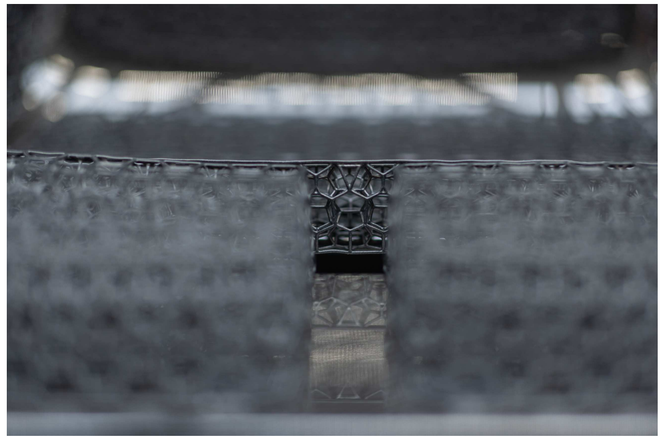
SEATING EXPERIENCE 2.0: HOW OECHSLER REINVENTED CAR SEATS



OECHSLER

01

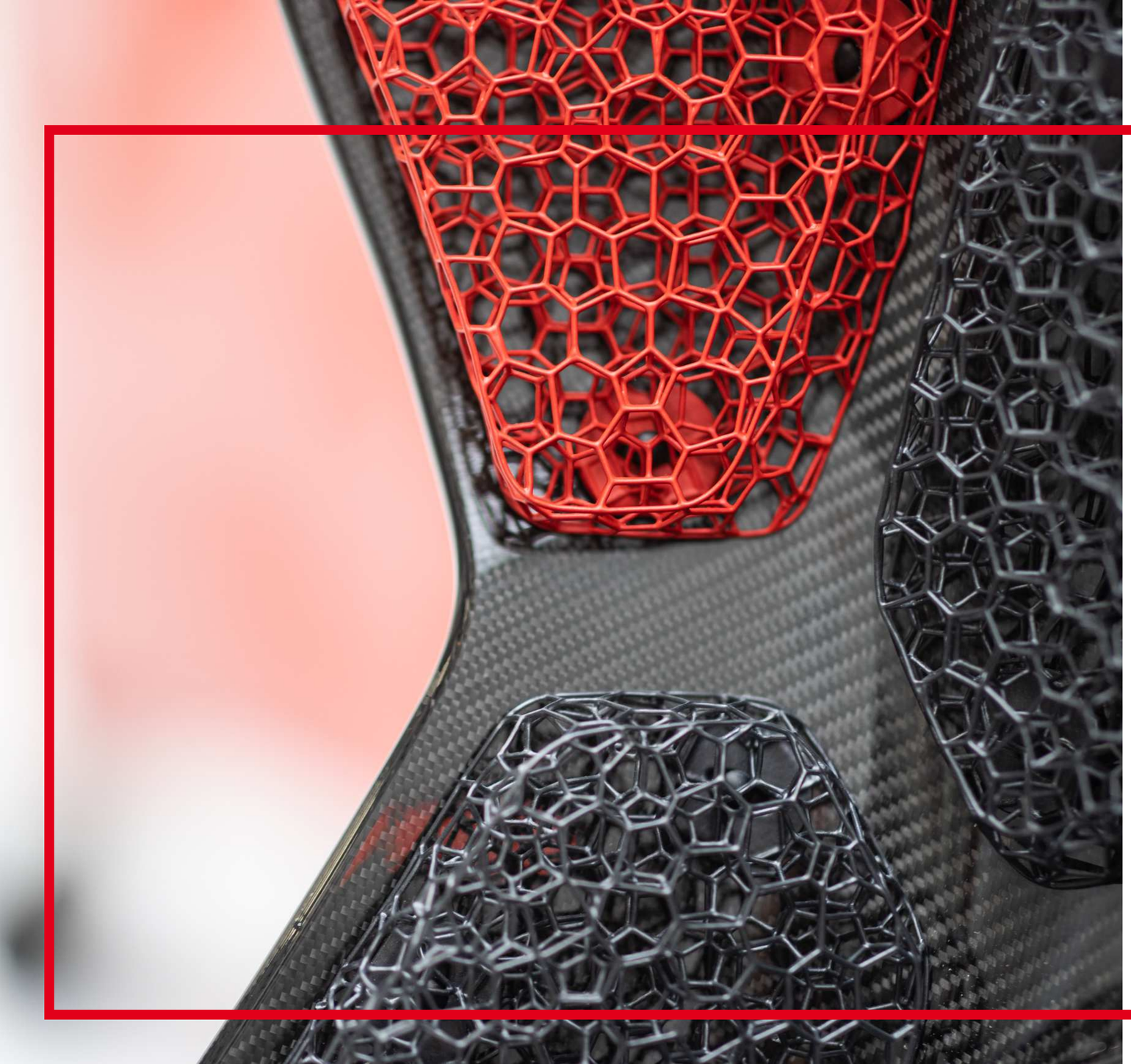
INTRODUCTION

Application:
Putting customers seating experience first by enhancing comfort, integrating functions and enabling an extra spark of design.

