THE INNOVATIVE OUTDOOR BACKPACK - YOUR BUDDY FOR SUSTAINABLE ADVENTURES

OECHSLER

01

INTRODUCTION

Application:
Outdoor backpack

Why OECHSLER & VAUDE:
We are a partner of innovation and additive manufactured solutions, from idea generation to global production. German Outdoor Brand VAUDE stands for comprehensive sustainability. The family-owned company is willing to think outside the box for sustainable, high performance outdoor gear in a circular economy. Together, we create innovative and sustainable solutions for the products of tomorrows.

Material used:
HP Jet Fusion 5200 Series 3D Printing Solution
BASF Forward AM Ultrasint® TPU01

The result:
New carrying experience by 3D-printed lattice comfort elements.

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With the Novum 3D VAUDE and OECHSLER enable a look into the future of sustainable, technical enhanced products and manufacturing processes. With this small series, VAUDE is gaining important experience on the way to the circular economy.
OECHSLER – one of the worldwide pioneers in Additive Manufacturing – has been inspiring leading customers from various markets with its additive solutions since 2017.

For the development of a new generation of backpacks, the German outdoor brand VAUDE has partnered with OECHSLER to incorporate our industrial-scale 3D printing services into the development and production process.

Moreover, the NOVUM 3D satisfies the desire for a sustainable lifestyle by using 100 % recyclable material.

02

THE STORY BEHIND

As a company, VAUDE always strives to think outside the box to create new sustainable products - the latest innovation is a fully recyclable backpack made from a single material.

Therefore, the main goal was to replace conventional foam-based back cushions - which was made possible through the use of additive manufacturing.

In cooperation with OECHSLER, VAUDE has opened a new chapter in local sourcing and superior cushioning. The new back pads manufactured of 3D-printed lattice comfort elements reduce contact pressures, increase air ventilation, and are also fully recyclable.

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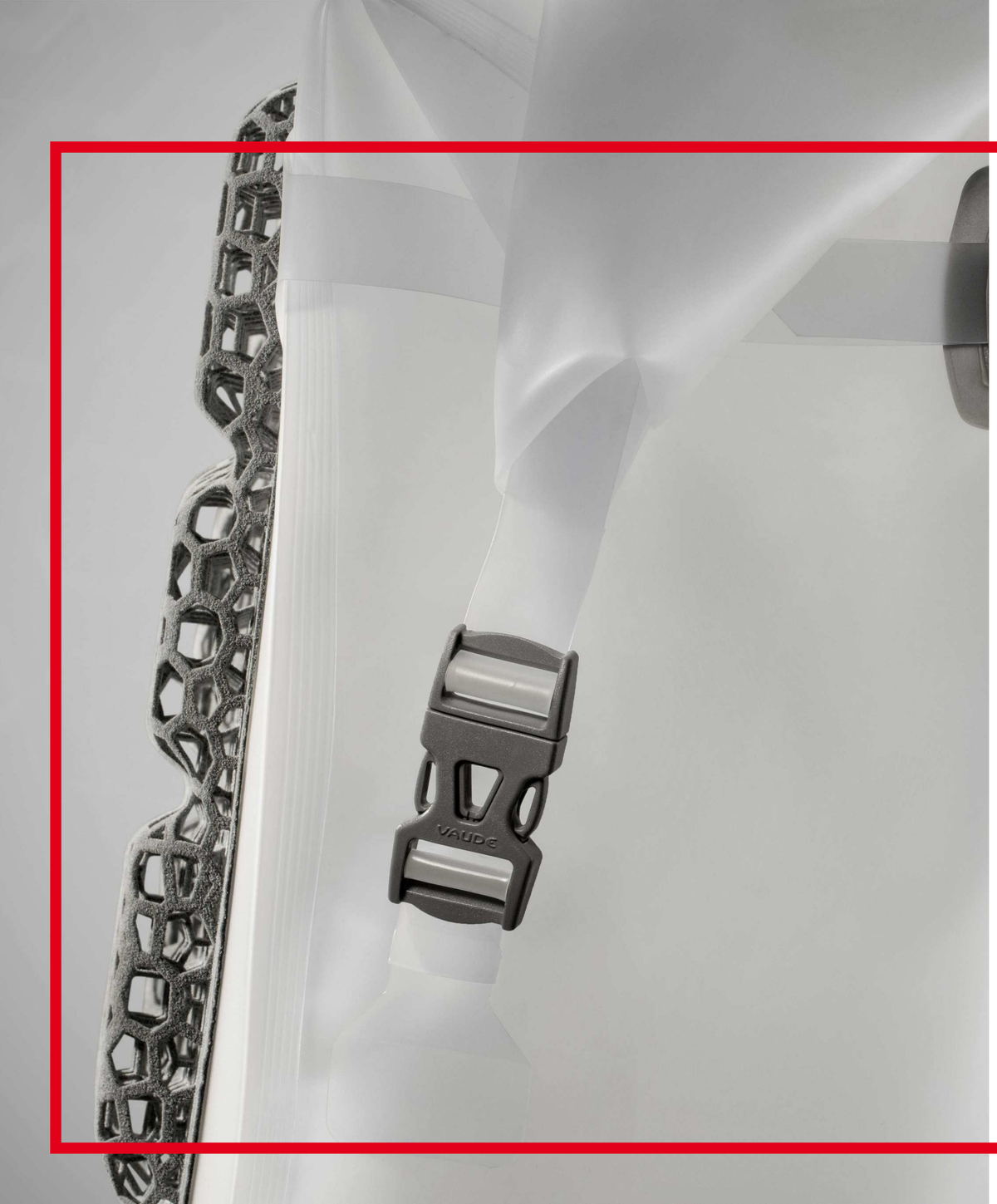
03

