

Case study

Forecast 3D gets out in front of 3D manufacturing

3D printing and manufacturing services



Industry

3D printing and manufacturing services

Objective

Establish market leadership by leveraging 3D printing for parts manufacturing

Approach

Meet customer needs by providing a wide array of 3D printing technologies and materials

Technology

- HP Multi Jet Fusion



Summary

Since its founding in 1994, Forecast 3D has made it a point to be first in line for the latest in 3D printing and custom manufacturing technology. It's an approach that keeps Forecast 3D out in front of the 3D printing movement, and explains why the Carlsbad, Calif., company was ready and eager to embrace HP Multi Jet Fusion technology from the start. Today, Forecast 3D is the official West Coast Multi Jet Fusion by HP Experience Center; and with 12* HP Jet Fusion 3D Printing Solutions in-house, Forecast 3D has quickly made HP Multi Jet Fusion technology a focal point of its additive manufacturing capabilities.

FORECAST 3D



*At the time of production of this customer case, Forecast 3D has doubled the number of HP Jet Fusion 3D printers due to high demand. Now, Forecast 3D has 24 HP Jet Fusion 3D printers.

Challenge

As a pace setter in rapid prototyping and manufacturing, Forecast 3D maintains a strategic appetite for technology. Over its 24 years in business, the company has built a lineup of nine different production offerings, ranging from the original SLA 3D printing process to Fused Deposition Modeling (FDM).

“We’re really big on giving our customers options – and explaining in detail what it is you get when you choose different technologies and resolutions,” explained Ken Burns, Technical Sales Director for Forecast 3D.

But for all its capabilities, Forecast 3D recognized a gap in its lineup of services. “We wanted to take our offerings to the next level,” said Forecast 3D CEO Corey Weber. “Rather than just prototypes and short-runs, the ability to produce high-volume production orders for customers is huge.”

Even as a pioneer in the industry, Forecast 3D found itself wrestling with the long-standing limitations of 3D printing: high costs and slow speeds for volumes extending beyond prototypes and short-run production.

Traditional 3D printing speeds, for example, can make it challenging to meet customer lead times – putting parts in their hands quickly enough to make necessary design adjustments and move in to market faster. Additionally, standard 3D printing technology was falling short of delivering the mechanical properties and surface quality that customers could get reliably from the injection-molding process.

For Weber, it was time for a 3D printing breakthrough. “We want to change the way our customers manufacture,” Weber said. “We want to have an easier, faster, and cost-effective option for them when it comes to high volume production.”

Solution

True to form, once Forecast 3D witnessed how HP Multi Jet Fusion technology was poised to transform 3D printing for high-volume production, the company went all in. With 12* HP Jet Fusion 3D printers in its fleet, Forecast 3D now possesses the capacity to produce up to 600,000 production parts per week.

“The 3D printing industry has been talking about production for a long time, the HP Multi Jet Fusion is the first technology that can really do it,” Weber said. “Customers are accustomed to waiting weeks and weeks for tooling, with high upfront costs. Now the customer can go straight into production with Multi Jet Fusion technology printed parts without any sacrifices. Customers can make product changes at any point without having to worry about new tooling, just send a new file.”

While HP Multi Jet Fusion technology generates a competitive edge for Forecast 3D in the delivery of prototypes, it’s production capacity that generates the more noticeable advantage. “This can range from short-run production to market testing to bridge production, all the way to high-volume production orders,” Weber said.

In fact, manufacturing capacity is the primary attraction for Forecast 3D, Burns said.

“We invested heavily in Multi Jet Fusion because we want to be able to do manufacturing,” he explained. “If we bought one printer, and then get an order for 100,000 parts, then we’re scrambling to really deliver – and our story folds before it even gets started”. And, in keeping with their leading-edge technology approach, Forecast 3D also took an innovative approach to their investment. They partnered with HP Financial Services to tailor an investment model that gives them the flexibility to update and innovate as new technology is introduced, thus ensuring they can always be able to meet customer demand with greater efficiency and the most cutting-edge technology.



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Forecast 3D facility in Carlsbad, California

Historically, Burns said service bureaus would only add 3D printers as needed for capacity, and plan to outsource during a production crunch.

“Our intention with having 12 systems (and 28 build units) is that we always have capacity. We can scale quickly and we’re never unable to deliver on projects that we win,” he said. “Our business plan is to always have two systems idle, so we can meet those surges in production as the orders come in.”

Forecast 3D is also drawn to the speed of Multi Jet Fusion.

“There are other 3D technologies that can print production-quality parts, but not at the speed required for manufacturing,” Weber said.

