

Stand-up paddle

This stand-up paddle was designed and manufactured for Itiwit, Decathlon's brand name for stand-up paddle and other paddle sports. The targeted features were low weight, adjustable length and optimum stiffness. The use of carbon composites enabled weight savings compared to aluminium and other composite materials (glass fibre or hybrids). The shaft is made of two carbon fibre pultruded tubes by Epsilon Composite. Depending on the fibres used, its stiffness can be adjusted. The handle, blade and tightening ring are made by injection moulding of carbon fibre-reinforced polypropylene.

www.epsilon-composite.com



Olympic racing boat mast

This racing mast was developed for the FINN Olympic dinghy with former French Olympic medallist Jon Lobert. The cantilever beam is subjected to static and dynamic loadings and provides a realistic feeling

and velocity. The complex structure combines carbon fibres at various angles to achieve a proper dynamic behaviour. Composite materials provide the high stiffness and strength required for the structure. The resin system makes it possible to control the dynamic behaviour. Masts are expected to be stiff. Specific control of the torsional behaviour requires an accurate lamination process with various off-axis plies. The design and structural simulations were performed by Dassault Systemes with the 3DEXperience platform. The mast is manufactured by Heol Composites using its patented one-shot process for lightweight hollow monolithic structural parts. In this process, several carbon epoxy prepreps are laminated in a two-part female mould and then cured in an autoclave.

www.heol-composites.com/fr



Air Core inflatable composite surfboard

Conventional inflatable surfboards lack stiffness. Performance is critical in surfing, and Inflatable Composites' Air Core Composite™ technology delivers 350% greater stiffness compared to standard inflatables. This results in an inflatable surfboard that rivals foam core composite boards – and fits in a backpack.

Using Air Core Composites™ on inflatables increases their stiffness, structural integrity, puncture resistance, and portability, with no impact on their stowed package size. Thus, the structures utilize smaller beam diameters or thinner panels, yielding a smaller package size and faster deployability. Air Core Composites™ feature thin layers of carbon fibre in a thermoplastic polymer matrix which deliver enhanced integrity and higher flexural modulus properties to any inflatable structure. These materials can be bonded to polymer-coated inflatable membranes and customized for any use by optimizing the layup schedule for the stress or load requirements of surfboards or any portable structure.

www.inflatablecomposites.com



Hybridized carbon skid plate

A new hybridized carbon skid plate for KTM motorcycles was successfully developed by KTM-T and Mitsubishi Chemical and is now in serial production. The result is a complex structural part that meets market needs by saving time, costs and efforts, with a refreshing FMC (Forged Moulding Compound)

look. Hybridization with direct chemical bonding in combination with this innovative, one-shot process allows for the use of the right material in the right place in a direct process line, while creating a new carbon look. The material combination can also be transferred to new material cards for simulation and design.

This composite skid plate is produced for KTM using an FMC/NCF/elastomer hybrid. The direct production line using a one-shot press process for serial production enables a best fit to market in both properties and costs. This part combines a new composite design, an efficient solution package and a breakthrough serial production technology with unprecedented cost saving potential.

www.ktm-technologies.com

Bamboo/carbon diving fin

This diving fin was developed inspired by biomimicry principles. Hybridizing carbon fibre's stiffness and bamboo fibre reinforcements provides significant benefits for apnoea practice, including ease of use for general users and the ability to swim over longer distances with lower muscular effort. The diving fin is made with a biobased epoxy resin and a reinforcement that combines bamboo and carbon fibres. The project partners are Omni Blue Free Diving, Bts Tignieu, Cobratex and Astela Design.

<https://omnibluefreedive.com>