GREATER COMFORT BY UNPRECEDENTED FUNCTIONALITY

Thanks to freely designable lattice structures only possible by using Additive Manufacturing, a fully integrated cushioning experience unlocks superior comfort. The open cell structure of the 3D-printed back pads and hip fins strongly enhances air ventilation, minimizes heat accumulation and thus noticeably reduces the temperature (3 to 5 °C) as well as relative humidity rise at the contact area to the hiker's back. Furthermore, maximum and mean contact pressures are significantly optimized. The damping characteristics of the lattice structure are programmable due to lattice geometry, the strut thickness, and the size of the lattice.

This allows variant areas of the lattice to have different degrees of hardness, thus, increasing damping properties and comfort. Driven by the idea of offering our customers more flexibility and efficiency in production, OECHSLER can realize small lot sizes as well as high-volume series production and complex components. The special BASF Forward AM Ultrasint ® TPU01 material is a multi-purpose TPU that offers strong, flexible, and very durable part performance, combined with excellent surface quality. Furthermore, the material is very easy to print with high process stability and one of the highest throughputs for flexible material in the 3D printing market.



SUSTAINABILITY

Thanks to the design flexibility enabled by additive manufacturing, the back pads can be produced in one single piece, which significantly reduces assembly steps, assembly time, and ultimately costs. No more gluing or sewing is required to integrate the pads into the systems.

In addition, the unprocessed Ultrasint® TPU01 powder is fully reused in subsequent print jobs.

Consequently, further components of the backpack are also made with TPU, so that the complete NOVUM 3D consists of only one material.

This mono-material product allows for the highest recyclability. After the buckles and back stays have been removed, the Novum 3D backpack consists only of TPU materials, which can theoretically be processed into recyclate.

