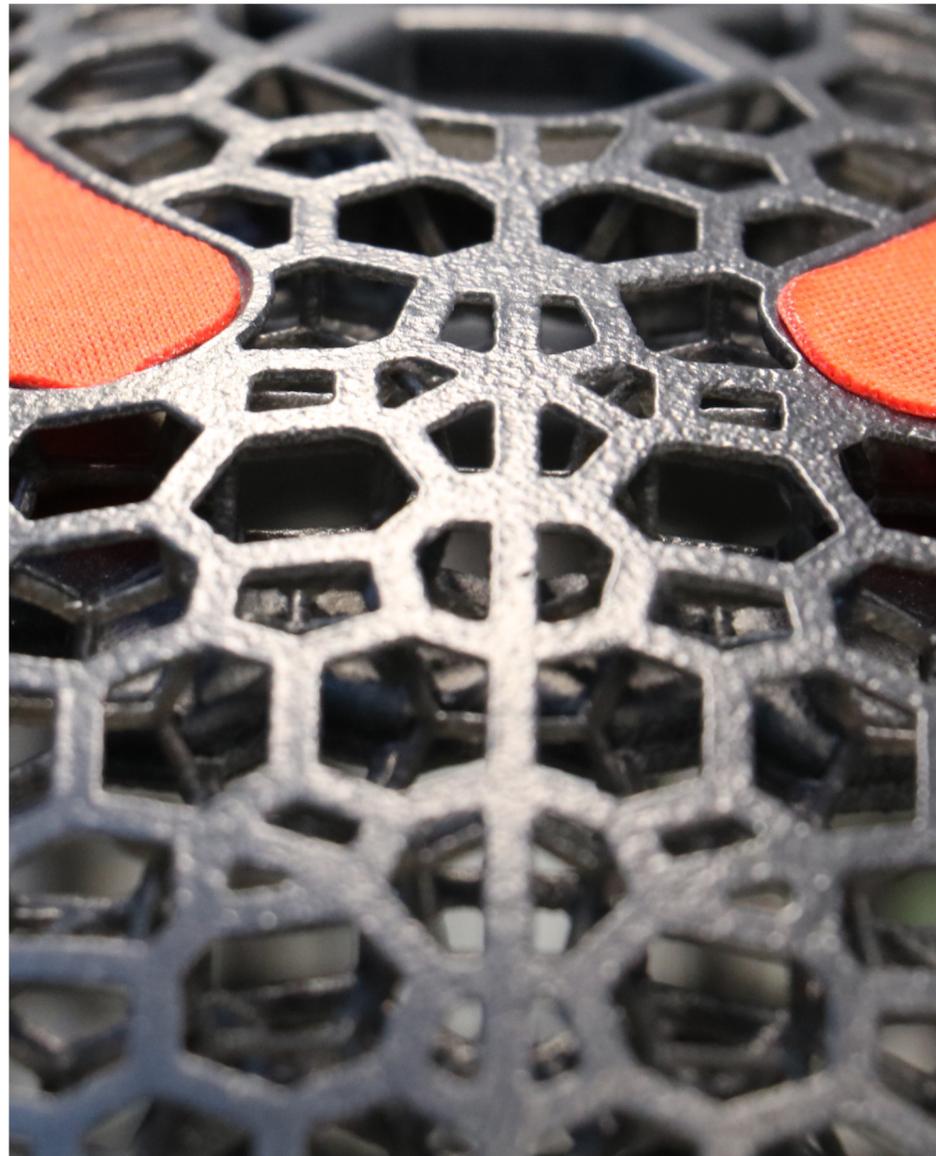


OECHSLER STRENGTHENS TECHNOLOGICAL ADVANTAGE WITH THE PATCH PRO (3D)



01

PROJECT BREAKDOWN

Application:

Fully automated positioning of patches for functional design

Why OECHSLER:

