

Case Study

Kessler Plastics GmbH - Plastics technology and mould making



THE 3D-PRINT IS NOT TO BE IMAGINED WITHOUT



Heinz-Dieter Kessler founded Kessler Plastics GmbH in 1988 in Kredenbach near Kreuztal as a small service company with initially two injection moulding machines. With reliable contract work, the small company made a name for itself in the region and has developed into a qualified full-service provider in the field of injection moulding.

On the edge of the Sauerland, centrally located at the motorways A45 and A4, the headquarters of Kessler Plastics GmbH is still located today, but much larger. Equipped with a modern machine park with 33 injection moulding machines and with meanwhile more than 120 employees and under the management of founder's son Michael Kessler.

Kessler Plastics GmbH has changed over time and courageously adapted to the market. In addition to its core business, injection moulding and contract manufacturing, the plastics specialists offer a complete, integrated solution for customers, from CAD design for injection moulds, the development of the first prototypes and the manufacture of the mould to the start of production.

"3D printing technology is indispensable for us!"

Michael Kessler, Managing Director
Kessler Plastics GmbH

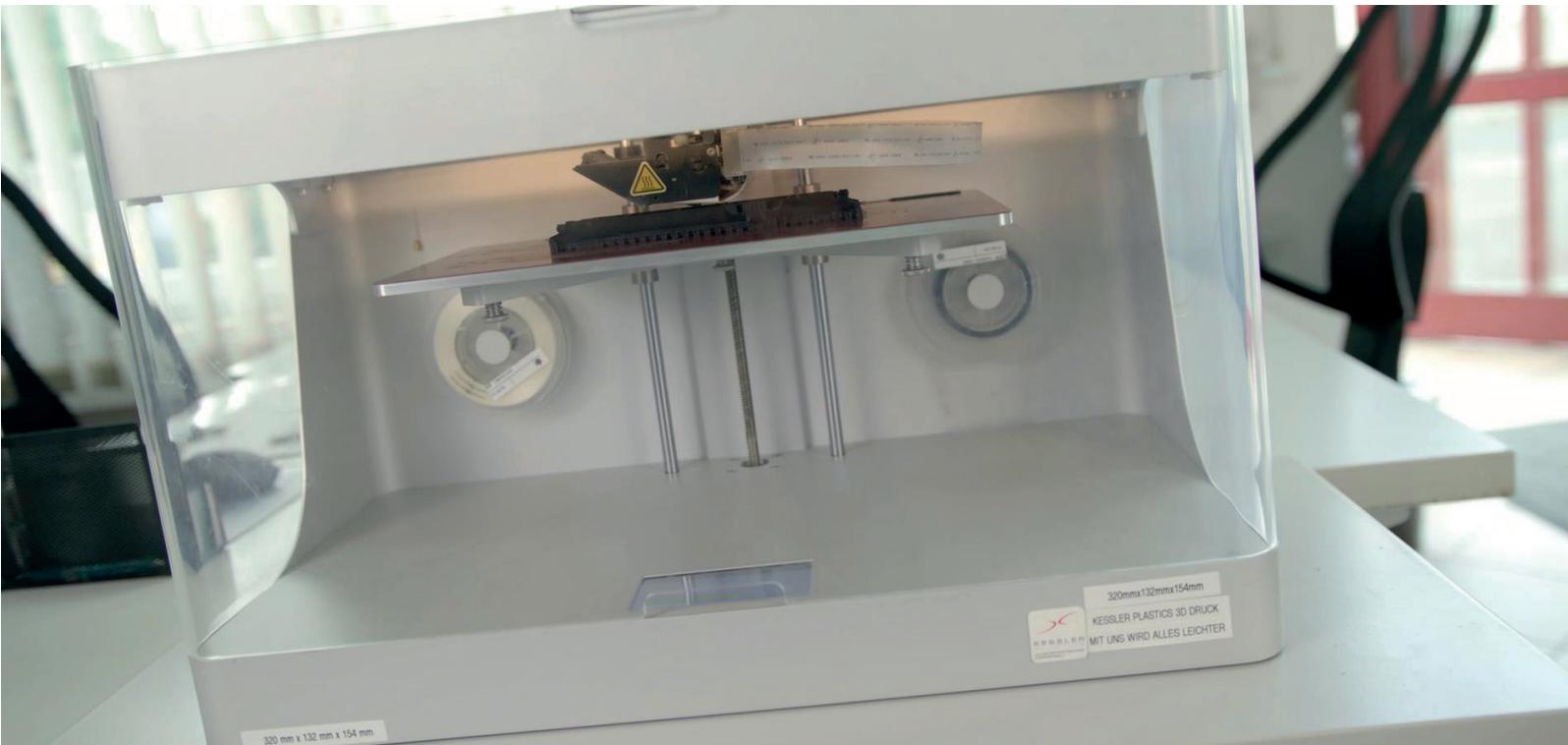


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MORE THAN JUST 3D PRINTED PROTOTYPES



