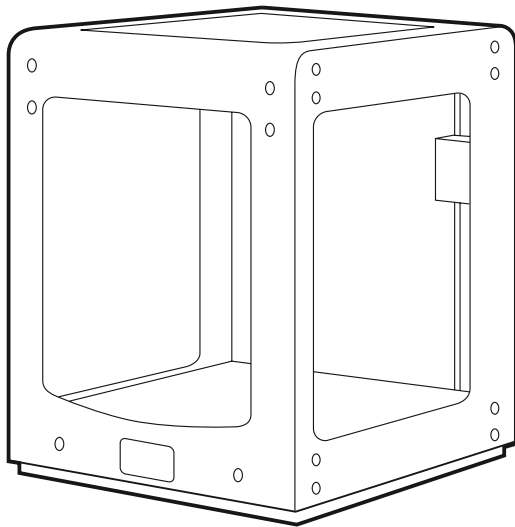
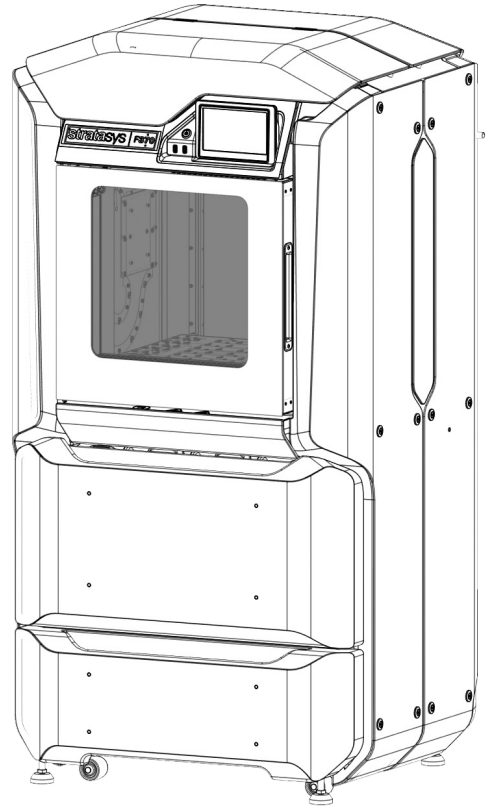


FFF Desktops vs. Stratasys FDM® 3D Printers Comparative Study

In a recent study* comparing Stratasys® F123™ Series 3D printers with four desktop printers, the F123™ Series came out on top by a wide margin. An overview of the findings is presented here, and you can schedule a discovery session with a Stratasys authorized reseller for more details on the head-to-head comparisons.

*Study conducted by Pragmatek Consulting specifically using the Stratasys F170™ 3D printer.



“

The Stratasys F170™ printer performed the best in the study in terms of ease of use, trouble-free printing and superior quality parts.”

