Technological ray of hope for the snowboard scene

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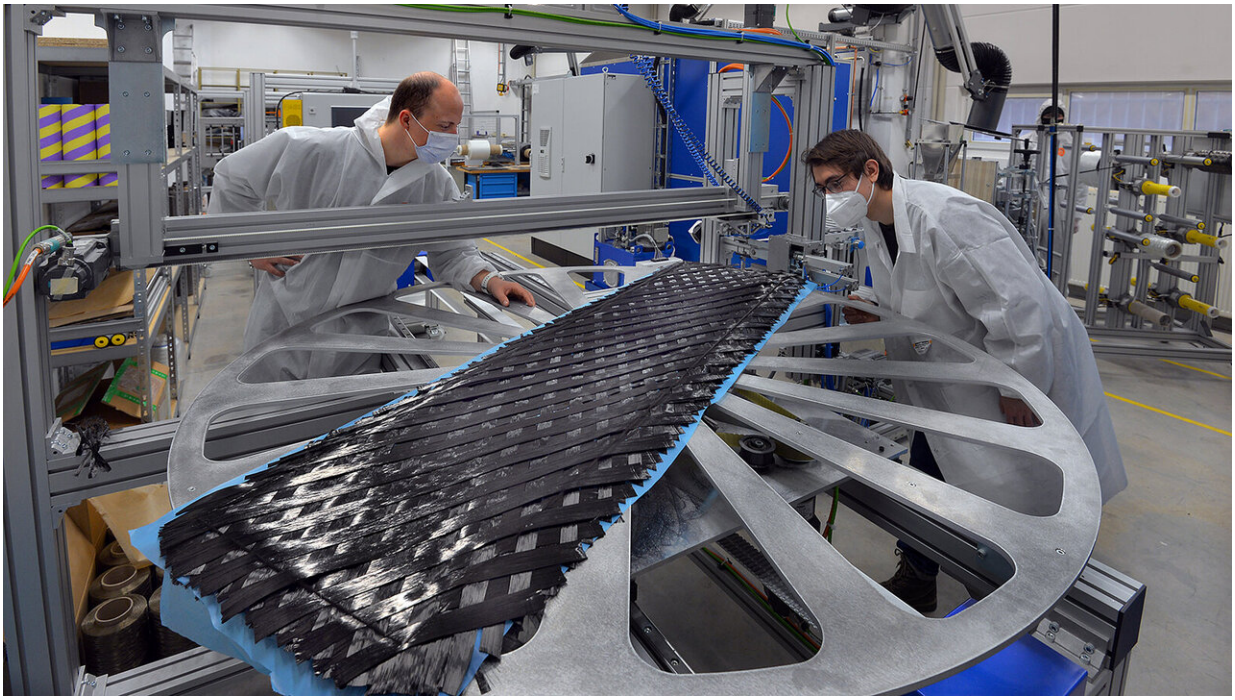

Jakob Schmidt and Marc Fleischmann, research assistants at the Department of Textile Technologies at Chemnitz University of Technology, check the quality of a splitboard's preform on the turntable of a special system. This near-net-shape preform was manufactured using the dry fiber placement process, in which the carbon fibers are placed on top of each other to save material. Credit: Chemnitz University of Technology

The first boards for gliding over snow existed as early as 1900, but it was

not until 1963 that American surfers brought the feeling of surfing to the snow and developed the original snowboard—the so-called snurfer. A few years later, the snowboard drew the interest of the winter sports industry, and since 1998, snowboarding has been recognized as an Olympic sport.

Chemnitz University of Technology researchers have presented an innovation from the 2020/2021 winter sports season: Together with silbaerg GmbH, a spin-off from the Institute of Lightweight Structures at Chemnitz University of Technology, they have developed a lightweight snowboard that can also be manufactured far more sustainably than comparable boards. This is made possible by a new type of textile fiber, a semi-finished product made of carbon fibers. By using the dry fiber placement process, fiber waste in snowboard production can be reduced by around 60%. "This not only saves costs, but thanks to the board's sustainable production, its carbon footprint is also significantly reduced," says Prof. Dr. Holger Cebulla, head of the Chair of Textile Technologies.

Successful trial by fire for the splitboard variant

The first prototype of the new board from Chemnitz was manufactured as a splitboard, a snowboard that can be split into two touring skis. Users tour comfortably up the mountain on two skis to the downhill point, where the touring skis are reassembled into a snowboard in a few simple steps. The Chemnitz-developed board has another advantage: "With a weight of 2.6 kilograms and a length of 1.59 meters, the splitboard is one of the lightest in the industry," says Dr. Jörg Kaufmann, manager of the composites division at the Department of Textile Technologies.

Thanks to the dry fiber placement process used at the Department of Textile Technologies, it was possible to use the unique technology developed 10 years ago at Chemnitz University of Technology's Institute

of Lightweight Structures for the splitboard. Called Anisotropic Layer Design, it uses special glass and carbon fibers around the wood core of a snowboard. "This allows the edges to deform depending on the riding situation, which noticeably improves the ride," Kaufmann says. For example, edge hold increases when the edge presses into the snow during a turn. "On the other hand, during a boardslide, a trick in which the snowboarder jumps onto an obstacle with a 90-degree turn and slides over it, the edge manages to lift off the rail." This prevents boards from wearing down and makes it more difficult for them to warp, he adds.

The splitboard's first tests in the Erzgebirge and the Alps were promising. "Due to the weight savings, touring on a mountain is much easier and peaks can be climbed that were previously unreachable," reports Paul Baudach, graduate of the university's sports engineering program and university champion in boardercross and slopestyle snowboarding. "I was surprised by how well the board handled both off-piste and on-piste," says the top athlete. For him, it is clear that the new board can also be used to win at boardercross.

"Of course, we hope that in addition to the splitboard, the dry fiber placement process in board manufacture and the use of textile fiber semi-finished products made of carbon fibers will continue to gain acceptance in the sports equipment industry and that their advantages will be received by customers," said Cebulla.

Provided by Chemnitz University of Technology