In addition to a modern machine park for the metal-cutting production for the manufacture of the injection moulds and the injection moulding machines themselves, Kessler Plastics has also dared to take a brave look beyond its own nose into the field of additive production and discovered many advantages for itself.

For some time now, the plastics specialists at Kessler Plastics have been using the **Mark Two** Markforged Filament 3D printer. The Mark Two is the all-rounder among the 3D printers and produces industry-standard high-strength components. With the MarkTwo, Kessler Plastics GmbH prints high-strength components and prototype parts overnight - on their desks, comfortably in the office. The direct printing of components has decisive advantages in

the calculation of new injection moulds and speeds up the development process considerably. "To determine that a part may not be feasible or does not meet the requirements, we no longer have to build a mold," explains Lars Oster, IT Manager at Kessler Plastics GmbH, "We not only save time, but also resources, material and therefore money. In the meantime, the Mark Two prints more than just prototypes for Kessler. "We are now also using the Mark Two very successfully for printing small series".



"Not only do we save time, but we save resources, material and therefore money."

Lars Oster, IT Manager
Kessler Plastics GmbH



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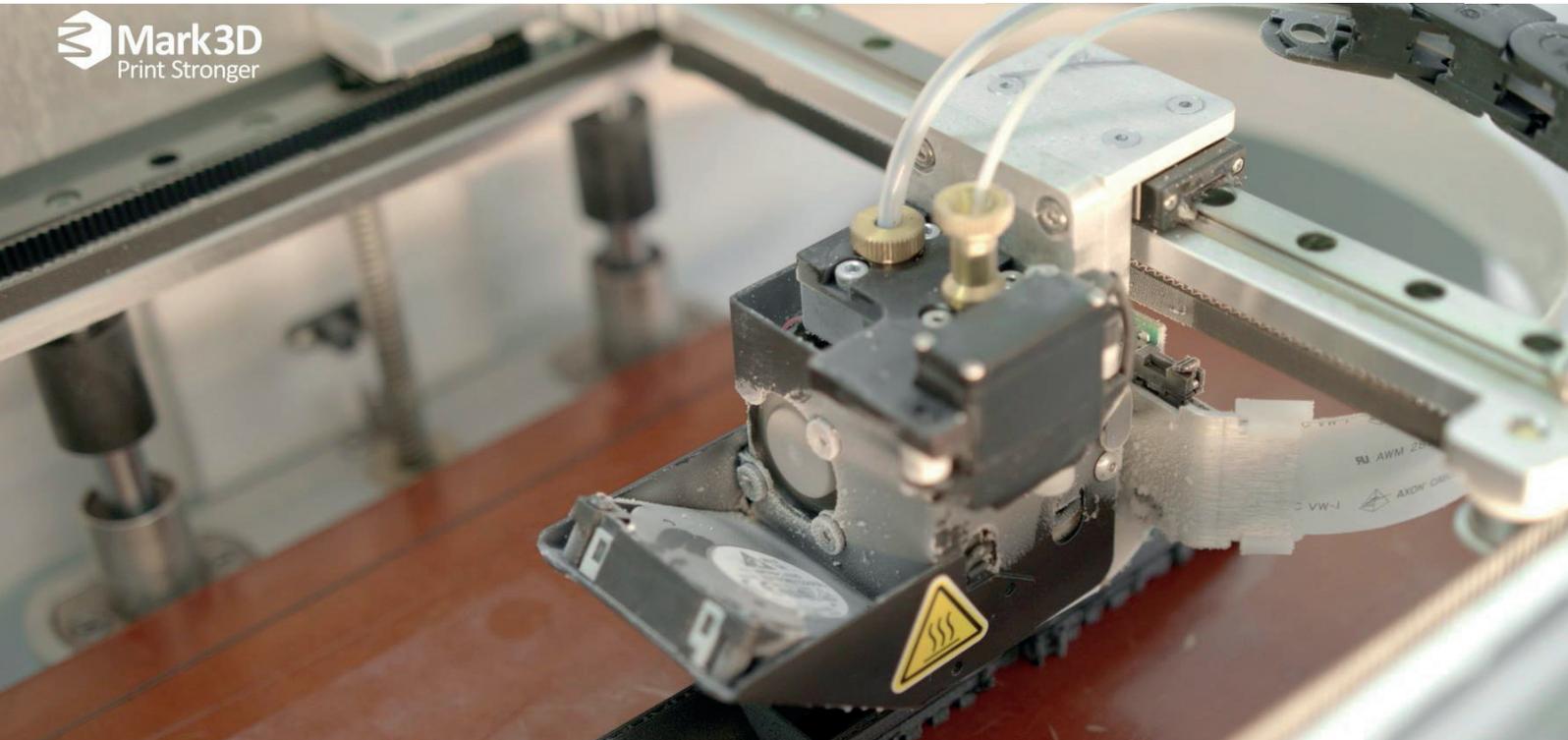
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DIRECT TRANSFER OF A 3D-CAD MODEL

