

- SLA is sometimes used for prototyping
- Some SLA can be used as fixturing
- Can be valuable for prototyping threads, splines, and gears

Sheet Metal Fabrication

- SLA is rarely used for prototyping
- Some SLA can be used as fixturing

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Surface Finish Options

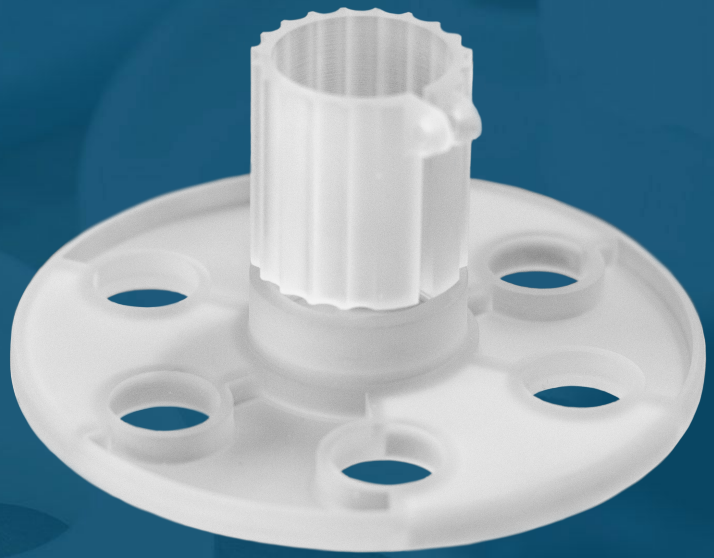
Standard Selections

- **Standard:** Parts are cleaned, stripped of supports, and may be lightly sanded around the supported area. Supported areas may show small grid-like dots where structure was required.
- **Matte:** Parts are cleaned, stripped of supports, and then either wet or dry grit blasted to give a consistent matte finish across the part. Supported areas may show small grid-like dots where structure was required.
- **Custom:** Xometry provides a variety of additional SLA finishing options, including but not limited to: sanding, painting, post thermal processing, and nickel plating to meet your needs.

Surface Finish Options

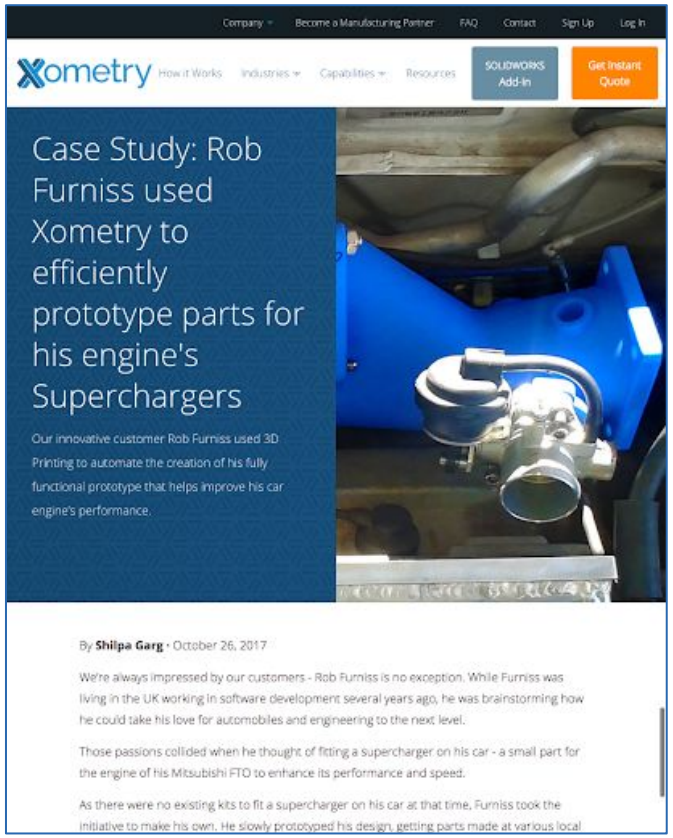
From Translucent to Transparent

- SLA is the best process for making clear prototype parts for models
- Significant manual post processing is required
- Requires a manual quote for “Custom” finish



Got your questions ready?

XOMETRY'S ONLINE RESOURCES



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YOUR ONE-STOP SHOP: XOMETRY'S MANUFACTURING CAPABILITIES

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Xom IQ℠ Sweepstakes

Grand Prize: EinScan-SP 3D Scanner

Ask Us Anything!