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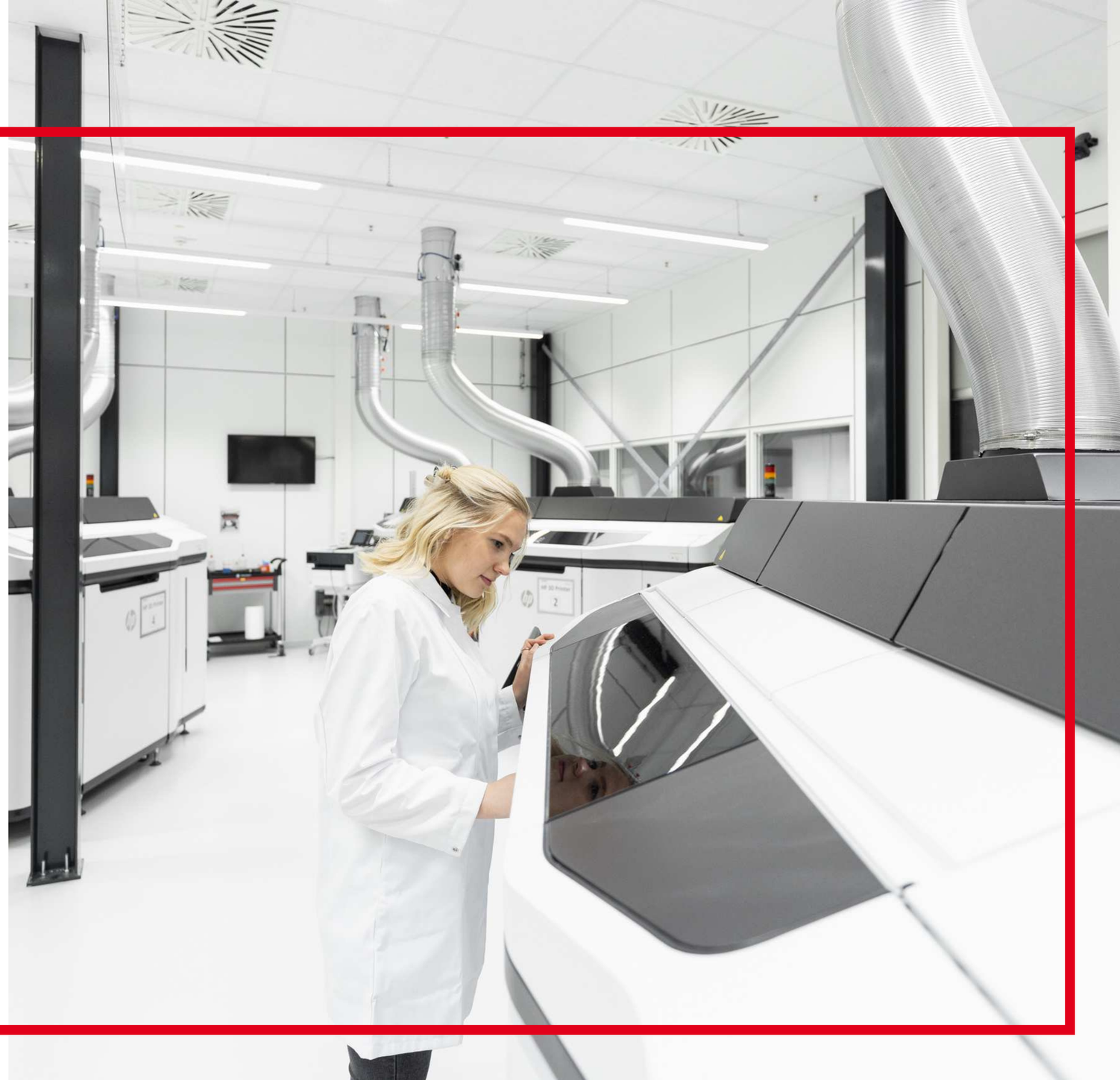
OUTCOME

OECHSLER offers customized solutions for printing cycling backpack elements including a full range of services from development to global production. The backpack creates a completely new carrying experience with its integrated 3D-printed lattice comfort pads. Here are some of the key benefits for the customer:

- Maximized air ventilation
- Significantly reduced temperature (3 to 5 °C) and relative humidity rise area to the rider's back
- Reduced maximum and mean contact pressures
- Adjustable damping characteristics
- Unlimited design flexibility
- Easy & fast assembly
- 100 % recycling of printed material



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ARE YOU INTERESTED IN OUR AM-PRODUCTION?
DO NOT HESITATE TO CONTACT US AT
3DPRINTING@OECHSLER.COM