Kessler Plastics' all-round carefree service offers customers the possibility of supplying their own 3D model or placing the development completely in the hands of experienced Kessler designers.

As soon as a first 3D design is available, it is uploaded as an STL file to the cloud based Markforged Software **Eiger**. In the software the print jobs are processed, e.g. wall thicknesses can be increased or scaled, the fill density can be adjusted, a honeycomb structure defined and the support structure can be adapted. The Eiger software is particularly user-friendly and easy to operate even by non-technical staff.



THE ADVANTAGES OF THE CARBON FIBER 3D PRINTER MARK TWO



The composition of hardware, software and materials makes the Mark Two a unique 3D printer. The Mark Two uses a nylon or onyx filament as basic material to print functional parts and small series for professional use. Parts can be printed in 3D with Kevlar®, carbon, glass fibre or with high temperature glass fibre (HSHT) reinforced, depending on requirements and application.



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THE RIGHT MATERIAL FOR EVERY APPLICATION

The base material Onyx is particularly resistant to bending and perfect for technically demanding applications. Onyx is 23 times stronger than 3D printed ABS. The base material Nylon is particularly tough, flexible and impact resistant and is suitable for applications requiring high flexibility or low friction. To obtain highly stable components, the base materials nylon or onyx can be printed reinforced with a continuous fibre.

Carbon, for example, has the highest strength-to-weight ratio and is mainly used to replace aluminium parts.

Fiberglas offers high strength at extremely affordable prices and makes components 2.5 times stronger and eight times stiffer than onyx printed components. Ideal for applications that require robust components.

HSHT Fiberglas has an aluminium-like strength and high temperature resistance. While the HSHT fibre is five times stronger and seven times stiffer than Onyx, **Kevlar®** scores with excellent durability. This makes Kevlar® the optimum material for repeated and sudden stress. It is as stiff as glass fibre, but much more ductile.



BRAVELY INTO THE FUTURE

The courage to invest in the future has visibly paid off for Kessler Plastics GmbH. More modern than ever before, Kessler offers its customers the all-round carefree package for plastic injection-moulded components in particularly high and reliable quality, also thanks to the Mark Two carbon fibre 3D printer from Markforged.

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