ED LIGHTING creates customized lighting fixtures with HP Multi Jet Fusion technology

HP Multi Jet Fusion technology enables ED LIGHTING to design and 3D print lighting fixtures for their Geometrie Collection of lamps

Introduction

ED LIGHTING creates and produces lamps designed by architect and designer Ettore Lariani and lighting designer Claudio Molinelli. Their ambitious projects focus on the evolution of industrial design and innovative techniques.

"We believe that in the lighting industry, manufacturing must marry artisan skills thanks to the most recent technical developments in mass production technology," says Molinelli.

The team at ED LIGHTING created the Geometrie Collection, an innovative project that combines technology and craftsmanship and features three high-efficiency LED lighting fixtures made from an aluminum profile, a Plexiglas® diffuser, and components of hand-finished oak.

• Industry

Consumer goods

• Sector

Household appliances and electronics

• Objective

"In our projects, we want to demonstrate that the industrial design is strongly influenced by Additive Manufacturing," says Molinelli. *"Combining this technology with 'Made in Italy' craftsmanship allows us to design objects that were previously impossible to create. We call it 'Artigianalità Industriale' (Industrial Craftsmanship)."*

• Approach

ED LIGHTING has adopted 3D printing technology to produce lighting fixture components and bring together elements of traditional design with the modern advantages of 3D printing technology.

• Technology | Solution

HP Multi Jet Fusion (MJF) technology, HP Jet Fusion 3D Printing Solutions

• Material

HP 3D High Reusability (HR)[1] PA 12

Challenge

What is the Geometrie Collection?

The Geometrie Collection includes three series of LED lamps:

- **Incline.** This table lamp or desk lamp emits high-powered light with a touch dimmer (LED 3.4W, 245lm). The body inclines 16° and rotates 18° from the base, and there are two variations according to the direction: Levante or Ponente. The design features three HP MJF–produced parts, one aluminum part, and one Plexiglas® part, which are created by replicable production processes that offer easy assembly.

- **Eccentrica.** The Eccentrica lamp suspends from the ceiling with a free base on the ground. By pressing two fingers on the two automatic adjustable wire brass grippers (one on the body, one on the base), it can rotate on its vertical axis, incline at will, and rise and fall at a height that extends from the base to the ceiling (a maximum of 4,5 meters). This lamp offers excellent and diffused brightness (LED 14.4W, 1,050lm).

- **Sinuosa.** The Sinuosa lamp can be tilted, rotated on its horizontal axis, or hung vertically in multiple positions. The power cord suspends the lamp, assuming sinusoidal curved shapes and offering exceptional light power. It is available in two lengths: 1,414 mm (LED 24.5W, 1,785lm) and 1,618 mm (LED 28.3W, 2,065lm).

What challenges did you anticipate in producing the fixtures for these lamps using 3D printing?

"We saw so many samples made with different 3D printing technologies (SLS, FFF), but the result required a finishing process by hand," says Molinelli.

