

# Market Guide to 3D Printer Manufacturers

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## Supply Chain Value Hidden in Plain Sight

Wheel Protection Jig		
	External Suppliers	Ultimaker 3D Printers
Cost	\$835/part	\$22/part
Time	56 days	10 days



Photo source: Ultimaker

## Supply Chain Value Hidden in Plain Sight

### Volkswagen Autoeuropa:

- 100,000 vehicles produced annually
- 1,000 3D printed jigs and tools
- Seven Ultimaker desktop 3D printers
- \$310,000 annual savings
- Two month ROI



Photo source: Ultimaker

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## 3D Printing Defined

An additive technique that uses a device to create physical objects from digital models



Photo source: Desktop Metal

## 3D Printing Defined

An Additive Technique That Uses a Device to Create Physical Objects From Digital Models

Technology	Definition	3D Printer Price Range
<b>Material Extrusion</b>	Material is selectively dispensed through a nozzle or orifice	\$0.5k to \$400k
<b>Stereolithography</b>	Liquid photopolymer is selectively cured by light-activated polymerization	\$3.2k to \$800k
<b>Sheet Lamination</b>	Sheets of material are bonded to form an object	\$9.0k to 37.0k
<b>Binder Jetting</b>	A liquid bonding agent is selectively deposited to join powdered materials	\$5.0k to \$1.8m
<b>Material Jetting</b>	Droplets of build materials are selectively deposited	\$20k to \$600k
<b>Directed Energy Deposition</b>	Focused thermal energy fuses materials by melting them as they are being deposited	\$200k to \$5.0m
<b>Powder Bed Fusion</b>	Thermal energy selectively fuses regions of a powder bed	\$20k to \$2.0m

US dollars; k = Thousand; m = Million

## Another 2D Technology Goes 3D

Selective Thermoplastic  
Electrophotographic Process  
(STEP)  
From Evolve Additive

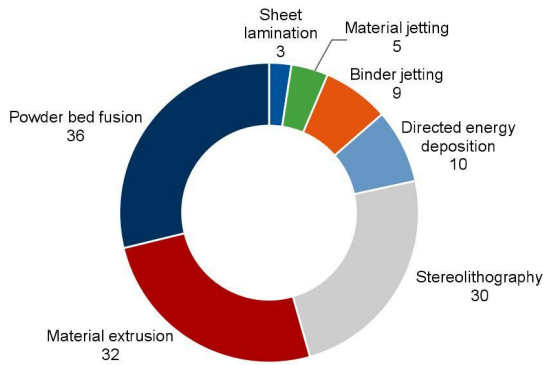


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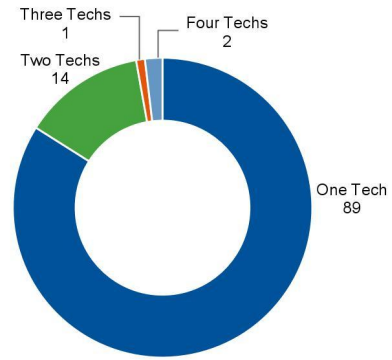
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# The 3D Printer Technology Landscape, Worldwide

Number of 3DP Manufacturers by Technology



Number of Manufacturers With Multiple Technologies



Note: 3DP = 3D printer; Graphs include only companies with 3D printers costing more than \$2,500  
See Gartner's "[Market Guide for 3D Printer Manufacturers](#)." (G00319094) for more details and a list of providers

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## 3D Printing at the Beginning, Middle and End



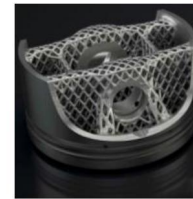
### Rapid, Iterative Prototyping

- Prototype in plastic, produced in either plastic or metal
- Produce copies at multiple locations simultaneously



### Tools, Jigs, Fixtures

- Increased productivity
- Greater flexibility
- Improved quality
- Fewer injuries



### Finished Goods

- Low-volume end-use parts and spares
- Bridge manufacturing, startup, end-of-life
- Customized designs

Photo sources: Stratasys (Volvo engine pump), Markforged (grippers), Frustum (engine pistons)

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## Balance the Supply Chain Opportunities and Risks

### Opportunities

- Unique Product Performance
- On-Demand Product and Tools
- Reduced Product Complexity
- Response to Design Changes

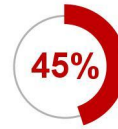


85% of supply chain practitioners are using or will use 3D printing within two years



### Risks

- Limited Supply Sources
- Lack of Certified Processes
- Specialized Skills Required
- Producing Product at Scale

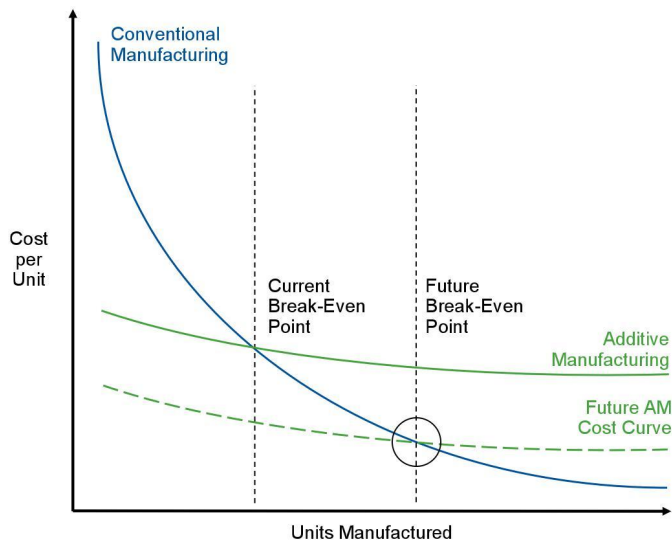


45% of supply chain practitioners say 3D printing presents a significant supply chain challenge

