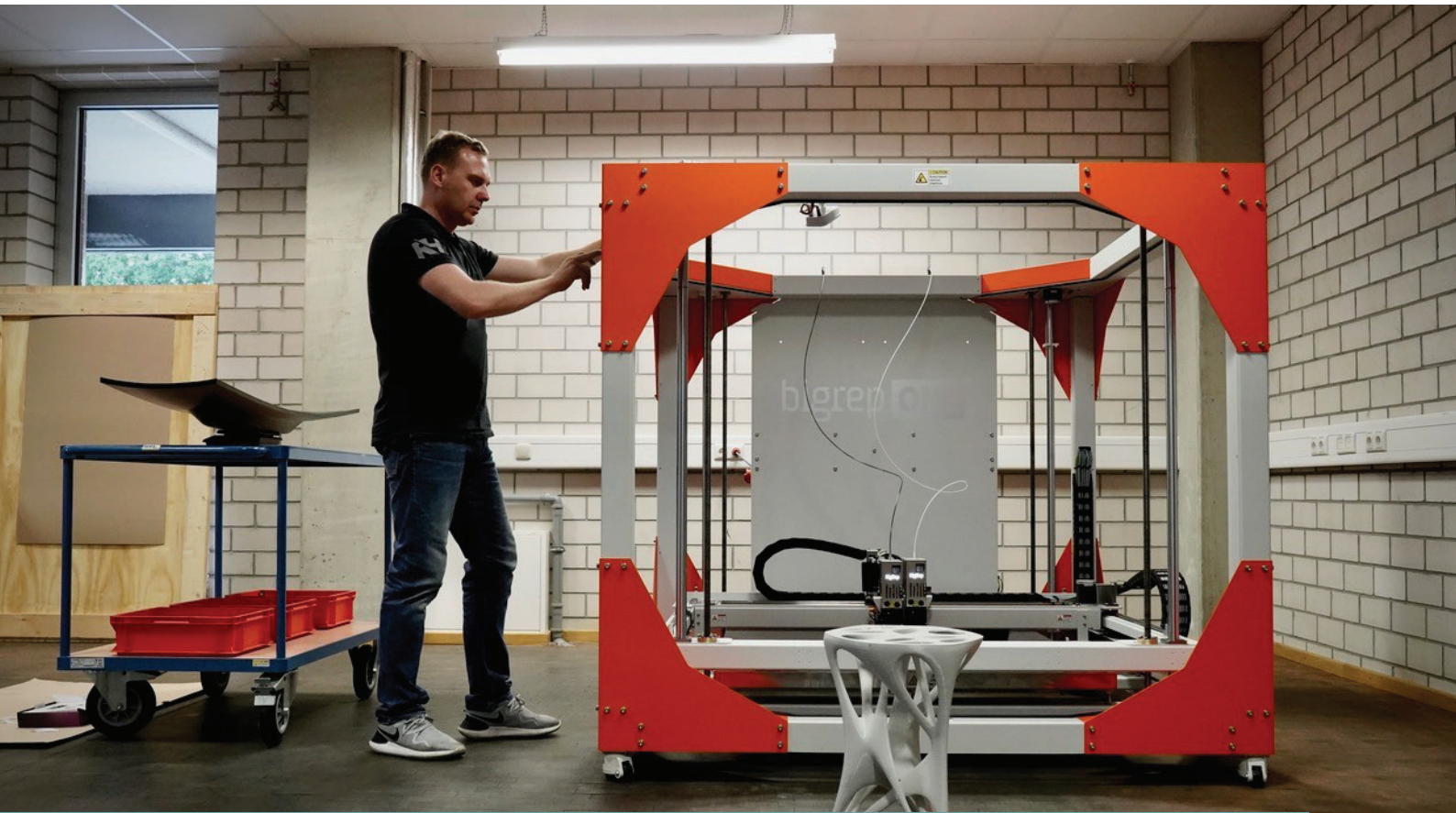


# HOW RH ENGINEERING & MANOFIGURE 3D PRINT LUXURY FURNITURE



How an innovative German duo is 3D printing end-use luxury furniture with their unique, artisan post-processing method.

In the East-German town of Schwarzenberg, a comfortable mountain town near the Czech border, a local duo has come together to create truly unique home furnishings and features for discerning customers with an eye for the unique. With their BigRep large-format 3D printer and artisan post-processing techniques, the pair is disrupting the luxury furnishing industry with end-use 3D printed products.

RH Engineering's brand-new office and showroom, a former clean room to manufacture vehicle batteries in Schwarzenberg's

industrial area, has the scrappy vibrance of a fresh new startup. In operation for just four months, René Helmreich, the company's founder and CEO, is using every available resource for their new endeavor. Even their BigRep ONE's wooden shipping container has been immediately repurposed, serving as an improvised wall to divide the large room and pinned with ongoing design projects. From here he and his partner Enrico Klemmer, an accomplished designer and proprietor of manoFigura, design and manufacture the core of their 3D printed luxury home features.