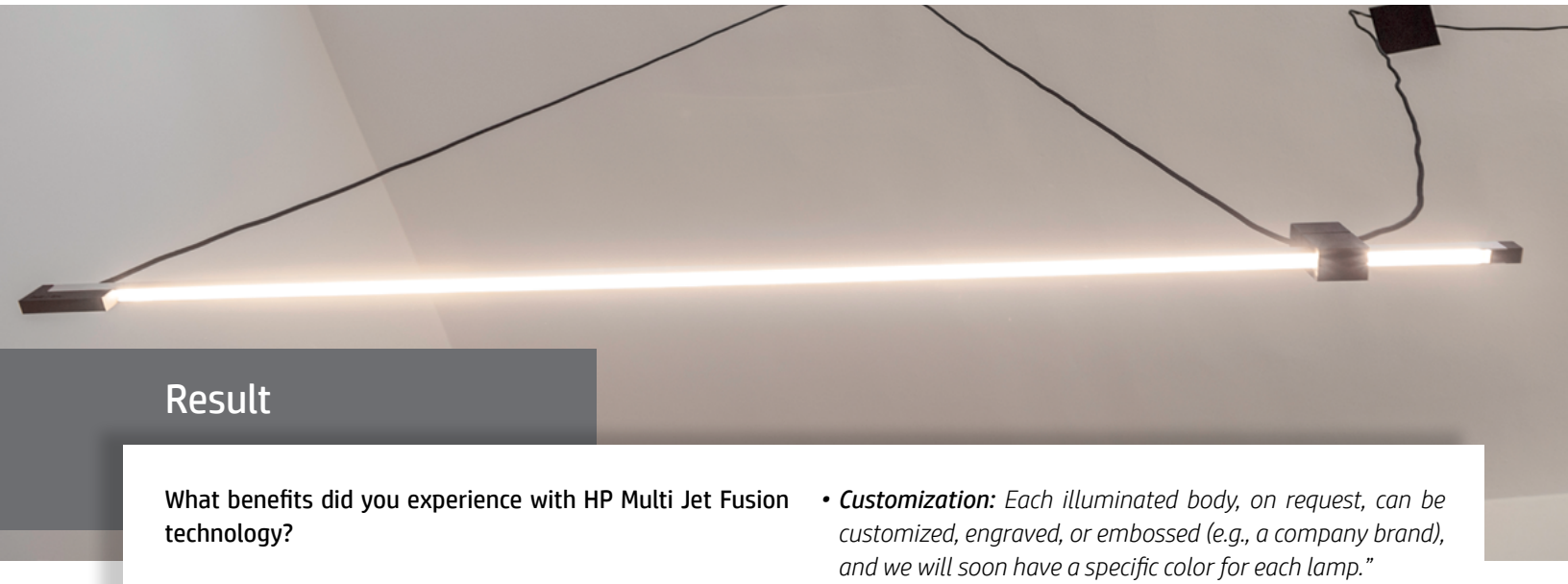
Solution

How did you adopt and implement 3D printing technology to create parts for these lamps?

According to Molinelli, the 3D printing process was faster than other methods of production in terms of prototyping and testing times. Creating a concept previously involved sketching by hand on paper, but with HP MJF, the ED LIGHTING team can create a three-dimensional model with sharpened proportions for all details such as joints, excavations, and threads.

"Upon closing this phase, the file is sent to the 3D printing service, which in a few days delivers the already-finished pieces with which we assemble the first prototypes," says Molinelli. *"They are evaluated, the necessary adjustments are made on the digital model, and we refer to the service for a second prototyping phase. To produce the definitive 3D components of the Geometrie Collection, three prototyping steps were enough to obtain the finished, tested, and salable product.*

"HP MJF has allowed us to avoid the costs of industrial molds. With HP MJF, the components are already finished, and they don't require additional manpower."



Result

What benefits did you experience with HP Multi Jet Fusion technology?

"We were looking for a 3D printing technology that can produce final parts: HP MJF proved to be the only technology suited to the aesthetic, material, and physical requirements for the serial production of the visible components of the Geometrie Collection.

"In our opinion this is a revolution in industrial design with the following benefits:

- ***Cost-efficient supply chain, both in design and in production:*** *It is possible to produce a few pieces with limited costs and complex composites in single pieces; the industrial molds are no longer necessary.*
- ***Quality of the material:*** *HP 3D HR PA 12 is heat-resistant, chromatically unalterable, robust[2], and with tolerances to the tenth of a millimeter.*
- ***Customization:*** *Each illuminated body, on request, can be customized, engraved, or embossed (e.g., a company brand), and we will soon have a specific color for each lamp."*

How can this technology be leveraged to other areas of the company and/or to other ED LIGHTING products?

"Ettore and I are designers and we love challenges," says Molinelli. *"We like to experiment with innovations. ED LIGHTING was born in 2017 with the Geometrie Collection, and we believe that HP 3D Printing technology will help us go far."*

What does the future hold for ED LIGHTING?

"As soon as possible, we will test colors, and then we want to design a low-cost lighting fixture that is completely 3D printed, emphasizing the potential of HP MJF technology, perhaps in a single component.

"Next year we would like to design a new collection with high-performing illumination features."

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

1. Based on using recommended packing densities and compared to selective laser sintering (SLS) technology, offers excellent reusability without sacrificing mechanical performance. Tested according to ASTM D638, ASTM D256, ASTM D790, and ASTM D648 and using a 3D scanner for dimensional accuracy. Testing monitored using statistical process controls. HP Jet Fusion 3D Printing Solutions using HP 3D High Reusability 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.
2. Tested with diluted alkalies, concentrated alkalies, chlorine salts, alcohol, ester, ethers, ketones, aliphatic hydrocarbons, unleaded petrol, motor oil, aromatic hydrocarbons, toluene, and DOT 3 brake fluid.

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