

SWEET SPOTS REDUCE ROUGHING CYCLES BY 400%

GIBBSCAM SOFTWARE HAS MADE IT POSSIBLE FOR QUELCH ENGINEERING TO ACHIEVE SOME STARTLING REDUCTIONS IN ITS MACHINING CYCLE TIMES ON AEROSPACE, MOTORSPORT, PETROCHEMICAL AND ELECTRONIC COMPONENTS, INCLUDING PARTS MADE FOR THE ARIANE SPACE ROCKET.

Quelch Engineering Ltd. (Uxbridge, UK) first invested in GibbsCAM software in 1999, choosing it for its simplicity of operation.

Now the manufacturer has two seats of the software, using it to program all of its 11 CNC machine tools for milling, turning and MTM (Multi-Task Machining) mill/turn operations. Alan See, the chairman of the company says, "We have a policy of continuous investment to ensure we can keep ahead of the technological demands of our market and deliver high quality products on time at a competitive cost."

As part of this investment program, the company has continuously upgraded its GibbsCAM software, adding modules for



VoluMill technology makes maximum use of the tooling available in the shop of Quelch Engineering to extend machine tool life and greatly reduce cycle times on complex jobs such as this.



The CAM software enables the programmer at Quelch Engineering to rough as deep as possible and make use of the full length of the tool. It then automatically re-roughs the large steps produced, ready for part finishing.

4-axis positional and rotary machining, full 3D machining, multi-task machining and solid modeling, all giving it the ability to read native CAD models including CATIA V5™, Pro-Engineer™, NX-CAD™ and SolidWorks™.

VoluMill for GibbsCAM was the next logical investment. In 2009, Quelch Engineering became the first manufacturer in the United Kingdom to install this module and achieve some truly remarkable results.

The software is designed for ultra high-performance 2-, 3- and 4-axis roughing by optimizing the feedrate, toolpath and cutting conditions to achieve the shortest possible cycle time. The programmer has control over the material removal rate and dynamically adjusts depth of cut, feedrate and path to keep chip thickness and tool load constant.

The intelligent algorithm in the software considers heat dissipation through the chips, keeping the workpiece and tools at a constant temperature, while curves and arcs are introduced into the cutter path to produce smooth fluid movements of the tool.

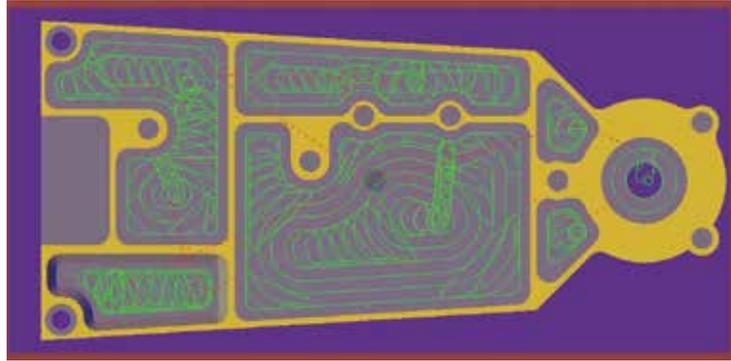
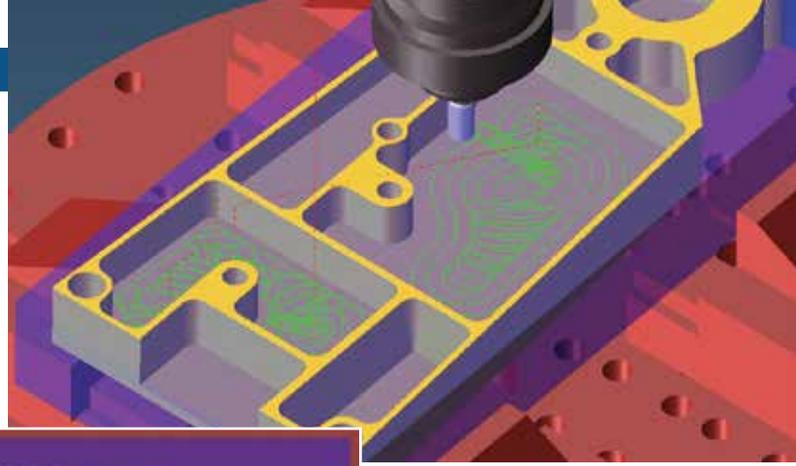
The programmer can rough as deep as possible to make use of the full length of the tool. The software then automatically re-roughs the large steps produced, ready for part finishing. Combined together, this VoluMill technology makes maximum use of the tooling available, extends machine tool life and greatly reduces cycle times.

Alan Baldwin, the technical director at Quelch Engineering explains how.

"Roughing operations form a very significant part of our machining activities, so any reductions in time are highly advantageous," he says. "This technology allows us to keep the chip thickness constant and enables us to push feeds and speeds up dramatically. Through a process of machining trials we have found the 'sweet spot' for our combination of tools, holders, fixtures and machining centres, giving us a reduction in roughing cycle times of 400 percent in some cases."

He continues, "Our machines are fully loaded most of the time, so not only does VoluMill increase our available production capacity, but it helps us to reduce lead times and gives us considerably longer tool life. Furthermore, the intuitive interface reduces CNC programming times, making it just as easy to program 4-axis parts as 3-axis parts and complete more of the component in one setting. This adds efficiency and reduces costs even more. With the release of V10 we are now able to fully utilize VoluMill on our MTM mill/turn centers."

The company's customers expect delivery within 3-6 weeks of a



The programmer can rough as deep as possible to make use of the full length of the tool (top illustration). The software then automatically re-roughs the large steps produced, ready for part finishing (bottom illustration). Combined together, this VoluMill technology makes maximum use of the tooling available, extends machine tool life and greatly reduces cycle times.

quotation, so any reduction in cycle or program preparation time makes the company's ability to meet these challenging lead times easier.

See also, "VoluMill has taken our CNC machining to another level. The technology within the software has outstripped what the machine tools can do, enabling us to use them to their full potential. We have spent time optimizing the software to suit our machines and way of working, and we see it as one of the tools at our disposal for keeping one step ahead of the competition. As a subcontractor, it is essential for us to get high quality parts off the machine quicker and more cost effectively. This technology helps us to do that." ■

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For more information from Gibbs and Associates, a Cimatron Company, please visit. www.GibbsCAM.com or call 805-523-0004.

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