

AUTOMOTIVE

Hyundai Ioniq 5 N NPX1 vehicle debuts carbon fiber hybrid wheel

After making an announcement about the collaboration in July 2023, Dymag (Wiltshire, U.K.) and Hankuk Carbon (Seoul, Republic Of Korea), together with Hyundai (Seoul), have debuted a concept carbon fiber hybrid wheel for the Hyundai *Ioniq 5 N NPX1* vehicle.



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The *NPX1* is a real-world technology demonstrator, previewing a range of

Hyundai's advanced N Performance parts, including Dymag's state-of-the-art carbon fiber hybrid wheels. The prototype N Performance parts applied to the *NPX1* concept will be further developed for production in preparation for sales later this year, with plans to expand the enhanced product line-up for all N brand models.

Over the last year, the bespoke wheel was designed specifically by Dymag for Hyundai's *NPX1* vehicle. The 21-inch-high wheel combines a composite outer rim, made from carbon

fiber, with a precision-machined, five-spoke, forged metallic centerpiece painted in Satin Black. According to Dymag, compared to one-piece carbon fiber wheels, a forged aluminum or magnesium centerpiece offers greater design flexibility, i.e., it can be changed without incurring expensive retooling costs. The carbon fiber rims themselves also require low upfront investment and new sizes can be produced quickly.

In addition to reduced unsprung mass, the composite wheel reduces rolling inertia, offers improved stiffness and strength and lowers noise, vibration and harshness (NVH). The entire N Performance wheel weighs under 10 kilograms, approximately 7 kilograms less than a traditional cast alloy version.

Dymag began commercializing carbon fiber hybrid automotive wheels in 2004, designed for high-performance vehicles from sports cars to SUVs and pickups. Its wheels are tested to all global OEM standards. The company offers a full range of 18-23-inch hybrid composite wheels, to which it will add new 24-inch and 25-inch examples later this year. Key investment comes from its strategic partner, Hankuk Carbon. Dymag notes that it is in advanced stages with multiple carmakers, with further original equipment supply agreements set to be announced soon.

PROCESSES

Broetje-Automation demonstrates rCF placement via AFP

In April 2023, Broetje-Automation (Rastede, Germany) laid the foundation for more sustainability in composites production with the successful demonstration of recycled carbon fiber processing using the company's Staxx One automated fiber placement (AFP) system.

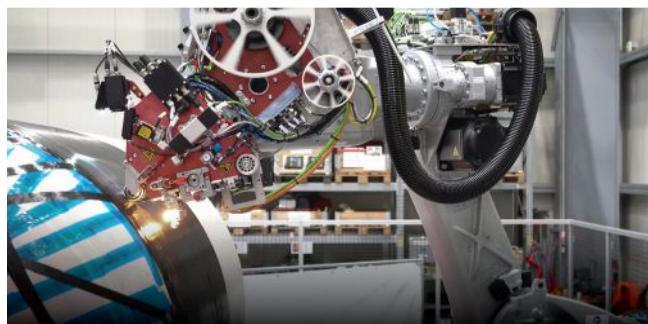
The processing of recycled carbon fiber (rCF) materials was investigated in the completed "ScrapSeRO" project together with the Fraunhofer Institute for Casting, Composite and Processing Technology (IGCV, Augsburg, Germany) and several partners from industry and research.

As a result, a novel AFP system called Staxx One was developed, which consists of a highly flexible AFP end effector on a robot and an associated rotary table.

The Staxx One rounds off the Staxx AFP product family with a small, cost-efficient and highly flexible robotic solution. Particularly noteworthy is its high flexibility — the Staxx One is completely material independent, i.e., it can process all material types from dry fiber to prepreg to thermoplastics. On the other hand, different end effector configurations can be realized within a few steps, depending on whether 1/4-, 1/2, 1- or 2-inch-wide materials are to be processed and whether these are provided on film coils or as bobbins. For this purpose, various heating sources are offered, such as infrared heaters, lasers or others.

These activities for processing resource-efficient recycling materials expand the marketability of Broetje-Automation and provide industry with core technologies for the production of sustainable, lightweight structures. In addition to rCF, glass and carbon fibers can also be precisely processed, such as dry fiber, thermoset and thermoplastic tows.

Thanks to the high degree of standardization of the Broetje-Automation layup head concept, numerous technology solutions are available for the entire Staxx product family. This covers a wide range of components and the corresponding implementation of automated component series production.



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