

Abstract

Occasion: Renewable Materials Conference 2021, Cologne May 18-20

Topic: Renewable plastics and composites

Format: Hybrid, digital and on location

Speaker

Speaker name, title: Régis Voillat, M.Sc., R&D Engineer & Sustainability Officer

Speaker bio: Graduated with an M.Sc. in Materials Science & Space Engineering from EPFL. Involved with Bcomp since 2018 as R&D engineer focusing on development projects in aerospace, material testing and sustainability assessments.

Presentation

Presentation title: Sustainable and lightweight natural fibre solutions for the future of mobility

Abstract: As mobility is undergoing a revolution to become cleaner, sustainability must be an integral part of the performance definition. Using less, and cleaner materials is crucial, and composites have an essential role to play. At the same time, these new technologies must not compromise performance.

With the powerRibs™ technology Bcomp has developed a high performance reinforcement solution based on natural flax fibres, with the potential to reduce weight by up to 50% and plastic by up to 70% in automotive interior panels. Bcomp's highly optimised natural fibre technologies have been proven in high performance applications across the board with cases like McLaren's F1 seat, Porsche Motorsports' Cayman 718 GT4 CS MR body kit, Baltic Yachts Café Racer, an ESA satellite demonstrator panel, and interiors of the Polestar Precept. Recently, Italian composite experts YCOM developed and successfully tested the world's first natural fibre crash structure with Bcomp's ampliTex™ materials, proving the concept for natural fibres in structural applications.

From the highest level of motorsports to industrial applications, natural fibres and the powerRibs™ technology have been tested in some of the harshest environments and are challenging the standard engineering solutions with one based on nature. Bcomp's natural fibre solutions have the potential to significantly reduce environmental footprint without compromising performance. In motorsports they even offer improved safety aspects versus the widely used carbon fibres.

About Bcomp

Website: www.bcomp.ch

Bcomp intro: Bcomp provides sustainable lightweighting solutions for the mobility, sports and marine sectors without compromising performance. The in-house engineering team supports clients from idea to production, including reverse engineering of parts.

Social handles: LinkedIn: <https://www.linkedin.com/company/bcomp>
Facebook: <https://www.facebook.com/BcompLtd>
Instagram, Twitter, Youtube: @BcompLtd

Hashtags: #SustainableLightweighting
#ampliTex
#powerRibs

Customer cases:

- McLaren F1 seat: <https://www.mclaren.com/racing/team/natural-fibre-sustainable-composite-racing-seat/>
- YCOM crash structure: <https://www.bcomp.ch/news/first-natural-fibre-crash-structure/>
- Porsche body kit: <https://www.bcomp.ch/news/porsche-full-natural-fibre-bodykit/>
- Polestar Precept as production model: <https://www.polestar.com/en-ch/press/press-release/polestar-announces-plans-for-precept-to-enter-production>
- Polestar & Bcomp: <https://www.polestar.com/en-ch/news/polestar-and-bcomp/>
- Baltic Yachts: <https://www.bcomp.ch/news/the-baltic-68-cafe-racer/>
- ESA Satellite Panel: <https://www.bcomp.ch/news/natural-fibre-reinforced-satellite-panel-for-cleaner-space-exploration-finalist-for-jec-innovation-award/>

More info: As mobility is undergoing a revolution to become cleaner, sustainability must be an integral part of the performance definition. It does not mean that neither the industry nor the users will accept a decline in traditional performance. But it does mean that the new performance technologies must tick a greater range of boxes to enable clean growth for the future of mobility.

The award-winning powerRibs™ reinforcement grid is made of natural fibres that sequester atmospheric CO₂ as they grow. The technology has been developed within motorsports, used in thermoset layups for bodywork in 16 racing series from Formula 1 to GT and Rallye, where it replaces carbon fibres in semi-structural parts.

At equivalent performance to a carbon fibre part, a full natural fibre layup with powerRibs™ and ampliTex™ technical fabrics has only 25% the CO₂ footprint cradle-to-gate, safer crash behaviour without sharp shattering, up to 30% lower material cost, better vibration damping, and can be fully and easily

incinerated for a partially CO₂-neutral energy recovery at end-of-life, rather than end up in landfills, as carbon fibres largely do.

Such parts are produced with the same method and mould as existing carbon fibre parts, but in most cases require fewer wasteful consumables in the process. The technology was a JEC Innovation Awards finalist 2019 for the Porsche Motorsport GT door, in addition to winning awards by the World Motorsport Symposium and Autosport International.

For large-scale automotive, powerRibs™ enables interior panels to be up to 50% lighter and to reduce plastic by up to 70% vs standard panels. The thermoplastic production can be fully integrated into modern high-speed production lines. Early 2020, electric performance car brand Polestar launched the Polestar Precept – where sustainability meets performance without compromise. The backlit interior panels are made in Bcomp's powerRibs™ and ampliTex™ natural fibre reinforcements and matched with other recycled and renewable materials. The Polestar Precept will be released as a production model. We have a dozen other ongoing implementation projects with global OEMs, showing the industry push for new solutions.

Official in-depth film: <https://www.youtube.com/watch?v=dfivqeZHTIA> (minutes 5, 8 & 12) and <https://about.polestar.com/news/kindred-spirits-bcomp> It is a clear statement of where the Volvo Cars & Geely owned Polestar intends to go with future production models. (Polestar Precept page: <https://www.polestar.com/uk/precept/>)

Bcomp's lightweighting technologies are used in a wide range of other applications as well, from the luxury Baltic Yachts' hulls to satellite panels made together with the European Space Agency. Clearly, the future of performance materials must be sustainable as industry, customer- and regulatory demands are raising across mobility sectors.

(Feature in Yachting World Magazine: <https://www.yachtingworld.com/features/future-yachting-smart-technology-126136>)