



Advanced Composites creates award-winning aerospace design

Swedish aerospace developer and manufacturer BlackWing is reshaping flight with a composite sport aircraft built using Divinycell Matrix materials. The BlackWing ultralight aircraft has now been awarded the 2016 Red Dot Best of the Best prize for Product Design. With this prestigious award, BlackWing is cementing their reputation as a rising international leader in aeronautical design.

Rewriting the rules

BlackWing was developed by a small team working under the leadership of company founder and CEO Niklas Anderberg. With an extensive aerospace engineering background that included experience at Boeing and Saab, Anderberg started the company with the goal of changing the rules for how small aircraft are designed. He set out to create a light, strong plane that would be aerodynamic and fast while also capable of slow flights and with a heavy focus on safety.

Verena Knaust, an experienced German industrial designer based in Sweden, was responsible for the look and feel of BlackWing. Knaust's final design includes a roomy cockpit, a modern and ergonomic panel as well as a uniquely low-cut canopy that offers unparalleled visibility. The combined efforts have produced an aircraft that looks as good as it is to fly.

Performance for every pilot

The BlackWing's innovative geometry is based on hundreds of hours of simulations and testing. The result is the first aircraft in its class capable of speeds up to 400 km/h with a cruise speed of 270 km/h. The unique wing design reduces interference drag with backswept tapered "winglets" that optimise short take offs and give an excellent climb rate. The design lets the plane offer both predictable flight characteristics as well as powerful performance, making it equally suited to basic flight training as well as advanced aerobatics.

The right composite for the job

Ensuring first class performance meant using the latest and best materials available. An issue BlackWing encountered during production was that their extremely thin carbon fibre laminate would easily be damaged if used with a traditional honeycomb composite core. The resulting surface would be less smooth, resulting in reduced performance. Divinycell materials offered an optimal solution for creating the perfect finish.

Working with Diab, BlackWing selected Divinycell Matrix 10-8 for the aircraft. Divinycell Matrix materials offer high mechanical properties at a low weight and can withstand wind speeds of up to 60 m/s, making them ideal for aerospace applications. Matrix 10-8 can also tolerate extremely high temperatures, which was important for BlackWing's prepreg process requirements.

The use of these composites with a high strength-to-weight ratio is what makes the BlackWing "ultralight." The aircraft has an empty weight of just 297.5 kg, contributing to its notable performance capabilities.

The gold medal of red dots

Held annually in Essen, Germany, the Red Dot Design Awards assess products according to strict criteria that include degree of innovation, functionality and ecological compatibility. In 2016, manufacturers and designers from 57 nations submitted over 5,000 products for consideration, with only 1.5% of entries receiving the highest "Best of the Best" recognition. BlackWing's impressive showing highlights the groundbreaking design achievements they have accomplished with their ultralight aircraft.

www.blackwing.aero/