With their BigRep ONE, a large-format additive manufacturing system with a cubic-meter build volume, Helmreich and Klemmer 3D print end-use, consumer-bound luxury home furnishings. Their goal is to create 100% custom pieces that lend a personalized ambiance to a room. They've started with bathroom features – a demanding application that necessitates complete water resistance – and have already sold several units in their short time. Their latest design, a minimalist sink with an industrial rust finishing, showcases their talent for 3D printing functional end-use furnishings.

“It’s real rust,” says Helmreich. “We can control the moisture and grow it to the level our customers want before sealing.”

Klemmer is regularly employed to design the interiors of multi-million-dollar yachts, homes, and other extravagant abodes. His studio – not far from Helmreich’s new office – is filled with prototypes, concepts, and experiments. Finished experimental designs are strewn around his workshop, each mimicking stone or showcasing their more unorthodox finishings.



The team uses two techniques to create their on-demand personalized products: large-format additive manufacturing and a yet to be named finishing process the team describes as “living veneers.”

“Our coating is highly durable and waterproof,” says Klemmer. “Of course, it takes craftsmanship to replicate different looks like slate, rust, granite, or sandstone. So, we create an entirely individual piece.”

The same rust finishing technique used for their latest bathroom feature was also used to create manofigura’s new signage, another service the two are offering in their burgeoning

enterprise. The embossed company name convincingly mimics a painstakingly cut metal part but was actually quickly and easily 3D printed on their BigRep ONE. RH Engineering also showcases the team’s ability to quickly construct unique signage with a smoothly finished and brightly lit sign in three pieces – inspired by BigRep’s own sign-making process.

Klemmer’s proprietary post-processing technique isn’t unique to 3D printed parts. The technique can be applied to any surface, but the two consider additively manufactured parts a must to deliver such completely personalized products of the complexity, and at the scale, they plan.

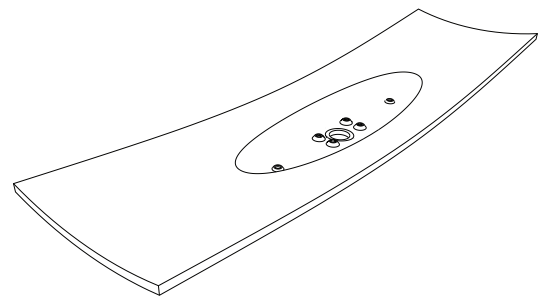
RH Engineering purchased their BigRep 3D printer for its size and German manufacturing but is enthused by the level of support he's had from BigRep and its innovation consultancy, NOWLAB. Helmreich had some experience with design for additive manufacturing before launching into business with Klemmer but was committed to becoming an advanced user fast. When they ran into some initial difficulties developing a sample product with the high strength it required, Helmreich turned to BigRep for advice and training.

With guidance from BigRep's experienced designers at NOWLAB, Helmreich learned new methods to increase part strength and how to get the most out of his large-format additive manufacturing system – like capitalizing on the one-cubic-meter of space to build their one and a half meter sink in a single, strong piece.



## MAGNA PATERO ORTUS - 3D PRINTED LUXURY SINK

<b>Dimensions:</b>	130 x 11 x 35 cm
<b>Nozzle:</b>	1 mm
<b>Layer Height:</b>	0.6 mm
<b>Plastic Weight:</b>	2.6 Kg
<b>Filament:</b>	PLA
<b>Printing time:</b>	27 hours



“We want to use technology to make things that our competitors aren’t able to,” Helmreich says, explaining how their flexible workflow allows them to deliver an array of customized home features in a fraction of the time it takes competitors – creating features of brilliant ambiance with concepts in an hour and deliverables as short as a week.

The unique position of Helmreich and Klemmer’s products and experience leaves them open to an interesting variety of new industries. After just four months of operation they’ve

already sold some pieces, now installed in high-end real estate that’s currently on the market. The two aren’t yet sure which niche will be best for their products overall, but their ability to quickly customize and produce products suggests they’ll have luck in many of the luxury contexts where quantity and time are key – such as exclusive real estate and resorts. The lightweight nature of their features may even create opportunities for the yachts Klemmer regularly works with, as a feature more appropriate to a water-vessel’s weight requirement than heavy stone or metal.



**“ The BigRep ONE allows us to do everything we want, it allows us to produce every design we can imagine.”**

**René Helmreich** - *Founder & CEO, RH Engineering*

“I simply want to reinterpret what is known, develop new designs. And all that in combination with new technologies, which creates undreamt-of possibilities for me,” says Klemmer.

RH Engineering and manoFigura are hoping to grow business exponentially and scale their new industrial space with a fleet of up to ten BigRep printers to meet their expected demand. Helmreich is especially interested in investing in a BigRep PRO

for its matching cubic-meter build volume, doubled speed, and engineering-grade material compatibility.

The team is hoping to further advance their technique and are investigating methods to automate their post-processing workflow with the help of other advanced manufacturing equipment. Until then, RH Engineering and manoFigura are open for business and accepting orders for their unique 3D printed home features from around the world.

# REDEFINING **ADDITIVE**

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