LIFE-CHANGING VEHICLE CUSTOMIZATION

3D PRINTING SHIFTS PARAVAN'S AUTOMOTIVE PRODUCTION

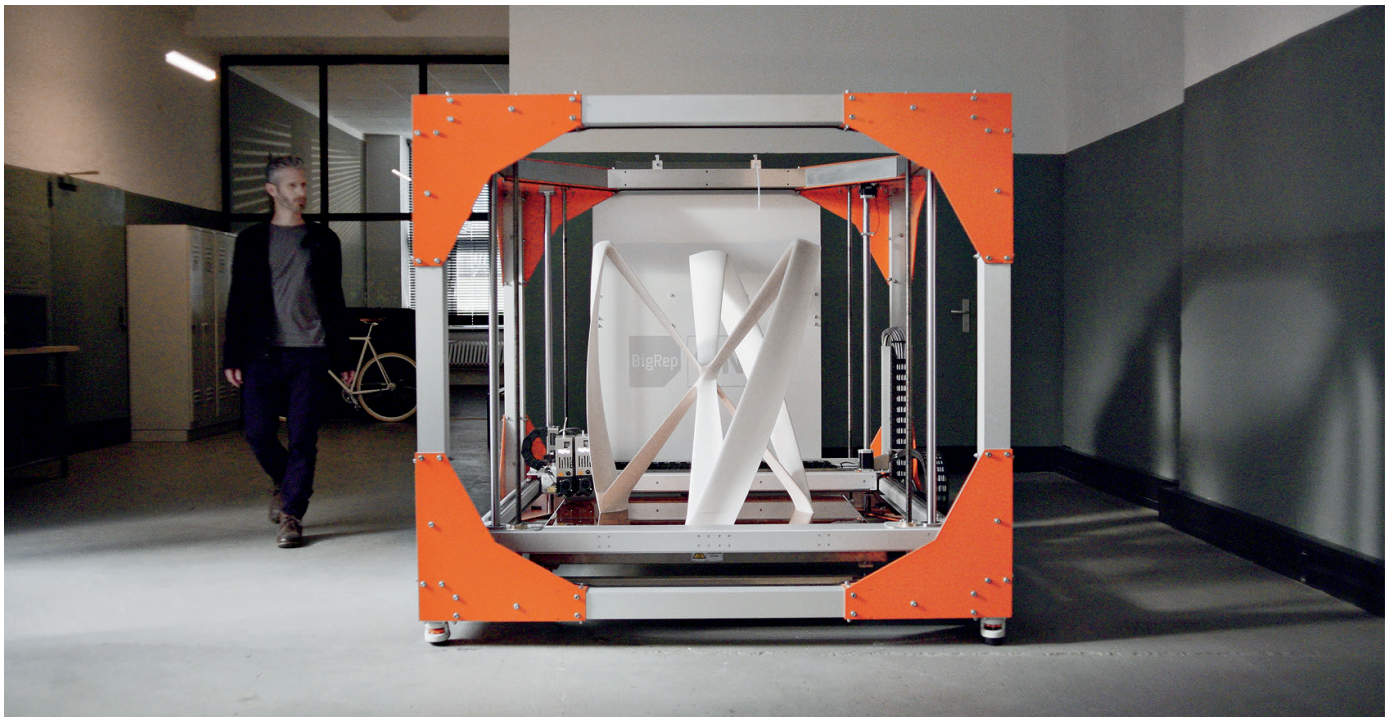
bigrep

3D PRINTED FOR PERSONALIZATION

For some companies, a shift toward Industry 4.0 means scaling up to mass production of the same goods or near-identical lines of products. For other firms, industrial advancements hold potential for greater customization and creation of bespoke products.

One such company is Paravan GmbH – a German company developing and supplying autonomous and independent drive systems for vehicles. Paravan has been a leading international provider of vehicle adaptations for people with a disability or special needs since 2005, as part of a wider mobility concept based around modifying vehicles, lifts, cartridge lifts and ramp systems.

Their solutions are specifically tailored to individual medical needs, incorporating features such as wheelchair access, loading systems, rotating seating, and many more accessibility assets for safety and comfort. Paravan's passion lies in providing personalized vehicle components that enable one of the most precious things there is: mobile freedom.



BigRep's experts are waiting to sink their teeth into your unique and challenging use case.

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TRADITIONAL METHODS VERSUS 3D PRINTING

Paravan owns and operates a large fleet of machines including, for example, a laser for sheet metal parts, a 5-axis milling machine, a turn-mill combination machine and other smaller machines. Now working with a BigRep ONE, Paravan does not have to rely on older, time-intensive machinery to deliver parts. In addition to saving 75% on production costs, Paravan is also producing its prototypes almost 50% faster with 3D printing than with traditional methods.

"With the BigRep ONE, we can quickly and inexpensively print complex components that are either impossible or very difficult to produce by machine," said Mario Kütt, Head of Mechanical Construction at Paravan. "Now we print a component that we had previously milled, thereby saving around 75% of the costs."

