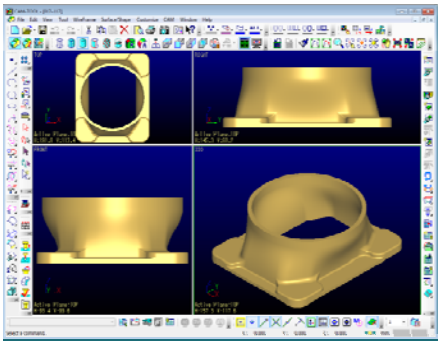
CAM-TOOL
CAD/CAM System for Molds & Dies

Case Study for Simultaneous 5Axis Machining

Achieved no hand polishing for production product.
They needed 1 hour or 2 hours for polishing before CAM-TOOL.

Our new customer, Rice Engineering & Operating Ltd., Edmonton, Alberta, Canada, was able to eliminate hand polishing after production machining with the simultaneous 5 Axis Module of CAM-TOOL Version5. This cutting sample, “Manifold for aircraft” was machined by Rice Engineering, and the NC program was provided by Graphic Products North America(1). (The following pictures are taken by the customer.)

It was roughed by 3+2 axis machining and then finished by Undercut Z-level Finishing. Our high accuracy tool path using CAM-TOOL’s surface calculation method and smoothing control for 5 Axis machining achieved the best surface finish.



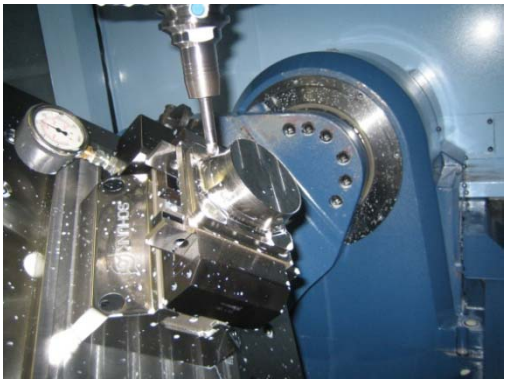
Sample : Manifold
Material :321 Stainless steel AMS#5645
Machine tool : Matsuura MAM72-63V
Machining time : 2.5 Hours

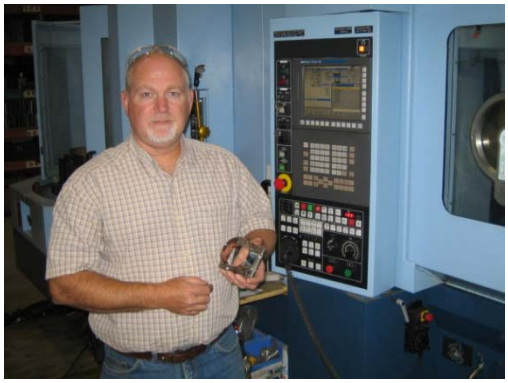
——Why were you looking for new CAD/CAM Software?

When I began having trouble programming my part, I talked to four different people on my previous software’s technical support staff for help and ideas to overcome my programming issues. They worked on my post and looked at the issues but were unable to help me solve the problems, I was told the best solution was to post my part with their user group open forum and see if someone could help me. For me this was not an option to post a proprietary part and all the information regarding the part, onto an open internet forum in hopes someone could help me. Some of the ideas and solutions looked like it might work on the screen but when posted to Vericut and at the machine, the tool path gouged and undercut the part profile. After a couple of months resulting in no solutions to my problems, I had to begin looking at new software to solve my problems.

——Why/how did you become interested in CAM-TOOL?

I became interested in Cam-Tool when I attended the JIMTOF 09 tool show and was very impressed with the quality of the parts machined using Cam-Tool in their showcases and with demonstrations I watched. The sales and technical support people at the booth were very knowledgeable and answered all my questions and explained how their CAM system would suit my requirements should the need arise. I was very impressed when I left the show and immediately thought of them when I was having issues with my CAM software.





——Do you have any feedback from your customer on the results on the manifold.

After completing the first manifold, we sent it to our customer for approval before going to production. The customer could not believe the quality of the product we had manufactured. The quality and accuracy exceeded what they had expected. We have since become their main supplier for prototype projects, along with their manufacturing for production products. I talked to our customer and he is allowing us to include his name. Acorn Welding Ltd., Aviation Parts Manufacture, http://www.acornwelding.com

——What are your current problems and demands for CAD/CAM, (examples Quality, Stability, Reliability, Cutting Efficiency, Calculation speed, Operation time, Automation, 5 axis capability

I need a CAM software that will adapt from parts that are very simple to very complex. We are a manufacturer and do a lot of production machining, along with specialty prototype products. We produce a large variety of products from different industries but all require quality and accuracy. I need a software product that can take me from a solid model to a produced part quickly and accurately. I am looking for a software package that will grow with me, and technical support for the software that I can depend on when I require it.

——When you say you are looking for "accuracy" are you referring to geometrical accuracy or surface quality or both?

My number one concern regarding "accuracy" is to machine the part 100 % geometrically correct to the solid model from the engineer. If I do not machine the part correct, it will not function as it was designed and I will have wasted valuable time and material machining incorrect parts.
Secondly, the surface quality has to be blended and smooth to provide the maximum flow and heat dissipation from the manifold. Sharp edges and uneven surfaces will create hot spots and resistance to air flow causing decrease in engine performance and premature failure or cracking of the manifold.

——Does the part require hand polishing after machining?

No, after machining the manifold with CAM-TOOL " NO HAND POLISHING OR DEBURRING IS REQUIRED ". The part goes straight from the machine to inspection and to the customer.
Previous machining of manifold required about one to two hours of hand polishing to blend and smoothen the surface.

<< Rice Engineering & Operating Ltd. >>
Head office : Edmonton, Alberta, Canada
Description of Business: Manufacturing and supplying products to the groundwater market.
Number of Employee: 51 (CAM: 2, Machine operator: 16）

URL: http://www.riceeng.com/