Why OECHSLER:
One partner for innovation, development and global production. Certified for quality standards within the automotive industry and high-volume Additive Manufacturing production capacities.

Technology & Material:
HP Jet Fusion 5200 Series 3D Printing Solution
BASF Forward AM Ultrasint® TPU01
BASF Forward AM Ultracur3D® Coat F

The result:
Upholstery for your special purpose with the highest standard of comfort and design.



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OECHSLER uses Additive Manufacturing to develop and manufacture upholstery that is individually adapted to the needs of the user. With a long history of supplying the automotive industry OECHSLER is firm in reaching all the certifications and quality parameters needed. No matter whether you are looking for small quantities or serial production – OECHSLER is your reliable partner.

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PAVING THE WAY

The development process begins with the analysis of the car seat components. OECHSLER uses software design tools to convert the 3D designs (fixed geometry) into lattice structures. To identify the different pressure points during the sitting experience, heat maps help to visualize the data. The damping properties are programmable based on geometry, the thickness, and the size of the lattice. By merging the data gained from the seating experience and taking advantage of free design, the damping characteristics are optimized for the specific application. The refinement of lattice structures created a new particularly air-permeable comfort layer for passive climate comfort and increased breathability. Depending on the vehicle type, harder and softer areas can be programmed ensuring the desired seating experience. In contrast to conventional manufacturing processes, the design freedom of Additive Manufacturing enables the production of bionic structures that allow for multiple hardness zones in one cushion. Given the challenges of car seating in terms of ventilation, weight and space the design process towards lattice structures provides a great approach to meet the respective automotive requirements. The final pressure test provides information about the mechanics and characteristics of the component. The performance is determined and compared based on a loading and unloading curve. The tests verified far superior results when applying lattice structures compared to conventional production methods.

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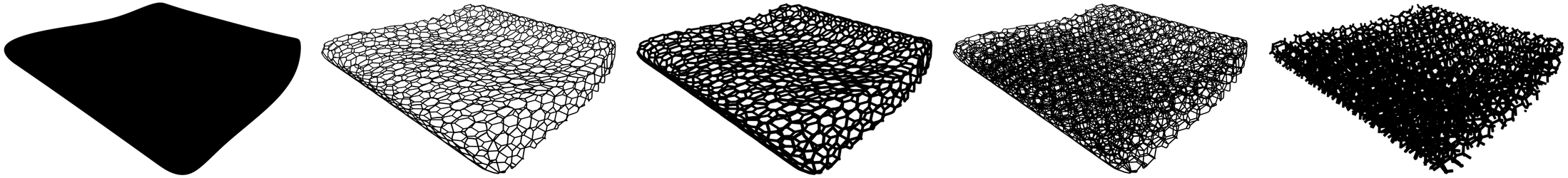