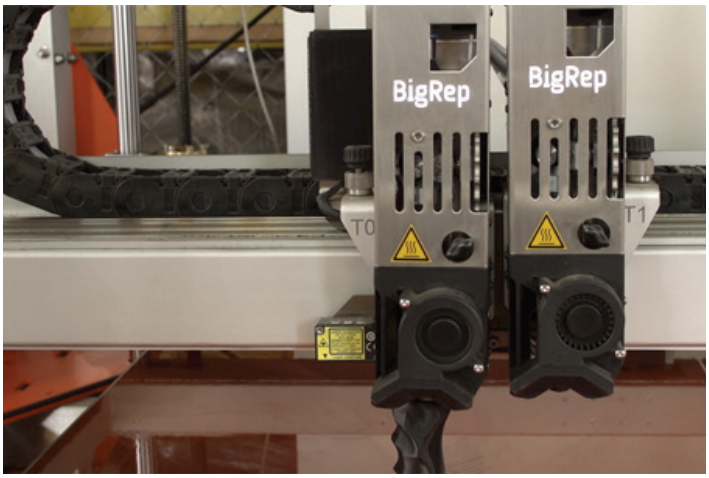
"WITH THE 3D PRINTER, WE CAN QUICKLY AND INEXPENSIVELY PRINT COMPLEX COMPONENTS THAT ARE EITHER IMPOSSIBLE OR VERY DIFFICULT TO PRODUCE BY MACHINE. NOW WE PRINT A COMPONENT THAT WE HAD PREVIOUSLY MILLED, THEREBY SAVING AROUND 75% OF THE COSTS."

Mario Kütt
Head of Mechanical Construction, Paravan

CREATING NEW COMPONENTS WITH THE ONE

Paravan uses a BigRep ONE 3D printer to produce parts for its road-approved, safety-related industrial applications, including its first prototype for a revolutionary new steering mechanism. Unlike in most cars, this Paravan steering wheel is electronic, rather than being directly connected to the steering column. The company designed their own cover for the steering wheel using the BigRep ONE 3D printer.

"We have had the printer for a good year, and together with a 3D scanner, our construction engineers work with it daily," said Paravan's Head of Marketing & PR, Alexander Nerz. "Of course, it's great to be able to quickly and efficiently build designs overnight… to be able to install the piece into the customer's vehicle the very next day. It's a really great tool."



"WE ARE IN THE PROCESS OF DEVELOPING A NEW GRIP THAT IS VERY INDIVIDUALIZED AND CREATED ACCORDING TO THE EXACT SPECIFICATIONS OF AN INDIVIDUAL HAND."

Mario Kütt
Head of Mechanical Construction, Paravan

The nature of Paravan's customized vehicle business means the ability to do rapid large-scale prototyping is paramount. With a clean CAD file, Paravan's engineers can design functional parts specific to a user's needs and turn around the print often within one day. Custom-fitting vehicles becomes a cost-efficient, speedy process. It's a process that has allowed them to continue creating new parts for production. "We have more pieces that are new, than those that we have had for a long time," says Mr. Kütt, who produces at least two prototypes per week using the BigRep ONE.

For customers who have difficulty grasping the controls with their hands, for example, Paravan has been developing custom grips that enable drivers to keep a steadier hold on the gear stick or steering mechanism. They take a mold of the individual's hand grip and to then create a custom grip with a flexible, easily malleable material. Using a 3D scanner, they convert a 3D scan of the final model to a CAD file. After refining the design, they are ready to print the prototype on The ONE.

THE RIGHT MATERIALS FOR INNOVATION

> "WITH THE BIGREP PRINTER WE PRINTED THE FIRST PROTOTYPE [OF A STEERING WHEEL]... AND WE COULD OFFER IT DIRECTLY TO CUSTOMERS."
>
> Mario Kütt
> Head of Mechanical Construction, Paravan

As the printed parts are sometimes placed directly into the custom vehicles, post-processing the prints is an important part of Paravan's process. "Currently we are only using PRO HT filament for production," said Mr. Kütt. "Mainly for its high temperature resistance, which is necessary for the vehicles, especially in summer."
Rather than painting the pieces smooth, which Paravan finds can be time consuming, they prefer to lightly sand the printed parts and prime them, thus creating the finish.

As Paravan continues to innovate in the automotive industry, BigRep's 3D printing technology will support the company to explore the potential of autonomous driving.

For businesses on the cutting edge of automotive technologies, being able to swiftly design and print prototypes allows them to remain frontrunners in their fields and provide, particularly in Paravan's case, life-changing products and services to customers.

BigRep's experts are waiting to sink their teeth into your unique and challenging use case.

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“ IT’S ALMOST TWICE AS FAST TO PRODUCE PROTOTYPES [WITH BIGREP ONE] AS WITH THE OLD METHODS.”

Mario Kütt

Head of Mechanical Construction, Paravan

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