

Customized eyewear made possible with **MEIDAI** and HP Multi Jet Fusion technology



MEIDAI and HP Multi Jet Fusion allow users to create their own eyewear using cutting-edge technology



Introduction

Data courtesy of MEIDAI

Hangzhou MEIDAI Technology Co., Ltd. (“MEIDAI”) is a fashion technology startup that provides comfortable and personalized products to fashion-forward customers all over the world. MEIDAI’s founding members have more than 10 years of experience in the eyewear manufacturing industry, and as such, they specialize in designing and selling fashionable eyewear from their website.

MEIDAI has a clear vision to sell “millions” of customized pairs of glasses. To do so, founder and CEO Chen Chao has developed a disruptive automatic design technology that, combined with Smartphone technology and 3D printing, is an ideal strategy for mass customization.

• Industry

Consumer goods

• Sector

Fashion and wearables

• Objective

To combine HP Multi Jet Fusion (MJF) technology with Smartphone capabilities to allow consumers to scan, design, and order customized frames for cosmetic and prescription eyeglasses.

• Approach

MEIDAI adopted HP MJF in order to realize their vision of mass customization; simplify and shorten their eyewear production process; and develop a more cost-efficient solution.

• Technology | Solution

HP Multi Jet Fusion technology, HP Jet Fusion 4200 3D Printing Solution

• Material

HP 3D High Reusability¹ (HR) PA 11

1. HP Jet Fusion 3D Printing Solutions using HP 3D High Reusability PA 11 provide up to 70% 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 accuracies.

Challenge

MEIDAI designs and produces both prescription glasses and sunglasses, which have different design and manufacturing requirements. Prescription glasses, which are considered medical devices, need to be comfortable and durable enough for daily use, and designs tend to be smaller, slimmer, and more discrete. When designing sunglasses, textures and colors can be applied since frames are normally bigger, bolder, and have fewer cosmetic requirements.

Until recently, MEIDAI relied on traditional manufacturing methods to create non-customized eyewear, but they learned that due to the number of steps involved in using these technologies, the costs became too high.

Traditional manufacturing typically implies Injection Molding, but molds that are used to create designs for glasses amassed costs and consumed warehouse space with the need to store between 10,000 and 20,000 different molds. Although Injection Molding tends to be a less-expensive manufacturing method for mass manufacturing (that is, once a mold has been created for 1.300€), MEIDAI found they had to compromise quality in order to achieve an efficient cost per part and needed to invest in tooling or molds in order to obtain a return on investment for long-run production series. Additionally, they realized this was not the optimal production method for their new business idea to mass produce customizable eyewear that consumers could design via a Smartphone application.



Solution

MEIDAI's business model focuses on optimizing the user experience by incorporating current mobile phone-integrated technologies. Therefore, MEIDAI developed an intuitive, innovative, and efficient mobile application that is compatible with mobile depth scanners available in most of today's Smartphones.

"Chinese (consumers) are very active in their phones, so having a scanning app that works directly with their devices is a great step forward for mass customization," says Chen. **"This app has a great advantage over other custom eyewear competitors since everyone can access these products without having to go to the store."**

Users can download MEIDAI's Smartphone application and scan their face with the phone's camera. Once they validate

their precise, high-resolution, 3D scanned face model, they can begin to virtually "try on" different frame models with various geometries, designs, and colors, all of which have been algorithmically optimized based on the geometric data collected from the facial scan. Consumers can then select their customized frames, place the order, and complete payment right on the app, with delivery to the customer's home to follow in approximately five days.

MEIDAI's eyewear production is outsourced to Infinite 3D, a service bureau based in Foshan, Guangzhou, which produces approximately 50 units per day, or up to 15,000 units per year. The models are uploaded into a software and are printed overnight, making them ready for shipment and delivery the following day.

Result

According to MEIDAI, the main advantages of 3D printing technology, particularly HP MJF with HP 3D HR PA 11 material, are faster production and opportunities for customization.

While Injection Molded parts can take between 45 and 60 days to produce 2,000 to 3,000 parts, HP MJF-produced parts can be ready in approximately 5 days (300 pairs per bucket, two buckets per day, printed in Balanced Mode). Traditional manufacturing also implies traditional design: Usually the process begins from a 2D file and then the 3D file is created for CNC Machining or molds. Through this process, a designer can produce a part in 3 to 4 days. However, with HP MJF, this is possible in 2 days.

The ability to customize eyewear is another advantage of HP MJF technology that MEIDAI was not able to execute with traditional technologies. Not only is the eyewear tailored to the personal style of the wearer, who designs their own frames using MEIDAI's mobile app, but each pair is also custom-fit, providing enhanced comfort for the consumer's unique face shape without compromising quality.

According to MEIDAI and Infinite 3D, the HP Jet Fusion 4200 3D Printing Solution offers improved efficiency and the capacity to achieve their goal of mass customization.

Connect with an HP 3D Printing expert or sign up for the latest news about HP Jet Fusion 3D Printing hp.com/go/3Dcontactus

Learn more about HP Multi Jet Fusion technology at hp.com/go/3DPrint

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