

M&MT

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Materials & Manufacturing Technologies



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Precision machining for high-performance motorsport helmets

Precision, productivity and process reliability are essential when machining carbon fibre components for motorsport helmets. At Schuberth Performance, a Belotti TRIM 2515 Waterjet 5-axis machining centre combines high-precision waterjet cutting with automated handling and digital process monitoring.

"Designed by the best. Built for the fastest."

This philosophy has long guided Schuberth, the German manufacturer renowned for its protective helmets for motorsport and motorcycle applications. The company today serves demanding professional markets where safety, performance and manufacturing quality are critical.

Carbon fibre helmets for motorsport are produced at Schuberth Performance's facility in Schio, northern Italy. Models such as the SP1 CARBON and the masterpiece SF3 FIA 8860 feature autoclave-cured carbon fibre shells, combining design, light weight, comfort and high technical performance.

5-axis waterjet precision cutting

To optimise the machining of these components, Schuberth selected a Belotti TRIM 2515 Waterjet, a 5-axis CNC machining centre equipped with a rotary table. The configuration separates the machining area from the loading and unloading area: while the components are being processed inside, the operator can prepare the next ones outside the enclosure, improving workflow efficiency and operator safety.

The system is specifically configured for high-precision waterjet cutting. Its 5-axis kinematics and 4,000-bar waterjet enable complex carbon fibre helmet shells to be machined with tight tolerances while maintaining high surface and edge quality.

"Our need was to optimise the cutting process of the carbon helmet shell, even at high thickness and with minimum tolerances," explains Alberto Dall'Oglio, CEO of Schuberth Performance.

The selection of Belotti followed the search for a technology partner able to combine precision with productivity

in carbon fibre processing.

"The Belotti TRIM 2515 WJ machining centre designed and configured for us ensures absolute cutting precision in just four minutes per helmet, thanks to the five cutting axes and the 4,000-bar waterjet," Alberto Dall'Oglio adds.

From machining performance to process control

The Belotti TRIM platform is designed for the high-productivity trimming and machining of plastic and composite components. In Schuberth's application, the combination of 5-axis machining and waterjet technology enables fast, accurate cutting while also helping to reduce material waste.

The machine is equipped with a dedicated pneumatic clamping and centring system to position the helmet shells securely during processing. Production data can be monitored through BES, Belotti's machine productivity monitoring and supervision software.

Schuberth has also integrated Belotti's MyB Suite, activating the bCare module for direct communication with Belotti Service. The solution combines TeleService, Advanced Log and bMaintenance functionalities, supporting remote assistance, machine monitoring and preventive maintenance activities.

Maintaining performance over time

For a production process in which dimensional accuracy and repeatability are essential, maintaining machine performance over time is as important as the initial technology investment. Schuberth has therefore also chosen a Belotti COMPACT preventive maintenance programme,

designed to reduce the risk of downtime, monitor critical components and preserve machine precision and reliability.

The application demonstrates how advanced CNC technology can contribute not only to the machining of high-performance composite components, but to the overall efficiency and control of the manufacturing process. For Schuberth, the combination of 5-axis waterjet cutting, dedicated component handling, digital monitoring and preventive maintenance provides a production solution aligned with the demanding standards of professional motorsport.

Advanced Engineering 2026

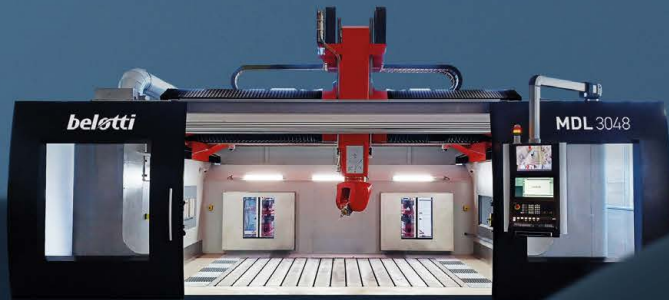
Components and demo-parts from the automotive, motorsport, and aerospace sectors will be displayed at Belotti V155 Stand (Hall 3A) at the Advanced Engineering show, taking place on 4 and 5 November at the NEC in Birmingham.

In collaboration with Cannon Shelley, its official distributor for the UK market, Belotti will present a range of products spanning from CNC machining centres to hybrid technologies (LFAM 3D printing and CNC milling), right through to waterjet and ultrasonic cutting systems for advanced materials (composites, plastics and light alloys).

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