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## Volume Determines Whether to Use 3D Printing

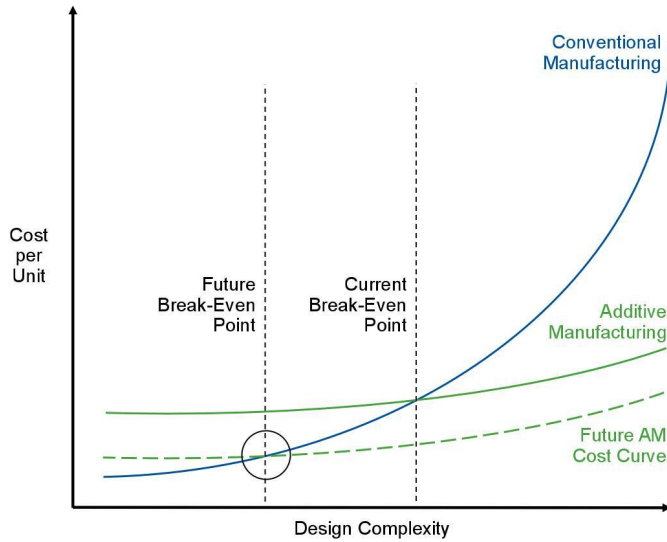


Injection Molding Machine

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## Complex Designs Favor Additive Manufacturing



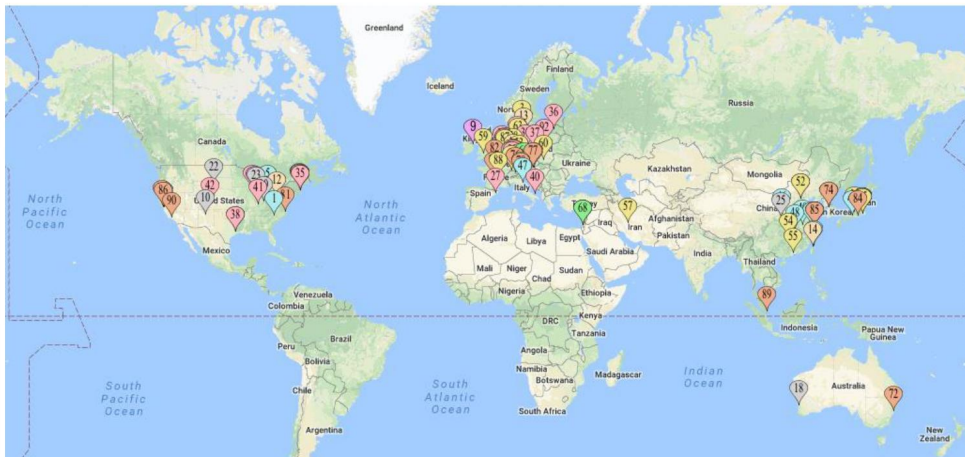
Hydraulic Valve Block

Photo source: VTT Technical Research Centre of Finland

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## How Do You Pick the Right 3D Printer Manufacturer When There Are More Than 100 Enterprise-Class Suppliers?



100+ vendors are listed in the ["Market Guide for 3D Printer Manufacturers."](#) (G00319094)

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## Begin With the End in Mind

1. What do you want to build?
2. What technology or technologies can produce the part?
3. Who manufactures the 3D printers that can build the part?
4. Which model 3D printer meets your requirements?
5. Which 3D print service bureau meets your needs?



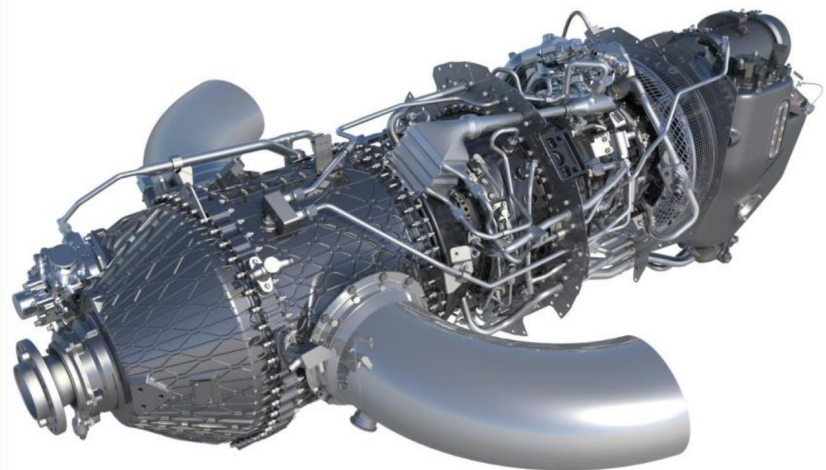
Photo source: Siemens

3D Printed Gas Turbine Blades

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From  
**Design for  
Ideal  
Manufacturing**  
to  
**Manufacturing  
the Ideal  
Design**



Advanced Turboprop Engine (ATP) photo source: GE Aviation

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## Recommended Gartner Research

- ▶ [Market Guide for 3D Printer Manufacturers](#)  
Pete Basiliere (G00319094)
- ▶ [Market Guide for 3D Print Service Bureaus](#)  
Pete Basiliere (G00326947)
- ▶ [Take a Strategic View of 3D Printing to Maximize Its Value Within Your Supply Chain](#)  
Michael Burkett and Pete Basiliere (G00332549)
- ▶ [Adopting 3D Printing for Industrial Parts Has Key Impacts on CAD and PLM Priorities](#)  
Marc Halpern (G00312880)
- ▶ [Predicts 2018: 3D Printing and Additive Manufacturing](#)  
Pete Basiliere, Michael Shanler, Stephen E. Smith and Others (G00342398)

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