

CMS Ares 3626 helps Crosby Composites produce high-accuracy parts



UK based Crosby Composites have recently invested in and installed a CMS Ares 3626 CNC machining centre adding to their existing 5 CNC machining centers.

Mr. Crosby founded his company 25 years ago and has spent all his working life in the auto sport industry. He began his career as an engineer with March, when the use of composites in racing cars was first introduced. "It was obvious that this was an opportunity that would get bigger and bigger so I started my own company," he remembered. "We began with very basic wet lay-up methods, and moved to using pre-preg and autoclave curing as the company developed."

Mr. Crosby introduced 3D modeling and machining around eight years ago. Before then, he had thought the systems were too expensive but CNC machining and CAD/CAM quickly became the normal way to do things.

Utilizing this type of technology is the only practical way to machine repeatable to the level of accuracy we need," he added. "The F1 market generally requires a maximum run of sixteen parts. Unless you can be very efficient, it is difficult to justify the cost of machining everything."

Speaking about the newly installed machine and the positive impact it is having on the business, Mr. Crosby said "It is important that as a company we equip ourselves with the very best technology available. That is exactly what we have done with this new capability provided by CMS., we know that they will provide us with an extended pattern making ability and a second to none component trimming capacity, critical in today's market place."

Following order placement a comprehensive project plan was created by CMS UK Ltd, to ensure all parts of the project were delivered and installed in the correct sequence and at the right time to meet the tight deadlines requested by Crosby and dictated by the Auto sport industry.

The machine installed is the CMS Ares 3626 5 axis machining centre, with a 3.600 mm X axis, 2600mm Y axis and a 1200mm Z axis, equipped with a large 3120mm x 2020mm work table. This system allows for tandem or single table working. Fully interlocked automatic doors ensure the operator is completely protected from the cutting area and a sophisticated vacuum holding system provides a very effective and unobtrusive part holding solution, a major benefit for this type of work.

The two rotational axes complete with a powerful 12 KW, 24000 rpm spindle, HSK tool connection and 8 station automatic toolchanger, ensure a heavy and flexible cutting capability. A particular benefit of the CMS



5 axis head assembly is the unique clamping mechanism for the rotary axes, giving extra rigidity when machining in the 3 + 2 and 3 axis mode.

As a result of the vast experience of CMS in the industry, the machine is provided with effective protection against the ingress of carbon dust to the slide ways and electrics as well as an efficient extraction hood that rotates with the axis movements.

Tool setting is catered for by an automatic laser tool diameter and length setting device to ensure precise and reliable tool accuracy. A radio probe completes the package and provides the necessary functionality for part positioning and inspection.

Apart from the increase in accuracy possible with this approach, another big benefit is that all the machining and inspection can be completed on the machine tool on a single fixture. According to Mr. Crosby, it is impossible to maintain the necessary tolerances when moving between a series of fixtures, while using multiple set-ups on different fixtures would take much longer.

The first set of seventeen components produced with this method was supplied to one of the F1 teams and fitted onto the car with no clashes or re-work. It was the first time in the team's history that this had happened with any set of composite parts from any supplier.

"Since then we have used on-Machine Verification as much as we possibly can," said Mr. Crosby. "It ensures that we catch any mistakes before they reach our customers. In the six months since we started with this approach, we have only had one part rejected and that was because of just one undersize hole."

"We will continue to use technology to do things better and more accurately," concluded Mr. Crosby. "Once the teams realize the level of accuracy that we can provide, they will soon switch from other suppliers that regularly send boxes of bits that don't fit together."