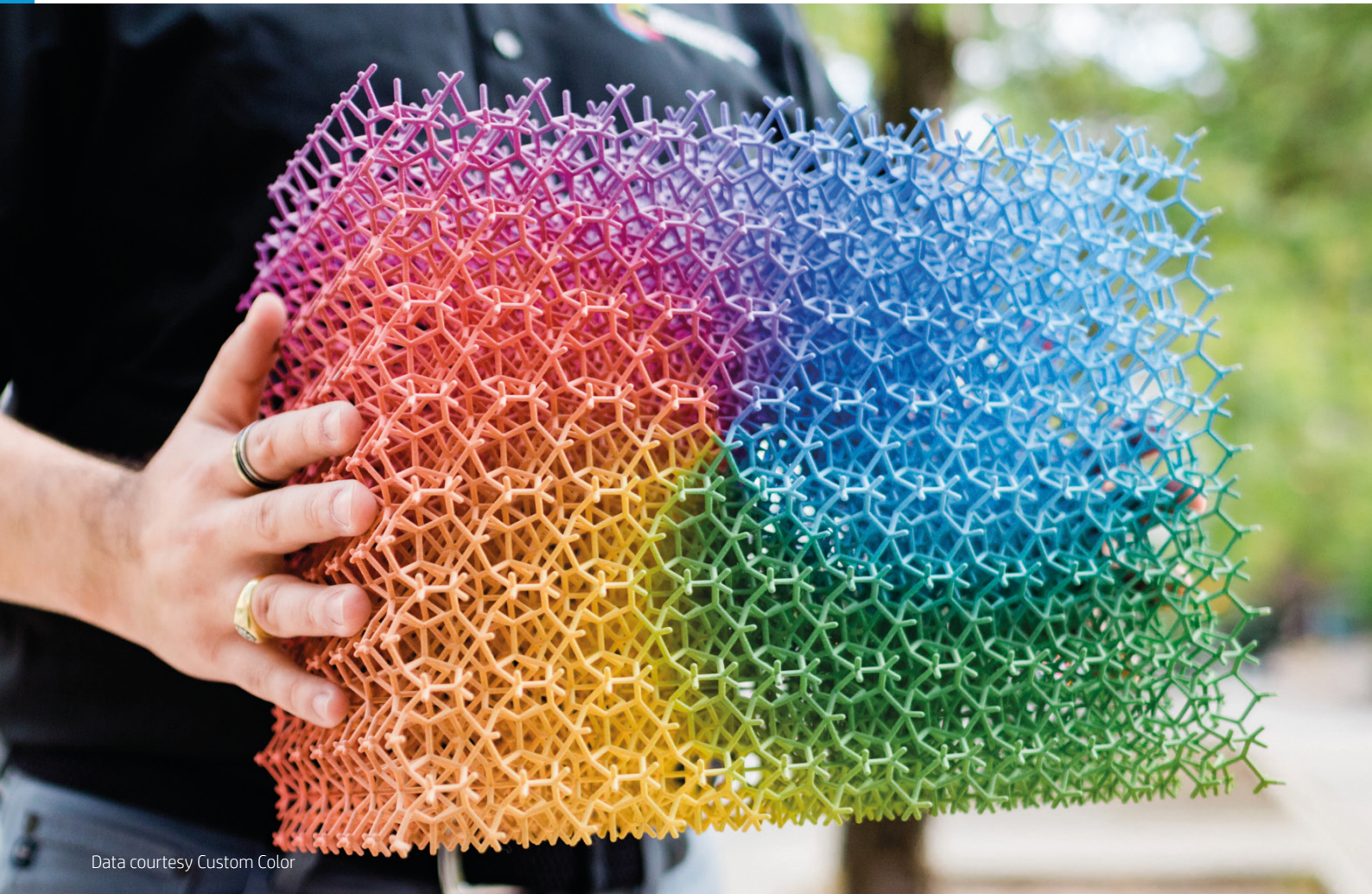


CASE STUDY | CUSTOM COLOR

# Custom Color 3D Printing

elevates art and design creativity  
with full-color 3D printing



Data courtesy Custom Color



From interior architecture to film props and figurines, **Custom Color** uses HP Multi Jet Fusion technology to serve clients looking to advance their creative pursuits



Data courtesy Custom Color

## Introduction

Custom Color 3D Printing is a 3D printing service bureau that specializes in color printing for creative industries. Founded in early 2019 in Chicago, Illinois, Custom Color's mission is to bring color additive manufacturing to industries that desire to improve their creative processes.

