NEWS RELEASE

Jabil and KAV Sports Harness the Power of Engineered Materials to Produce Game-Changing Customized Bike Helmets

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Innovative Materials Science and 3D Printing Collaboration Enable Mass Customization

ST. PETERSBURG, Fla.--(BUSINESS WIRE)-- **Jabil Inc.** (NYSE: JBL) has teamed with **KAV Sports** on made-to-order, personalized bicycle helmets that deliver a better fit for superior comfort and protection using custom **engineered materials** and **additive manufacturing**. Recognized by Time Magazine as one of the "best inventions of 2022," the KAV Portola helmet is made from custom nylon carbon-fiber material engineered by Jabil to meet exacting standards for performance and aesthetics.

Jabil teamed with KAV Sports on a custom material, available in different colors, to produce tailor-made, 3D-printed bike helmets. (Photo: Business Wire)

"To fulfill our mission of saving lives, we needed to produce a better-fitting helmet that people would want to wear," said Whitman Kwok, founder and CEO of KAV Sports. "For consumers to experience the benefits of customization, we had to overcome limitations in materials and manufacturing. Jabil knocked it out of the park by engineering a custom material that met stringent criteria and could be manufactured using 3D printing to create something really unique and special for the helmet industry."

Innovating the Perfect Fit

Traditional bike helmets are made from injection-molded, expanded polystyrene (EPS) foam and come in one to three sizes, which fall short in accommodating various head sizes and shapes. Moreover, typical helmets have limitations in stability, durability, and comfort.

While KAV wanted a novel material that was as light as EPS, the company sought superior performance in temperatures ranging from -15 degrees to over 60 degrees Celsius. KAV engineers evaluated more than 20 off-the-shelf materials, all of which failed to meet the company's criteria for absorbing high-velocity impacts or providing sufficient stability under extreme environmental conditions.

KAV enlisted the help of Jabil to create a custom material that was stiff and strong yet flexible enough to accommodate both high and low temperatures. In addition to providing excellent energy absorption, the material needed to increase layer-to-layer adhesion for consistent performance, as well as improved look-and-feel. A team

of additive manufacturing engineers, chemists, materials scientists, and production experts at **Jabil's Materials Innovation Center** in Minnesota created a completely new and customized material — in just nine months — that met all KAV's expectations.

Prioritizing Polymer Science

To achieve that milestone, Jabil applied comprehensive innovations in materials formulation, compound development, materials systems integration, and ISO 9001 Quality Management System certification. "We take a polymer science approach to developing additive materials," said Matt Torosian, director, product management for additive manufacturing at Jabil. "Jabil engineers materials that work with additive manufacturing processes in a repeatable manner to meet customer requirements and manufacture top-quality products."

Jabil and KAV developed and tested nearly 30 iterations of custom polymer formulations and compounds before creating the proprietary nylon carbon-fiber composite that embodied all the necessary properties. Jabil's extensive expertise and experience in materials processing, testing, and scaling proved instrumental in formulating the polymer, compounding the final filament and attaining ISO 9001 Quality Management System certification.

KAV then completed the necessary validation testing to achieve certification in accordance with the U.S. Consumer Product Safety Commission (CPSC). When KAV launched the Portola helmet featuring the new material in April 2022, the company asserted that the product not only met but exceeded U.S. CPSC safety standards for impact resistance by more than 25%.

Improving Customer Experiences

KAV's custom material is available in grey, black and white colors to offer flexible choices while a simple custom-fitting process and the use of 3D printing enable two-to-three-week delivery of made-to-order helmets. Production of these unique, energy-absorbing structures would not be possible via traditional manufacturing. Additive manufacturing also allows KAV Sports to reduce production costs and unnecessary waste.

Thanks to its highly productive collaboration with Jabil, KAV is planning to expand its product portfolio and market reach by leveraging Jabil's additive manufacturing prowess, global additive manufacturing capacity and extensive supply chain capabilities.

Supporting Quotes and Resources

- David Stoutamire, CTO and co-founder of KAV:
  "We have big ambitions. There's no reason we can't bring mass customization and a bespoke experience for protective gear across sports. So, we're going to keep working with Jabil as our esteemed provider to perform that optimization as we continue to grow."
- Levi Loesch, process engineer for additive manufacturing, Jabil:
  "Jabil is an ideal partner for custom material development. We have a huge range of expertise and experience, along with an astounding array of capabilities for materials processing, testing, and scaling."
- **KAV and Jabil Case Study**

About Jabil:

Jabil (NYSE: JBL) is a manufacturing solutions provider with over 250,000 employees across 100 locations in 30 countries. The world's leading brands rely on Jabil's unmatched breadth and depth of end-market experience, technical and design capabilities, manufacturing know-how, supply chain insights and global product management expertise. Driven by a common purpose, Jabil and its people are committed to making a positive impact on their local community and the environment. Visit **www.jabil.com** to learn more.

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