Compared to FDM technology, for example, HP Jet Fusion 3D printers are consistently producing parts at radically faster rates, Burns said. “We do FDM in-house – we know (HP 3D printers) can be 70 times faster in some cases.” Burns even likes how Forecast 3D stacks up against injection molding manufacturing.

“If it’s one (3D) printer against one injection molding process, probably not. But with all 12, we can outrun a press in a lot of different size geometries. Basically, if it’s a softball size or smaller – and you make that into a cube – we can run head to head with an injection mold press.”

“Perhaps a better angle of HP MJF vs. IM could be the additional revenue generated by coming to market earlier,” Burns said. “By avoiding the time to cut a tool overseas and then the additional lengthy time for modifications to those tools, a product can be brought to market much sooner. Not only is there the potential market share gained but also the product comes to maturity sooner, therefore extending the product lifecycle. Coming to market three months earlier could therefore extend the mature stage of its lifecycle by those three months. If you look at a product’s mature sales of three months, it is likely quite a bit of revenue. It’s easy to miss that part of the equation. It’s not simply HP MJF part cost vs. IM part cost.”

And with the high reusability of HP’s 3D PA 12 material, HP’s Multi Jet Fusion technology is helping Forecast 3D topple another traditional obstacle to 3D printing in manufacturing. “This is critical to keeping costs low,” Weber said. “(Lack of reusability) has always been one of the limiting factors to production with 3D printing. The high reusability means lower-cost parts.”

Result

As an early proponent of HP's Multi Jet Fusion technology, Forecast 3D also embraces the importance of educating its customers while demonstrating the advantages—and value—of 3D-printed parts to an uncertain audience.

“We want to make sure, as a contract manufacturer, that we are setting the bar high in the marketplace,” Burns said. “As an early adopter, we feel a big responsibility to do that.”

That means delivering prototypes and short-run parts from HP Jet Fusion 3D printers that are fit for large-volume orders.

“One of the the areas where we've had success already is, when we produce quantities in the hundreds or low thousands, the customer has said ‘This is great, go ahead,’” Burns said. “They are willing to go into manufacturing with 3D technology when traditionally they were going to injection molding.”

One Forecast 3D customer that was quick to buy in was Knuckledragger Design Inc., which designs and manufactures custom components for communications equipment used by government agencies. Using traditional manufacturing methods, Knuckledragger would first develop a prototype, then modify the design for a production run on an injection molding press. “They would spend another 25 hours to redesign for the mold,” Burns explained. “That was a bottleneck.”

With the HP Multi Jet Fusion technology, Knuckledragger owner Mike McCrory can cut out the extra step, designing parts specifically for the HP Multi Jet Fusion process, and with features that are unique to additive manufacturing.

“The HP Multi Jet Fusion technology is really nice because we can actually design the parts and get them quickly,” McCrory said. “And they're printed, so we can design them however we want, where previously we were restricted by the manufacturing methods.”

Compared to CNC or injection molding methods, HP Jet Fusion 3D printers are not only producing usable parts at cost-effective prices for Knuckledragger, the HP Multi Jet Fusion process is cutting up to two weeks off the production schedule.

Among the factors persuading customers to rally to HP's Multi Jet Fusion technology is the use of Nylon 12 material in the production process.

“That's a big thing that we try to stress,” Burns said. “There's no difference between this material and injection molding material.”

As the official West Coast Multi Jet Fusion by HP Experience Center, Forecast 3D enjoys first crack at advantages such as new software updates, and implementation of new materials and hardware as they become available. The HP-Forecast 3D relationship “is important to us to be able to offer the best service possible to our customers,” Burns said.

High on that list of new developments that HP has targeted is the introduction of color. And Burns and Forecast 3D are keen to see it happen.

“Customers are saying the quality is there, if you can get me color, you've made it,” he summarized. “We have so many requests already. The opportunity for us is vast.”

Customer at a glance

Application

3D printing for prototyping and short-run manufacturing

Hardware

- HP Jet Fusion 3D 4200 Printer

Accessories

- HP Jet Fusion 3D 4200 Processing Station with Fast Cooling
- HP Jet Fusion 3D Build Unit

Software

- SolidWorks
- Materialise
- Proprietary Forecast 3D software

HP services

- Next-business-day onsite support¹
- Next-business-day spare parts availability,¹ thanks to HP's global reach
- 3D printing productivity and professional services
- Investment solution from HP Financial Services

Footnotes:

¹ Available in most countries, subject to Terms & Conditions of HP Limited Warranty and/or Service Agreement. Please consult your local sales representatives for further details.

Learn more about HP Multi Jet Fusion technology at:

hp.com/go/3DPrint

Connect with an HP 3D Printing expert or sign up for

the latest news about HP Jet Fusion 3D Printing:

hp.com/go/3Dcontactus

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