1 Solid Structure

2 Surface Geometry

3 Meshed Surface Lattice

4 Volume Lattice

5 Meshed Lattice

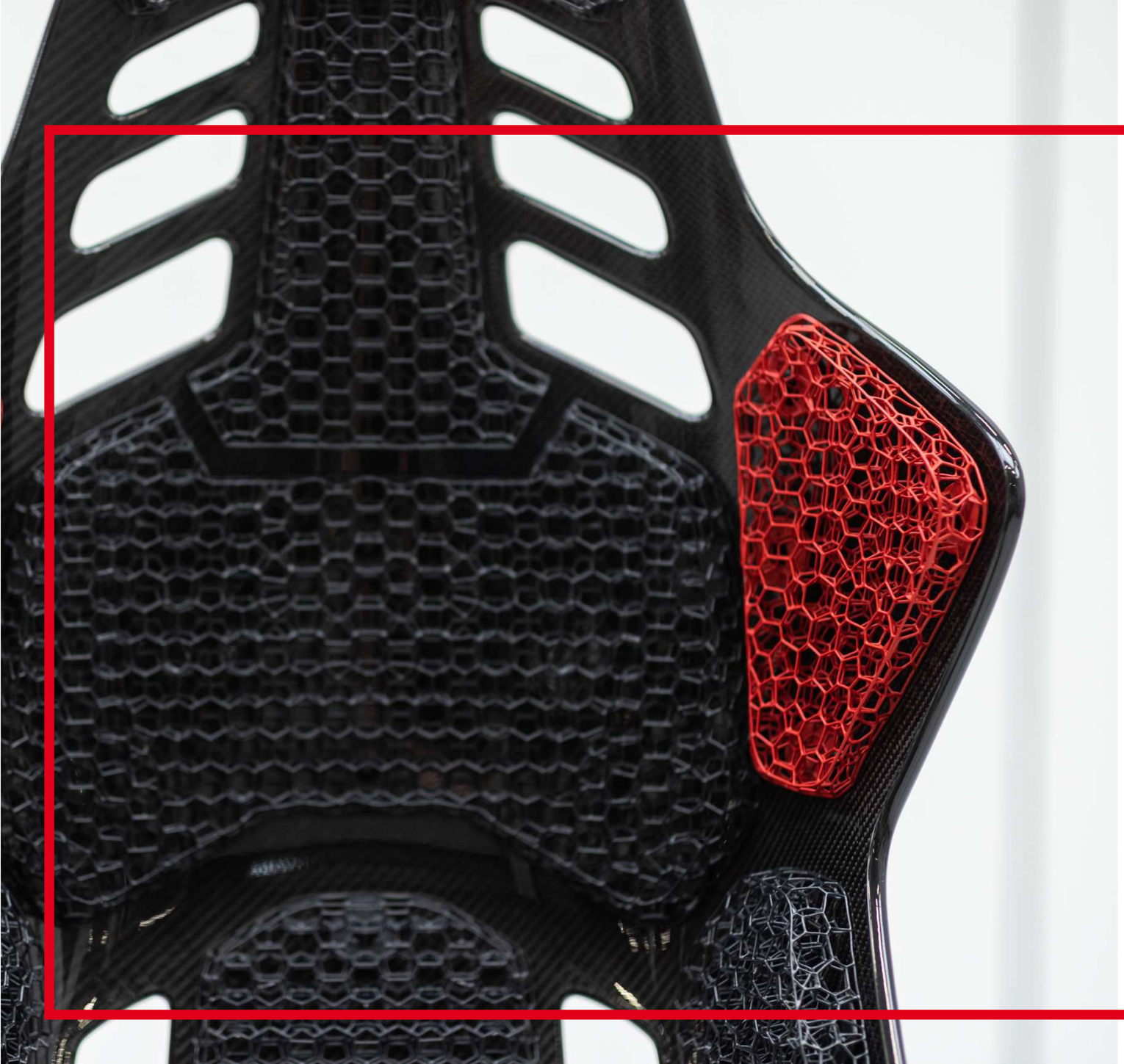
03

MATERIAL & GEOMETRY

In this project, OECHSLER's experience in the automotive industry and product development were of decisive importance. Innovative product design approaches resulted into considerably more efficient downstream assembly processes, e.g., integrating further functions such as seam channels and folding mechanisms. Hinging allows large components to be produced in a single printing process.

The development has taken into account the strict quality standards and fulfilled the further specifications necessary for automotive with regard to fittings, odor and emissions. All elements are coated with Ultracur3D Coat F developed by BASF Forward AM to ensure a perfect match between flexible substrate and applied coating. The seatbelt guiding is a solid printed component. The backrest element can be printed in different levels of hardness to increase comfort.

The complete seat element can be adjusted to the driver's requirements by means of the lattice structure. The colored elements enable a distinctive design.



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“The car seat is a core interface between driver and vehicle. Additive Manufacturing enables us to go beyond the limits of conventional materials and manufacturing processes, to deliver greater comfort and driving experience.”

Max Lehnert, AM-Seating Program Manager at OECHSLER

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OUTCOME

With additively manufactured car seats by OECHSLER, a new era of seating comfort has begun. Completely new material properties as well as efficiencies in assembly and quality can be achieved to produce the car seats of tomorrow:

- Higher comfort (comfort layer of the cushion can be selected in different hardness zones)
- Particularly air-permeable comfort layer for optimized passive climate comfort
- Reduced weight of the component
- Individualization through visible, colorable and programmable lattice structures
- One component system of recyclable material

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