Study Parameters

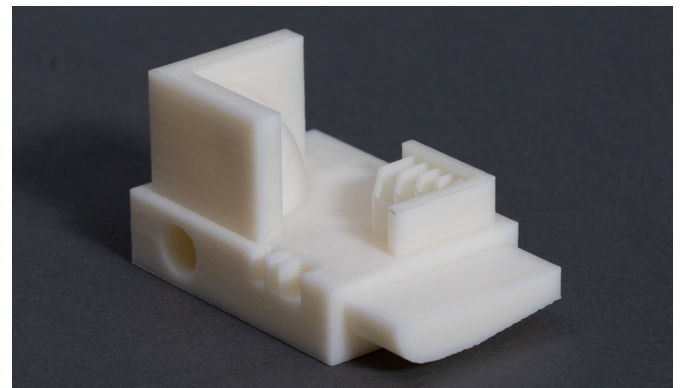
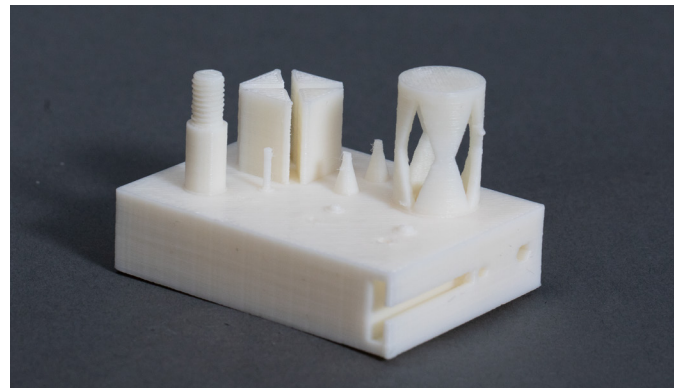
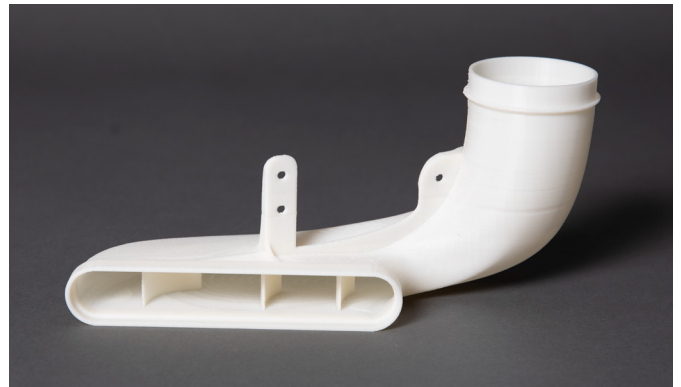
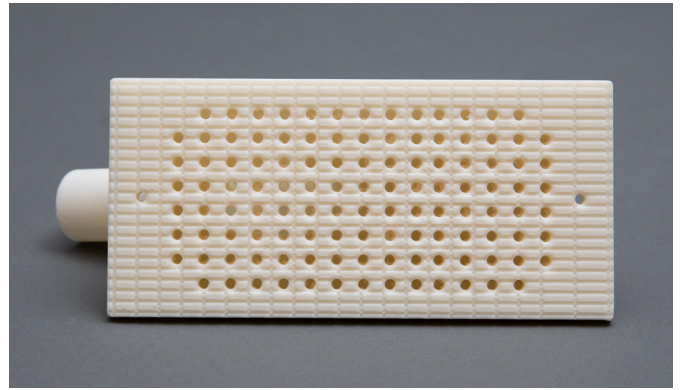
The study compared the performance of five entry-level fused deposition modeling 3D printers for a variety of attributes, including reliability, production quality, and ease of use. Each 3D printer was used to print a range of design geometries using ABS material (except for one printer that uses a proprietary material rather than ABS), which were then analyzed for quantitative measurements such as Tensile Strength and Feature Position Accuracy. Reliability was also quantified by comparing the parts completed to parts attempted, and a visual inspection was also performed.

The Tests

Each 3D printer was tested to produce identical designs. Along with the accuracy of each printed piece, the study measured how often each build was successful, the number of parts completed compared to the number sent to print, the amount of time each printer required, and any downtime.



The F170™ 3D printer used in the study is part of the Stratasys F123™ Series. Easy to operate and maintain, F123™ Series printers deliver high levels of accuracy, repeatability and reliability.



The printed parts used in the test ranged from a simple ASTM dogbone to the vacuum sanding pad, complex duct and 4-piece interlocking geometry box shown here.

Findings

Reliability

The reliability of each printer was calculated as the percentage of parts completed out of parts attempted. The base number of builds was 18, though some printers required more attempts.

Parameter	Stratasys F123™	Competitor 1	Competitor 2	Competitor 3	Competitor 4
Builds	18	21	23	18	22
Successful Builds	18	12	18	15	12
Parts Printed	77	90	98	77	79
Parts Completed	77	49	78	61	45
Reliability %	100%	54%	79%	79%	57%
Print Time (hrs.)	146	335	233	211	276
Downtime (hrs.)	0	92	80	32	97.5

- The Stratasys F123™ Series was the only model to print every part correctly the first time
- The Stratasys F123™ Series printed the parts in significantly less time than the other models
- Only the Stratasys F123™ Series performed without any downtime or stoppages

Part Quality

Accuracy — the part you print is the part you designed — is essential for all 3D printing, especially industrial-grade 3D printing. The study provided a comprehensive analysis of the quality of each part printed, expressing the performance as a percentage.

