

Durable Mold Parts for Rapid Tool Production

3D printing with innovative materials is driving injection molding into the future



OVERVIEW

When updating products or changing technologies, companies often require prototypes or small batch sizes, a process that can often be hindered by the high costs and long lead times associated with traditional injection molding. Through the collaboration with Forward AM, DREIGEIST is pushing the boundaries of 3D printing through the creation of injection molds using Ultracur3D® RG 3280 and Digital Light Processing (DLP) technology creating 3D printed molds that are both cost-effective and have significantly reduced lead times.

QUICK FACTS

Materials:

- Ultracur3D® RG 3280

Technology:

- DLP

Project breakdown:

- Industry: Injection Molding/Tooling
- Why Forward AM: Ability to quickly produce durable and accurate molds in small batch sizes with high-quality materials and able to withstand the extreme IM process conditions
- Result: Injection molded bumper for high-performance RC cars

DREIGEIST

Additive Intelligence.

In 2015, DREIGEIST was founded by Christopher and Mareike König with a focus on using the transformative power of 3D printing and making it a key success factor for companies worldwide.

DREIGEIST, based in Nürnberg, Germany, is a trusted partner in the world of 3D printing with extensive knowledge and experience in the field of additive manufacturing. From startups to established companies to creative firms, DREIGEIST works with dedicated focus to help organizations realize the full potential 3D printing can have in a variety of industries.

[DREIGEIST.COM](https://dreigeist.com)



Average cost reduction of 88% when compared to traditional molds



CAD design to completion of the first injection molded part achieved in less than 24 hours

Challenge: Produce durable and accurate molds that meet manufacturing process requirements

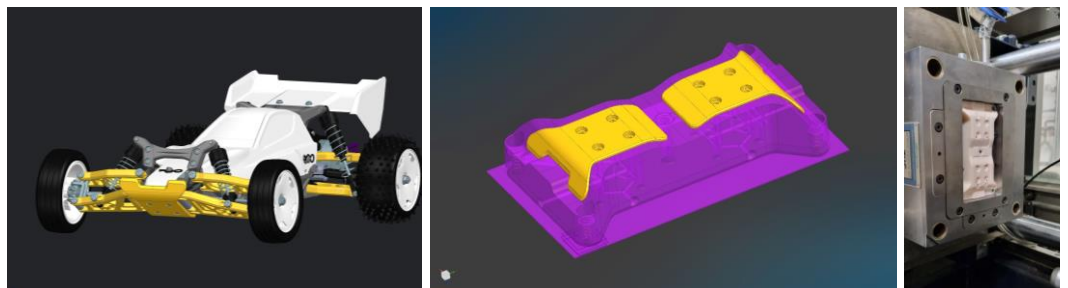
Traditional manufacturing uses conventional techniques for tool making such as milling. However, the milling process requires multiple processing steps resulting in extended production time when compared to AM.

The final challenge was to determine which 3D printing material would be able to withstand the extreme IM process conditions such as clamp force, injection pressure, high temperatures, and fiber-reinforced thermoplast processing.

The goal was to develop a process to produce high-quality and accurate parts via Injection Molding (IM) from part design to production in less than 24 hours

“Additive Manufacturing of injection molding tools for small series applications has it all; Freedom in design, short process chains, and parts that exceed all expectations!”

-- Christopher König, Co-Founder and CTO of DREIGEIST



Challenge: Reduce both production time and costs

[Ultracur3D® RG 3280](#) is the perfect material for injection molding with qualities that meet or exceed the characteristic process requirements as well as ensure an increase in production speed for mold making. This advanced resin material is filled with ceramic particles, delivering superior stiffness and high HDT which are both necessary for the IM process conditions. Ultracur3D® RG 3280 also allows for the precise printing of lattice structures providing the ability to create a part with a fully optimized design.

There was also a significant cost savings through Rapid Tooling as production through conventional methods such as milling (creating two halves) of around the same size, can vary in cost from 2500 to 6000 Euros and take between four to six weeks to deliver. By implementing in-house 3D printing, the net cost of a tool through AM is less than 500 Euros and can be realized within 9 hours of total processing time.

Learn more about Ultracur3D® RG 3280:

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