

Quelch Roughing 400% faster with GibbsCAM VoluMill

GibbsCAM VoluMill has made it possible for Quelch Engineering Ltd to achieve some startling reductions in its machining cycle times. The Uxbridge based company specialises in aerospace, motor sport, petrochemical and electronic components, including parts for the Ariane space rocket. As a subcontractor, a high proportion of parts are new and unique, leading to a heavy demand for CNC programming.

Quelch Engineering first invested in GibbsCAM in 1999, choosing it for its simplicity of operation. Now the company has two seats of the software using it to program all of its 11 CNC machines including Milling, Turning and MTM Mill/Turn.

Chairman, Alan See, 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, Quelch Engineering has continuously invested in its GibbsCAM software adding modules for 4-axis Positional and Rotary machining, solid modeling, multi task machining and full 3D machining. With the ability to read native CAD models including CATIA V5, Pro-Engineer, NX-CAD and Solidworks, to name but a few. The VoluMill module was the next logical investment. In 2009 Quelch Engineering became the first company in the United Kingdom to install the GibbsCAM VoluMill Module achieving some truly remarkable results.

GibbsCAM VoluMill has been designed for ultra high-performance 2, 3 and 4 axis roughing by optimising the feedrate, toolpath and cutting conditions to achieve the shortest possible cycle time. The software gives the programmer 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 cutterpath to produce smooth fluid movements of the tool. The software also enables the programmer to rough as deep as possible, to make use of the full length of the tool. It then automatically re-roughs the large steps produced, ready for part finishing.

Combined together, the VoluMill technology makes maximum use of the tooling available, extends machine tool life and greatly reduces cycle times.

Alan Baldwin, Technical Director at Quelch Engineering says, "Roughing operations form a very significant part of our machining activities, so any reductions in time are highly advantageous. VoluMill 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% in some cases." He continued, "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, allowing us to complete more of the component in one setting, which adds to our efficiency and helps reduce costs even more, also, with the release of GibbsCAM Version 2011 we are now able to fully utilise VoluMill on our MTM Mill/Turn Centres."

Quelch Engineering's customers expect delivery within 3-6 weeks of a quotation, so any reduction in cycle or program preparation time makes the company's ability to meet these challenging lead times easier. Alan See says, "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 optimising VoluMill 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. GibbsCAM and VoluMill help us to do it."

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