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A MANUFACTURING LEADER ACROSS INDUSTRIES

The largest brands trust Xometry for their custom parts

32%

of Fortune 100 Companies

18%

of Fortune 500 Companies

* 52% of Fortune 100 and 23% of Fortune 500 companies have ordered custom parts from Xometry, when adjusted to remove financial & insurance institutions

Xometry's customers include engineers in each major manufacturing industry

90% of Top 10 Fortune 500 Aerospace Companies

90% of Top 10 Fortune 500 Technology Companies

44% of Top 10 Fortune 500 Automotive Companies

86% of Fortune 500 Medical Device Companies

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FAQ/LIVE ENGINEERING SUPPORT

Live support hours: M-F 8:00 AM - 9:00 PM EST

Email
support@xometry.com

Phone
240-252-1138

Live Chat
Talk to an Expert

After Hours/Anytime: Browse our FAQ at xometry.com/support

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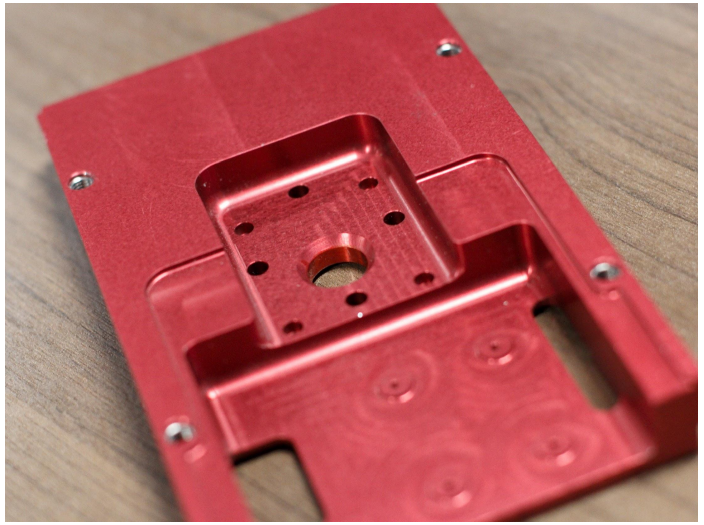
CNC MACHINING

Key Information:

- High-precision tolerances ranging from +/-0.001" – 0.005", depending on customer specs
- Choose from over 50 metal and plastic materials. CNC Machining offers a wide variety of certified materials
- Select from a variety of finishes on solid metal or plastic parts, built to precise design specifications.



Advantages:

Rapid Turnaround

Material Selection

Scalability

Custom Finishes

Precision

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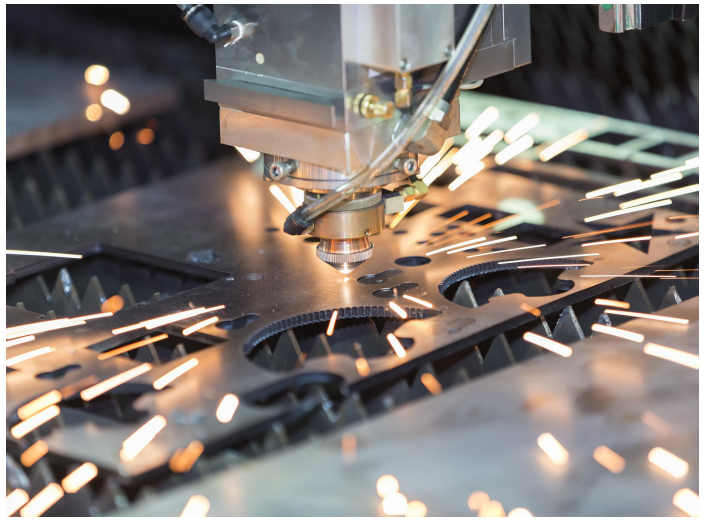
SHEET METAL FABRICATION

Key Information:

- Durable, end-use metal parts
- Cost-effective way to fabricate product device panels, boxes and cases for a variety of applications
- Wide range of strength, conductivity, weight, and corrosion-resistance

Advantages:

- Durability
- Material Selection
- Scalability
- Customization
- Rapid Turnaround



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METAL 3D PRINTING: DIRECT METAL LASER SINTERING (DMLS)

Key Information:

- Known for building fully dense, complex parts, end-use
- Tolerances of +/- .005” plus .002” per inch is typical for DMLS
- Can be milled and welded
- Textured surface requires post processing to smooth

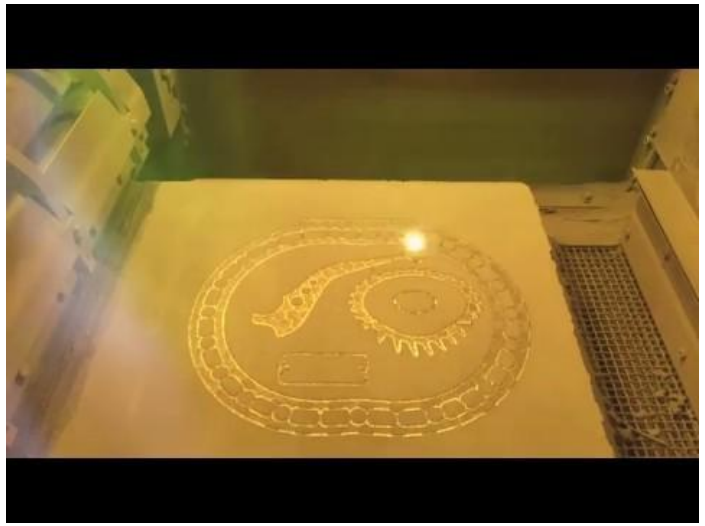
Advantages:

