

CaseStudy



Race Car Development Specialist Stay “Always Miles Ahead” with huge savings on Tooling Costs using SolidCAM’s Patented iMachining Technology

Machining parts to precise specifications, with no room for mistakes, is imperative in the manufacture of race cars. It was therefore no surprise that Cambridgeshire based race car specialist, CTR Developments, who are heavily involved with groundbreaking engineering for Tier one manufacturers, sought out a CAM system that would enable them to meet their customers’ demand, for the highest precision and machining quality, including flexibility and fast turnarounds. As a result, the company chose the leading integrated CAM Solution, SolidCAM with iMachining.

what attracted CTR Developments to purchase. Being first and foremost made up of racers, the motorsport company’s main focus is quality.

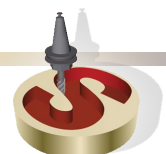
Dr Chamberlain continues, “We don’t run our machine hard and are not interested really in time savings, but the life on the tools is important and I know it has saved a good number of accidents! Although we have seen a significant reduction in time compared to how we used to machine, it’s all about quality for us, but it definitely saves ‘bang ups’ and general tool wear.”

However, having the reduction in machining time, means that CTR Developments can get a prototype to their customers before they commit to expensive tooling, so although not at the forefront of importance, time savings is still an important factor.

The patented, revolutionary and unique iMachining technology avoids machine downtime, as there is less wear and tear on CNC machines resulting in higher machine up time, reduced machine maintenance costs and extended machine life. Full depth-of-cut ensures that the entire tool is utilised rather than only the bottom part, so that average tool life is increased by five times or more, and the

Dr Matthew Chamberlain, Company Secretary at CTR Developments says of iMachining, “I am not a machinist, I have never been formally trained, but I wanted to take control over the bits and pieces we were sending out to be manufactured. The one-button-click, to calculate 3D roughing cutting paths was a *revelation!* It just worked! The surface finish we get on the 2D finishing passes from iMachining are also better than anything we were able to previously achieve.”

Although iMachining helps companies to save 70% and more in machining time, this was not in fact



cost for un-necessary premium and speciality tooling for hard materials can be eliminated. Materials used by CTR Developments includes the hard alloy, Aluminium 7075 T6. Using a Hurco VM10i, and mostly AluPower cutters for parts such as suspension uprights and Steering wheels.



Fig.1

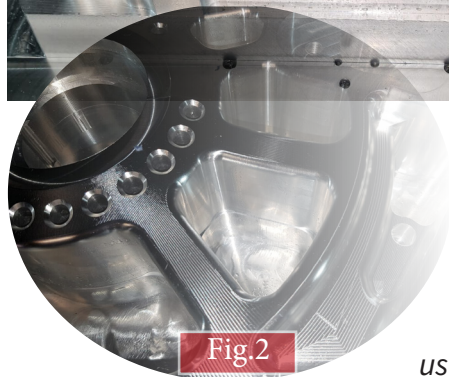


Fig.2

high-quality collets. That said we are still able to hold more than enough accuracy for bearing fits, in things like the uprights.”

Part sizes range from a bell housing at 400mm by 300mm by 250mm to a suspension breakoff 50mm by 100mm by 50mm. The Upright's dimensions, as seen in Figs.1-4 are 100mm x 450mm x 250mm, and the steering wheel's dimensions, as seen in Fig. 5 and Fig. 6 are 25mm x 200mm x 300mm. CTR Developments have experience in virtually all classes of motorsport from Formula 1 downwards, and can design anything from a sump tank to a complete chassis, and their experience with the Porsche Flat 6 engine makes them the builder of choice for these engines.



Fig.3

Using iMachining, means they will have zero air cuts when machining their parts, as toolpaths are driven by dynamically updated 3D model of stock and the 3D model of stock is precisely updated after each short segment of tool movement.

“With SolidCAM I am always using iMachining as much

as I can! *It's simple!* The iMachining module has saved us money, and SolidCAM UK are always more than happy to go the extra mile when I ring up with questions and have never left me hanging, even over the holiday period,” explains Dr Chamberlain.



Fig.4

The iMachining's unique Technology Wizard, generates automatic optimal feeds and speeds eliminating trial and error to find the optimal machine settings, keeping the tool at maximum efficiency.

“We don't have to specify any feeds/speeds, it just calculates it all by itself. It's made all the difference as it takes away the human error risk, even if you have

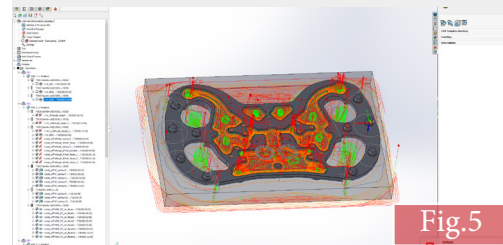


Fig.5

perfect cutting parameters for the given tool and material,” confirms Dr Chamberlain.

With over 40 years design experience, SolidWorks premium is CTR Developments' CAD system of choice. Therefore, it was a no brainer for them to invest in a CAM solution that ran directly within their existing SolidWorks, providing seamless integration and full tool path associativity, with an extremely short learning curve due to the familiar environment.

“The full integration of SolidCAM into SolidWorks just *made everything easy*; no intermediate filetypes, auto model update, and it 'feels' comfortable, as we have been using SolidWorks for 15 years now, so it's not a new interface to learn, which meant we were up and running faster and less likely to make geometry errors etc,” concludes Dr Matthew Chamberlain.

CTR Developments have been using SolidCAM & iMachining for over three years now and consider it to be a continuing asset to their business.



Fig.6