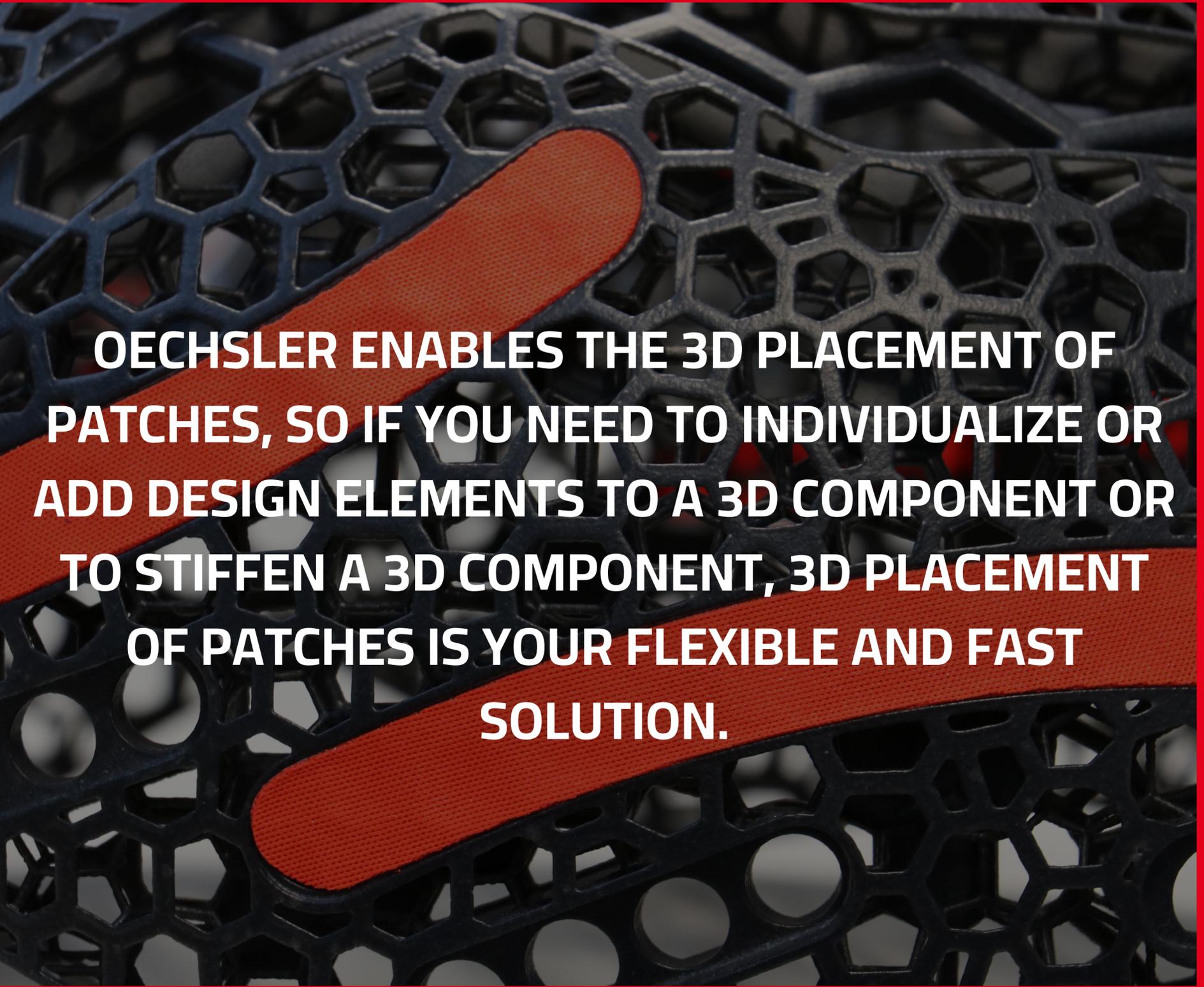
Development, simulation, and production out of one hand

Material used:

Textiles, unidirectional tapes, polymer-based materials, TPU

The result:

Functional design (comfort, stiffening, design)



**OECHSLER ENABLES THE 3D PLACEMENT OF
PATCHES, SO IF YOU NEED TO INDIVIDUALIZE OR
ADD DESIGN ELEMENTS TO A 3D COMPONENT OR
TO STIFFEN A 3D COMPONENT, 3D PLACEMENT
OF PATCHES IS YOUR FLEXIBLE AND FAST
SOLUTION.**

01

OECHSLER automated the 3D-placement of patches, enabling functional design and individualization through the application of multiple patches. The automated process, called Patch PRO (3D) (Positioning Robot Operated) is highly flexible and can be applied to different surfaces.

Patches are the ideal alternative to conventional functional design solutions when reinforcements are required but the installation space is tight, the material has special property requirements or when weight is a major factor.



THE CHALLENGE

Typical machines are limited to placing components on a 2D surface or plane. This restricts the use of stiffening and design elements on many products or it may require subsequent manual work to achieve the desired result. Faced with the challenge of stiffening unstable, three dimensional surfaces, OECHSLER developed a material-safe, cost-efficient, and precise automated process for 3D patch placement.

Our target for the process was scalability. To achieve this, we need to reach object, shape, and material independence. Simultaneously, we knew the process must deliver the same level of quality as existing technologies, especially for placement accuracy. A particularly challenging aspect of the process was

accurate placement of (larger) elements on curved surfaces, requiring a rolling motion by the robot. The programming effort can be minimized through complete automation through the interface between CAD data and the placement system.

To accelerate the process and deliver more value to the customer OECHSLER developed the Patch PRO (3D), enabling automated placement applications even for short production runs.

With the new Patch Pro (3D) we show that even complicated last production steps can be automated and thus brought back to Germany cost-effectively. Fast and customized products require rapid manufacturing and short supply chains.

HOW DOES THE PATCH PRO (3D) WORK?

It all starts with a computer analysis where critical spots in components can be detected at an early stage. The results of the FEM simulation show at which points and to what extent patches are required to meet the desired performance objectives. This minimizes development time and costs typically resulting from many iterations of sample construction and testing. After determining where and to what extent patches should be applied, the process of the Patch PRO (3D) begins. After positioning the patches on a carrier

plate, a smart camera system determines the position of the patches, automatically detects the shape of the patches and confirms their quality. Because of this system the order of the patches on the carrier is irrelevant. The patches are picked up with the help of a specialized vacuum gripper and placed on the surface after being activated by heat briefly. The automation reaches a precise placement of the patches, with an accuracy of about 0.2 mm. The system is capable of applying patches of different thicknesses.





OUTCOME

The Patch PRO (3D) enables the rapid reinforcement or refining of soft 3D components. In summary, the machine delivers the following advantages:

- The elimination of expensive tools allows for both short run and fast reaction projects
- It can be used in prototyping or series production to achieve design, comfort, or stiffening requirements
- The Patch PRO (3D) realizes a competitive alternative to high-priced engineering polymers while optimizing the topology
- In design applications where manual double layering of patches has reached its limits the automation allows for precision placement.



**ARE YOU INTERESTED IN OUR ASSEMBLY
PRODUCTION?
DO NOT HESITATE TO CONTACT US AT
SALES@OECHSLER.COM**