

3D PRINTING IN THE JEWELRY SECTOR

2025

HOW AND WHY IS 3D PRINTING USED TO MAKE JEWELRY?



Pushing the boundaries of design

3D printing offers designers and jewelry makers the possibility of realizing almost limitless geometries. Traditional methods meanwhile make it difficult to manufacture such innovative designs. Design and 3D printing enable jewelers to push boundaries and create complex, exceptional jewelry.



Various Materials and Technologies

3D printing technologies encompass a wide variety of processes and materials. It is thus possible to create models in resin or wax, but also to print costume jewelry in plastic directly with SLS or MJF and in precious metal via DMLS. What's more, this diversity enables us to experiment with new technologies and materials.



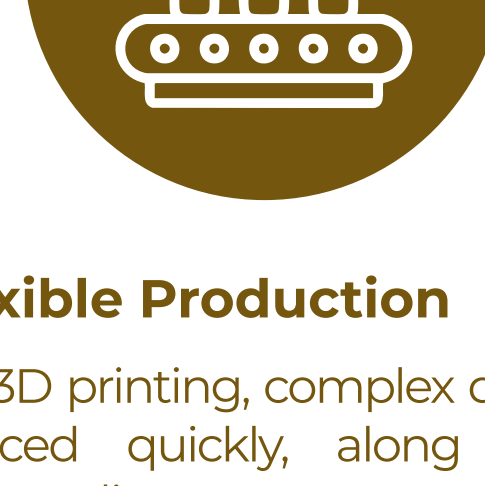
Customization

Additive manufacturing makes it possible to produce unique, tailor-made jewelry that can meet customers' desires. This enhances customer satisfaction, as well as setting jewelry stores apart from the major producers.



Sustainability

Jewelry 3D printing generates less waste than traditional methods. This is particularly true when jewelry is directly manufactured with AM, saving valuable resources and limiting material waste. Furthermore, production can take place directly on site.



Fast, Flexible Production

Thanks to 3D printing, complex designs can be produced quickly, along with any necessary adjustments. 3D printing technology therefore enables flexible production and shorter time-to-market. Prototypes can be developed and validated quickly, and the whole production process, from idea to product on the market, is accelerated.



Reproducible Jewelry

Thanks to the aforementioned benefits of design diversity and production flexibility, jewelry can be reproduced as required. It is also possible to produce small batches of a piece of jewelry.

APPLICATIONS

MODELS

Traditional goldsmiths melt precious metals and then cast them in a prefabricated mold. 3D printing makes it easy to create such molds. A model of the piece of jewelry is first printed in wax, then dipped into a casting compound. The mass is dried and then heated, the wax melts and a mold for the jewelry remains. This process is called lost-wax casting.



PROTOTYPES

3D printing makes it possible to produce prototypes quickly and cost-effectively. Jewelry manufacturers can create models of their creations for testing and refinement before mass production. Prototypes can be created using the lost-wax technique, or printed directly from plastic or metal.



ONE-OF-A-KIND, CUSTOM-MADE PIECES

Goldsmiths and designers can use 3D printing to create personalized, bespoke jewelry, responding even more closely to customers' wishes and needs. Design, size, material and details can all be customized, enabling customers to purchase a truly unique piece.



SMALL SERIES

3D printing makes it possible to manufacture small quantities or collections and thus react quickly to customer requests and market trends. It also enables designers and goldsmiths to test new designs for necklaces, bracelets, earrings, rings, etc., and bring them to market quickly.

KEY FIGURES

\$989

MILLION

How much the 3D-printed jewelry market is expected to be worth by 2031.

(SMARTTECH ANALYSIS)

7,801

The number of diamonds in "The Divine," the flower-shaped ring 3D printed by Indian 3D printing service Imaginarium. The ring's mold was created in resin, then cast in gold.

(IMAGINARIUM)

80%

The percentage that Cloud Factory's carbon footprint was reduced thanks to the use of 3D printing and 100% recycled 925 sterling silver.

(CLOUD FACTORY)

33.8%

The percentage of 3D-printed rings in 2023, or more than a third of the market for jewelry designed using additive manufacturing.

(GRAND VIEW RESEARCH)

TIMELINE

- 2012** ● RADIAN creates a ring design for "Solitaire", creating its first 3D-printed ring prototype.
- 2013** ● Ross Lovegrove develops a collection of 3D-printed rings called "Foliates", made up of six 18-carat rings, each manufactured in a series of 10 using DMLS.
- 2015** ● Marie Boltentern takes over the traditional Boltentern company in Austria and makes algerhythm-based, 3D-printed jewelry.
- 2016** ● India's leading jewelry manufacturers, at the cutting edge of technology, join forces with Melorra to provide original and contemporary jewelry designs.
- 2017** ● Bvlgari uses wax 3D printing for the Bvlgari Serpenti collection.
- 2019** ● Ganit Goldstein works with Stratasy on a new "Shifted Craft" fashion collection of 3D-printed jewelry and shoes, unveiled at Milan Fashion Week. All seven pieces of jewelry incorporate Swarovski crystals.
- 2020** ● "The Divine," a 3D-printed ring with 7,801 diamonds, wins the Guinness World Record for "the most diamonds set in one ring".
- 2023** ● Legor and HP enter a partnership to produce stainless steel accessories for the fashion and luxury goods sectors.
- 2023** ● Startup Cloud Factory manufactures sustainable 925 sterling silver jewelry using the SLM process.
- 2024** ● Jenny Wu's LACE presents the first collection of 3D-printed carbon fiber jewelry, made with Impossible Objects' innovative technology and a combination of PEEK and carbon fiber fabric.