**"I wanted to start a 3D printing business and offer the ability to do projects that no one else in the (service bureau) industry is doing,"** said Kent Mages, President and Founder of Custom Color. **"I don't think traditional service bureaus that offer additive manufacturing have a mindset that caters to creatives. Creatives are a unique and specific breed—their budgets, timetables, and expectations are very different than those who are in a traditional manufacturing**

**environment. I wanted to bring additive manufacturing into the creative space where it has a lot of room to grow."**

Custom Color is targeting customers in a wide variety of artistic industries, including interior architecture, collectibles, and film and television. As the company grows, it expects to add a design studio to its offerings.

Snow Day, a company that produces customized snow globes, and Geoff Flint, a film and television production designer, are two of Custom Color's current customers. They are both using HP 3D-printed parts to advance their creative pursuits.

### • Industry

Manufacturing services

### • Sector

3DP Service bureaus

### • Objective

To enable client creativity and design freedom by offering a full-color 3D printing solution that produces strong, functional parts.

### • Approach

Custom Color 3D Printing purchased two HP Jet Fusion 580 Color 3D Printers to serve its growing client base and improve turnaround times.

### • Technology | Solution

HP Multi Jet Fusion technology, HP Jet Fusion 580 Color 3D Printer

### • Material

HP 3D High Reusability (HR)<sup>1</sup> CB PA 12

1. HP Jet Fusion 3D Printing Solutions using HP 3D High Reusability CB PA 12 provide up to 80% powder reusability ratio, producing functional parts batch after batch. For testing, material is aged in real printing conditions and powder is tracked by generations (worst case for reusability). Parts are then made from each generation and tested for mechanical properties and accuracy.



## Challenge

A veteran of the signage industry for years, Mages dealt with customers who requested three-dimensional signage that could not be created with conventional methods, such as laser cutting and CNC routing. In 2018, he started looking into 3D printing as a solution and was immediately drawn to HP because of his previous experience working with HP's large format 2D printers.

**“Given how embedded I was with HP, I initially started looking at how they were bringing their color expertise to 3D printing,”** said Mages. **“In my opinion, everything about the (HP Jet Fusion) 580 (Color 3D Printer) lent itself to shaking up the signage industry. From there, it was a natural progression. If I were buying this printer to start a business, I needed to augment my production to related fields, like interior architecture. And then from there, I thought of helping industries that I'm passionate about—film and television and toys and collectibles.”**

Mages specifically looked at investing in a 3D printer that could print in color, produced strong parts that could be displayed publicly without fear of breaking or warping over time, and had fast print speeds. The HP Jet Fusion 580 Color 3D Printer met all his criteria while other color 3D printers on the market either were too slow to keep up with his expected volume or produced parts that were too fragile.

**“If anything was going to stand up over time, it was going to be HP Multi Jet Fusion technology,”** Mages said. **“HP has already proven to be an industry leader in 3D with the (Jet Fusion) 4200 (Printing Solution) and given HP's depth of knowledge with 2D color printing, I knew that HP was extremely capable of putting color on different materials.”**

## Solution

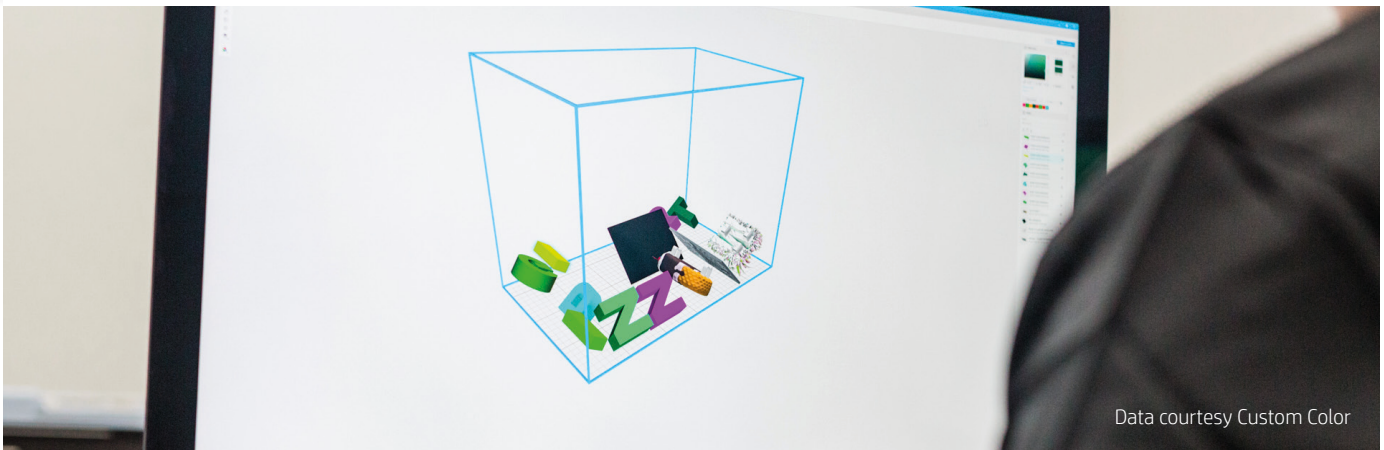
For Custom Color, allowing customers to unleash their creativity without being limited by geometry or material strength is essential.

