

Make Radically Better Helmets

Powered by **Carbon**



Why Carbon for Helmets?



Manage energy impact attenuation precisely with data-driven customization and multizonal lattice pads



Improve breathability and cool the wearer up to 7 times faster than foam through the open nature of a lattice structure



Boost comfort with variable density designs and achieve a perfect fit through custom scanning



Create personalized responses matched to your customers' unique needs



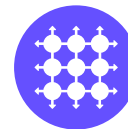
Consolidate impact and comfort layers with multizonal lattices to ease assembly and simplify manufacturing process



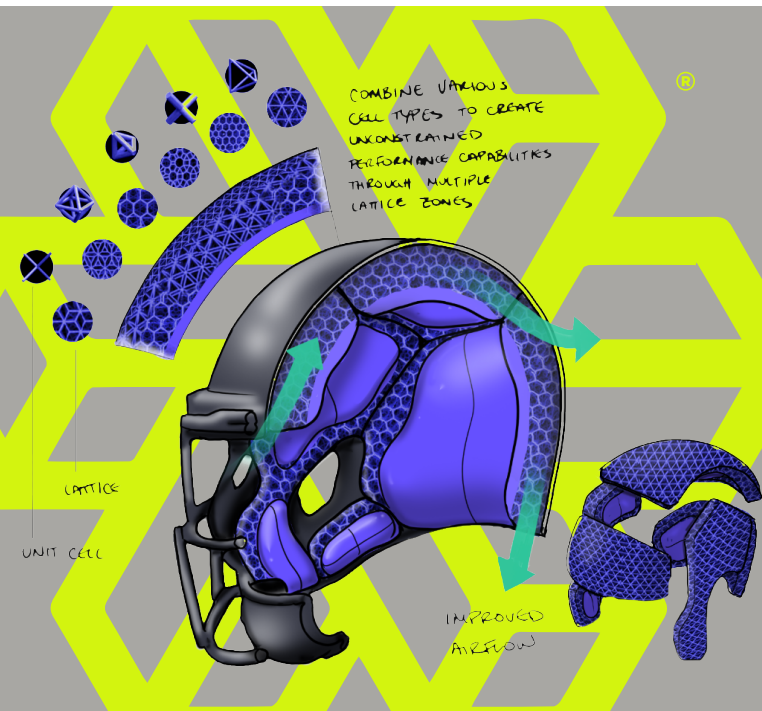
Scale up production with the proven and growing Carbon Partner network—independent manufacturers across the globe who provide unique expertise across a fleet of Carbon printers



Validate designs faster by prototyping and producing on the same platform



Supplement traditional helmet materials with uniquely tailored lattice pads to enhance performance and protection



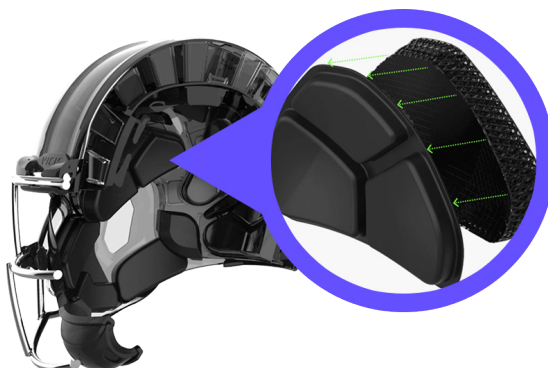
Design Insights

- **Energy Control:** Absorb, dissipate, or divert energy based on activity and application through a range of energy damping materials at a variety of stiffnesses.
- **Exceed Expectations:** Characterize lattice cell types to match an existing material or go beyond what's possible with flat foams by designing custom unit cells to make a multizonal lattice unlike anything on the market.
- **Data Driven Designs:** Produce specific designs with the performance and protection required to meet industry-specific standards using a collection of field- or application-specific data.
- **Optimized Design:** Consolidate multiple features in a single design that is optimized for comfort and impact protection.
- **Add Functionality:** Use textures to assist assembly or channels to wick away sweat. Our platform enables you to produce a diverse product range with one tool so you can create as many custom designs as possible.

Use Case: VICIS

The ZERO2 MATRIX helmet from VICIS features custom 3D-printed, interchangeable fit pods, optimized to provide the ultimate in both player fit and protection. This first-of-its-kind system resulted in the industry's first position-specific helmets for linemen and quarterbacks-- the **VICIS ZERO2 MATRIX ID TRENCH** and the **VICIS ZERO2 MATRIX QB**-- that are designed to withstand the unique impacts each position experiences, and **are rated #1 and #3 on the NFL/NFLPA 2023 Helmet Lab Testing Performance Results**, respectively. The lattice structures in these custom-fitted helmets provide a stable fit while maintaining exceptional impact protection, which is further enhanced by custom unit cells within the lattice itself.

VICIS: ZERO2 MATRIX



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MATERIALS

- **EPU 43:** Soft, excellent durability, and energy damping, great for comfort areas.
- **EPU 45:** Energy damping and starting-rate-sensitive for peak impact zones.

CARBON DESIGN ENGINE™

Carbon Design Engine™ online software empowers designers to make precisely tuned, high-performance latticed padding and other components for products like saddles, helmets, and insoles. It reduces and usually eliminates any need for the tedious, manual editing of struts or structures post-generation and automatically resolves lattice features, both large and small, while robustly transitioning between different zones inside the same part for tunable performance. Carbon Design Engine™ offers many different types of lattice types including the ability to upload and populate custom unit cells.

SUPER STATS

- **Five of the top 10** helmets rated safest by the NFL have liners designed and printed by Carbon.
- **Over 20% of helmets in the NHL** utilize Carbon technology.
- Millions of midsoles have been printed for adidas shoes, making it **the world's largest application of 3D printing.**
- Lattice saddles produced on the Carbon platform can be seen in some of the world's top cycling competitions like the **Tour de France cyclists.**

CARBON CUSTOM PRODUCTION SOFTWARE

Carbon's methodology enables rapid and efficient production of customized parts tailored to each user. Customers can easily pair Carbon's lattice design and production workflow with personalized data from scans, pressure maps, or other data sources to automate design and enable mass customization.

DIFFERENTIATION

Powered by Carbon can produce almost any design, the sky's the limit to what you can do to make your product stand out, whether it's a distinct performance result or unique aesthetic using textures or lattices. And with the support of the Carbon Application Engineers, you can develop and iterate designs quickly and collaboratively.

PARTS MADE WITH METAMATERIALS:

- Helmets
- Saddles
- Gloves
- Insoles
- Footwear
- Backpacks
- Workwear
- Padding
- Grips

GET FROM IDEA TO PRODUCTION-FAST

With the Carbon platform, you can iterate rapidly and print a new version without having to change tooling. Because you can prototype with the same materials used in the final product, you can start printing production parts as soon as your design is ready.

CPN

The Carbon Production Network (CPN) is a global ecosystem of leading industry design firms and contract manufacturers who are experts in the Carbon idea-to-production platform. Find a CPN partner based on your needs and leverage the power of the Carbon platform to design, develop, and produce radically better products.

[FIND A CPN PARTNER](#)

WANT TO GET STARTED?

Reach out to learn more about how you can make radically better helmets Powered by Carbon.

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PERFORMANCE ENHANCING TECHNOLOGY

Powered by **Carbon**



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Published: 08 / 23
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