GKN ADDITIVE
FORECAST 3D

HP Multi Jet Fusion

Powerful technology delivering detailed and durable 3D-printed parts

About

HP Multi Jet Fusion 3D printing technology (also known as HP MJF) produces durable parts using robust material properties at groundbreaking speed. This manufacturing process prints a new layer of material atop a layer that is molten, allowing the part to fuse completely. This eliminates the constraints posed by traditional designs and large capital investments for tooling.

Our Southern California and Detroit-area manufacturing centers house 36 HP MJF printers and have the capacity to produce hundreds of thousands of production parts each week. MJF delivers parts within days, allowing users to make design revisions, receive parts, and deliver products to market faster.

Benefits

- Ideal for prototyping and production
- Excellent dimensional accuracy and detail
- Robust mechanical properties
- Isotropic in all axes
- Manufactured in the United States

Applications

- Flexible and bridge manufacturing
- Functional prototypes and end-use parts
- Batch production for testing and validation
- Serial production

Build units for an HP Multi Jet Fusion printer

Process

1. GKN Additive (Forecast 3D) reviews CAD file and advises customer if features do not meet minimum requirements or design edits are needed.
2. Project technicians prepare customer's order files to ensure printability before initiating build setup.
3. Customer receives order confirmation, showing detailed project schedule and ship date.
4. HP MJF printers produce parts using fusing and detailing agents over a powdered Nylon 12 building area with infrared lamps to build entire layer in a single pass.
5. Parts cool for 24-48 hours in build unit before project team sends to post-processing for cleaning and finishing.
6. Quality assurance team reviews parts for official sign-off and release to customer.

"What appealed to us most was GKN Additive (Forecast 3D)'s knowledge of the HP MJF process, as well as their capacity to deliver the quantities of parts needed."

— Yoav, partnering director of mechanical engineering

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Lead Time	3–5 days, with turnaround in as little as one day
Accuracy	+/- .012 up to 3.937 inches and +/- .003 for every inch above that. +/- 0.3mm ≤ 100mm, +/- 0.4% > 100mm (+/- 0.016" ≤ 3.900", +/- 0.4% > 3.900")
Standard Layer Thickness	80 microns
Minimum Wall Thickness	.020" / .5mm (XY plane is .012" [.3mm] and for the Z plane .020" [.5mm])
Maximum Build Envelope	380mm x 284mm x 380mm
Finishes	Natural gray, dyed black, carbon gray, vibratory tumble, vapor polishing, performance paint, flex paint, specialty dye

Materials

PA 11 (Nylon 11). Thermoplastic delivering optimal mechanical properties, known for producing strong, ductile, functional parts

PA 12 (Nylon 12). Engineering-grade thermoplastic for high-density parts offering extreme dimensional accuracy and fine detail for functional prototyping and final parts

PA 12 Glass Bead (Nylon 12 GB). Forty percent glass bead-filled material producing stiff, functional parts

PP (Polypropylene). Ideal for producing chemical-resistant, weldable, low moisture-absorption, functional parts

TPU 88A (BASF Ultrasint TPU01). MJF-specific thermoplastic from BASF offering high wear/abrasion resistance, ideal for applications needing rubber-like flexibility and excellent shock absorption

TPU 95A (Estane 3D TPU M95A). Thermoplastic polyurethane (TPU) material from Lubrizol featuring high tear strength, flexible design, and versatility

These surfboard fins were printed using PA 12 (Nylon 12), shown in the following colors/finishes (from left to right): dyed back, carbon gray, natural gray

This robot arm was printed using HP Multi Jet Fusion technology with PA 12 (Nylon 12) material and a carbon gray finish.

Find out how GKN Additive (Forecast 3D) can take your product from prototype to production. Visit forecast3d.com today or contact us directly at (877) 835-6170 or hello@forecast3d.com to learn more.