With two HP Jet Fusion 580 Color 3D Printers running in his shop, Mages is targeting artists who create unique interior architecture and signage as one of his core customer bases. For example, Mages sees the potential of working with restaurants that want to customize everything from accents on their walls to beer taps.

**“Being able to offer something that is visually unique that sets a restaurant apart is a huge sell—especially for restaurants that are trying to carve a name out for themselves in a crowded market like Chicago,”** Mages said.

Every day, Mages fills his HP Jet Fusion 580 Color 3D Printers with creative designs that either weren't possible or practical to create with traditional manufacturing or other 3D printing technologies. And although he never operated a professional 3D printer before receiving his first HP Jet Fusion 580 Color 3D Printer, he quickly became comfortable with operating the machine.

**“When I decided that 3D printing was a good fit for a new business, I had never touched a 3D printer in my life,”** Mages said. **“Now, I'm printing between three and five client jobs on each printer every day. With HP, we're opening up the doorway to a bunch of industries that have not had additive manufacturing on their radar because full-color wasn't an option except for with delicate material.”**



Data courtesy Custom Color

## Result

Mages is building Custom Color's client base in interior architecture, but he also currently has a variety of unique clients in other artistic industries. For example, Snow Day works with Custom Color to order miniature 3D-printed renderings of houses that it places in snow globes. Karl Stiefvater, one of Snow Day's founders, is impressed with the quality of prints that are coming off the HP Jet Fusion 580 Color 3D Printer compared to other 3D printing technologies he previously used.

**"The quality on the HP prints is much better than what we were getting before,"** Stiefvater said. **"The resolution is so nice—you can get shading on shapes that has otherwise gotten washed out with other technologies."**

To create a custom snow globe, customers take a video of their house, or whatever they want to put inside of the globe. They can even hire a drone to take high-resolution aerial video of their house. Then, Stiefvater and his team use photogrammetry to turn the images into a 3D rendering, which is eventually sent to be 3D printed in full color.

**"We were struggling to maintain color fidelity and fine detail in structures with other 3D printing technologies,"** Stiefvater said. **"However, the HP we are now using has been fantastic for both of those. We are sending (Custom Color) objects we were never able to print before—like a rhinoceros with a very tiny tail."**

In the future, as Snow Day grows, Stiefvater sees the need for buying his own 3D printer. **"We have found something in 3D that really resonates with consumers,"** Stiefvater said. **"People like heirlooms of the homes they grew up in."** Flint, another customer using Custom Color to 3D print props and set pieces in film, television, and commercials, appreciates the quality as well as the speed of prints from the HP Jet Fusion 580 Color 3D Printer. **"The traditional route of molding and casting an artifact is a 3-day process. With the HP, we can get it printed and sent to us in 24 hours,"** Flint said.

Production design is always on a tight time clock, Flint explained, so speed is essential. He bills clients for his time, and the faster he can get assets made, the more valuable he is to them. For example, Flint recently used the HP Jet Fusion 580 Color 3D Printer to produce a futuristic land drone for a video game commercial.

**"If we were to have sculpted it by hand, the approach would have been super time consuming,"** Flint said. **"With 3D printing, we could nail the actual curves and body shape of this drone without sacrificing any interior space needed for all of the electronics we had to put inside of it."**

Flint was especially impressed that the HP printer could print such a large, detailed piece in one build overnight. Furthermore, when he received the drone, he noted its smoothness—it did not have layer lines that needed to be sanded like other 3D printing technologies he had used in the past.

**"The resolution of the printer is super high quality—we had to do minimal finishing to get it to look exactly how we wanted,"** said Flint.

In the future, Flint plans on using the HP Jet Fusion 580 Color 3D Printer to produce more props and visual assets on film and television projects he is working on, like "Escape the Night," a murder-mystery reality web series. In the past year, he 3D printed upwards of 20 different specialty props for the show. Going forward, he would like to experiment more with HP's color 3D prints to potentially save time on finishing and print more designs with detailed features.

**"We get to invent stuff that has never been seen before or only been seen in the digital world,"** Flint said. Overall, Flint's and Snow Day's projects are exactly the type of work that Mages and Custom Color want to pursue—creative ventures that are just starting to scratch the surface of the potential of 3D printing. **"I see the 580 as a machine that can bring a technology that was typically relegated to a very mechanical industry to a much more creative industry,"** he said.

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