Rapid Turnaround

Complex Geometry

Strength

Efficiency



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PLASTIC 3D PRINTING: SELECTIVE LASER SINTERING (SLS)

Key Information:

- Known for high complexity in parts
- Uses nylon as a durable, flexible, and chemical resistant material
- Water-tight
- Tolerance of +/- 0.005" or +/- 0.002" per inch, whichever is greater
- Lower diversity in material/finishing options, has a textured or grainy surface
- Often chosen for internal components/non-cosmetic parts (jigs, fixtures)

Advantages:

- Precision
- Durability
- Scalability
- Complex Geometry
- Rapid Turnaround
- Part Production

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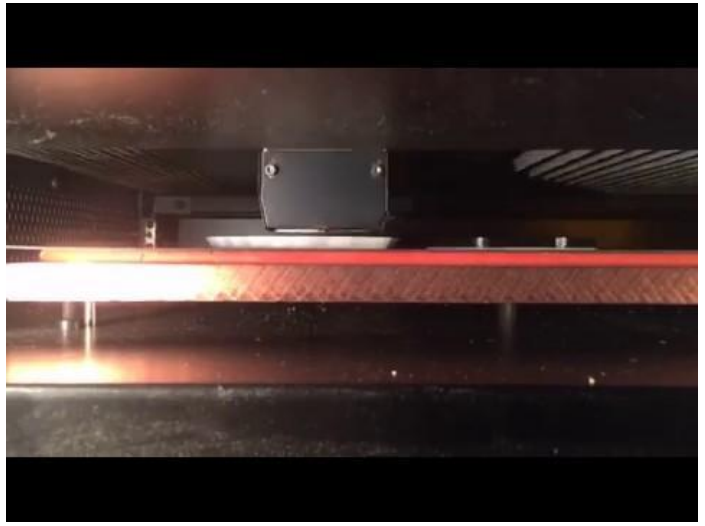
PLASTIC 3D PRINTING: FUSED DEPOSITION MODELING (FDM)

Key Information:

- Known for printing big
- Has over 50 different materials like ABS, ASA, PC, PPSF, and Ultem - Colors!
- Does sweat the small details, has noticeable layer stepping
- Great for large custom fixtures

Advantages:

- Precision
- Strength
- Large Build
- Customization
- Complex Geometry
- Rapid Turnaround
- Part Production



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PLASTIC 3D PRINTING: STEREOLITHOGRAPHY (SLA) & POLYJET (PJ3D)

Key Information:

- Known for the best and finest details
- Several resins ranging from rigid to rubber like
- Clear and translucent parts
- Not very durable
- A “best-use” tool for final fit checks before moving to traditional manufacturing

Advantages:

- Precision
- Material Selection
- Rubber-like Flexibility
- Complex Geometry

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INJECTION MOLDING

Key Information:

- In almost every case, an injection molded part will outperform the same 3D printed or machined part from the same material
- Best known for producing production parts in the many thousands or even millions
- Economy of scale - the more you buy, the more you save on cost per unit
- Ultra-precise surface finishes can be reproduced over and over when machined into the mold

Advantages:

- Rapid Turnaround
- Precision
- Scalability
- Efficiency
- Strength
- Part Production

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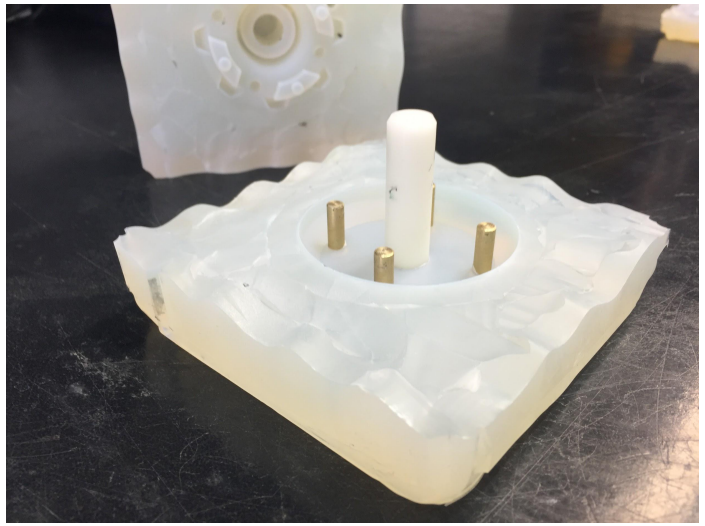
URETHANE CASTING

Key Information:

- Perfect for low-quantity production when volumes do not justify investment in injection mold tooling
- Test designs with a variety of materials in the same mold
- Capable of reproducing small details - little to no finishing is required

Advantages:

- Durability
- Scalability
- Rapid Turnaround
- Material Selection
- Color Matching & Finishes



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