Design	Stratasys F123™	Competitor 1	Competitor 2	Competitor 3	Competitor 4
Relative Dogbone Tensile Strength (average of XY, and Z)	100%	64%	82%	67%	66%
XY Dimensional Check Part (Points in spec)	95%	86%	62%	55%	39%
Interlocking 4-Piece Box (Dimensional accuracy)	92%	33%	13%	17%	Fail
Vacuum Sanding Pad (Design intent met)	100%	30%	Fail	50%	Fail
Complex Duct (Design intent met)	100%	70%	Fail	10%	Fail
Overall Quality	97%	57%	31%	39%	21%

- The Stratasys F123™ Series achieved an overall quality score of 97%, while no other printer topped achieved more than 57%
- Quote from the study: “The F170™ performed the best in the Fine Feature Detail Testing as measured by the dimensional accuracy of the parts and the reproduction accuracy to the CAD file.”

*Specific model used: F170™

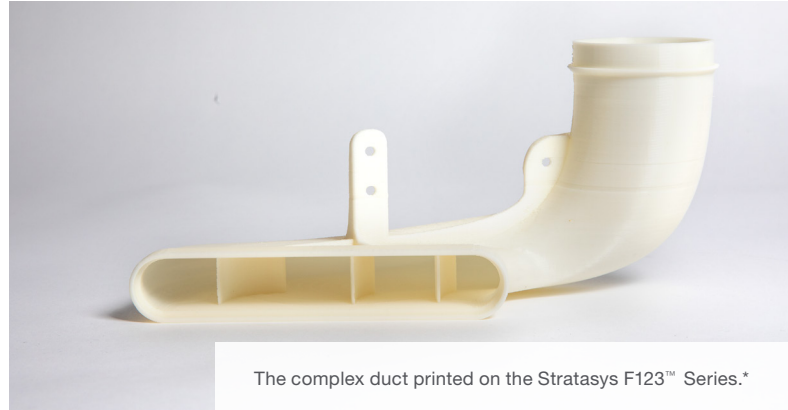
The choice is clear

As these photos from the comparative study show, the difference between 3D printing with the Stratasys F123™ Series and the competition is night and day.



The Complex Duct produced by the F170™ achieved the perfect score across the Visual, Completion and Functional aspects.”

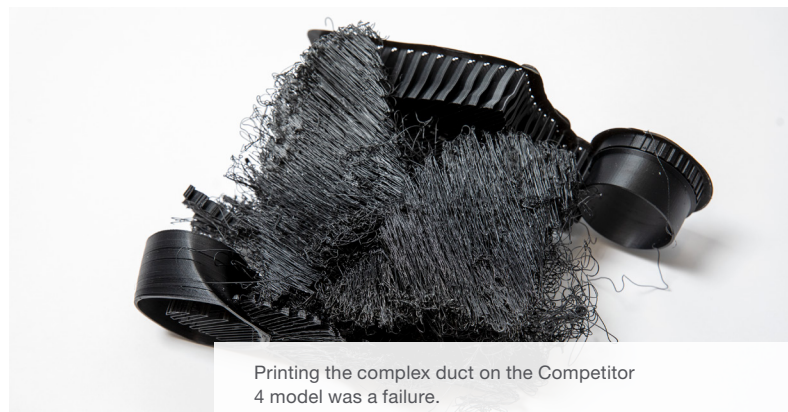
Pragmatek Consulting
Comparative Study



The complex duct printed on the Stratasys F123™ Series.*



The complex duct (with broken tab, weak walls, support not fully removed) printed on the Competitor 1 model.



Printing the complex duct on the Competitor 4 model was a failure.

*Specific model used: F170™

The only comparison is that there's no comparison

	F123™ Series 3D Printers	Competitor 3D Printers
Printing Reliability	Proven	Not consistent
Ease of Use	Plug and print	Require frequent user interaction
Material Options	Tuned ABS, ASA, and soluble support QSR™	Many options; material performance dependent on user expertise
Material Storage	Sealed bays	Open to moisture & dust
Solid Parts	Precisely printed	Expect warp & curl
Max Oven Temp	110° C	Room temp
Material Volume	60 or 90 ci	45 – 60 ci

The F123™ Series delivers reliable, accurate, quality industrial-grade 3D printing

From tight temperature uniformity to specialized extrusion algorithms, F123™ Series 3D printers are packed with features that deliver outstanding precision and long-term performance. You'll get a printer that produces consistent parts of all sizes and shapes, fast and hassle-free — day after day and year after year.

Learn More

You can get complete details from the PragmaTek FFF Desktops vs. Stratasys FDM® 3D Printer Comparative Study and learn more about the reliable, accurate performance of F123™ Series 3D Printers by contacting your local Stratasys reseller. Find one near you at

www.stratasys.com/contact-us.

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