NCG CAM Solutions Ltd.

New Features for NCG CAM V10

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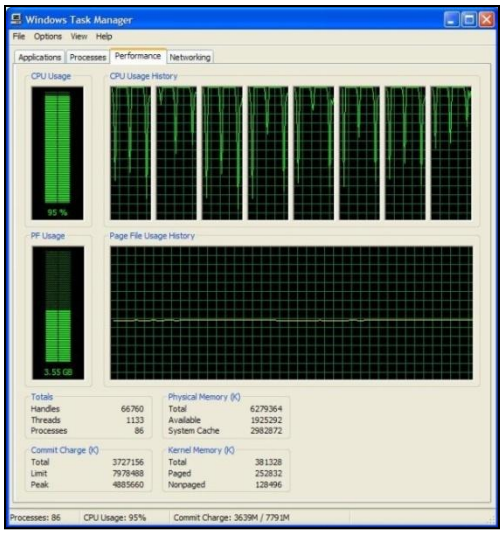
NCG CAM New Features V10– Base Module

Parallel Processing

The **NCG CAM** kernel was first written 14 years ago and was one of the first CAM systems to utilise multi-threading capabilities. Parallel processing improves the use of CPU's further still, by significantly speeding up calculation time already improved by multi-threading.

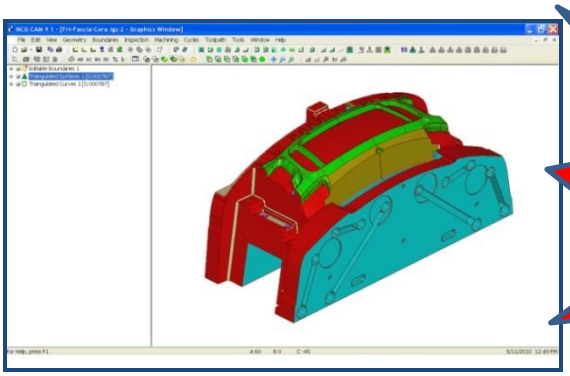
Almost all PC's today will be dual core, if not quad core and so support parallel processing. Basically, this means that your PC could support between 2 and 8 CPU's in one form or another.

NCG CAM now utilises this parallel processing facility. For example, when calculating rest finishing passes, rather than using a single processor, **NCG CAM** will spread the calculation among all the available processors.



***Left** - The processors of a Quad core with hyper- threading. This is showing an Intel Core i7*

Benchmarks show significant improvement in calculation times, especially on big parts like the automotive one below.



Example – Rest Finishing

300% faster with 4 processors!

400% faster with 8 processors!!

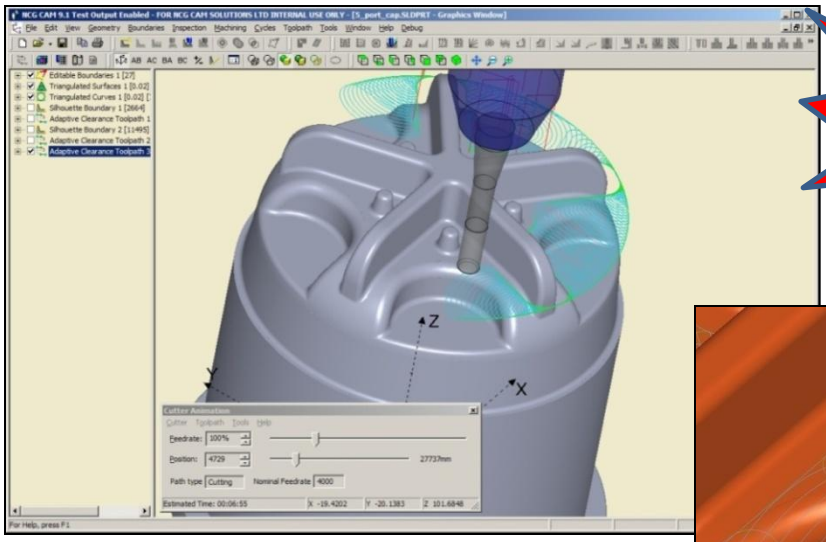
***Above** – Core side of an injection mould tool for a car facia*

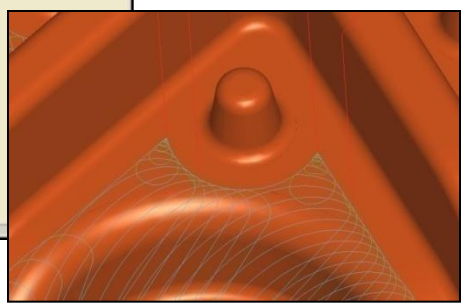
Adaptive Area Clearance

Adaptive area clearance eliminates full width cuts using a concept similar to trochoidal milling.

This unique cutting technique is aimed towards high speed machining with solid carbide cutters. It provides the ability to safely cut using the full length of the flute at the optimum cutting speed for the material and part. Tool wear is spread evenly, cutting more on the flute than the bottom of the cutter, reducing deflection and the potential for vibration by maintaining a constant load on the cutter. The technique is particularly suitable for cutting hard materials and also some electrode manufacturing. The strategy automatically adjusts the toolpath for efficient and safe machining, improving cutting conditions and allowing more consistent and possibly higher machining speeds to be maintained.

As well as significantly improving tooling life, adaptive area clearance can reduce machining time by an average of 25% over conventional roughing as the machine uses the full flute length of the cutting tool, and the machine runs at the optimum speed without exceeding its limits at an isolated point.





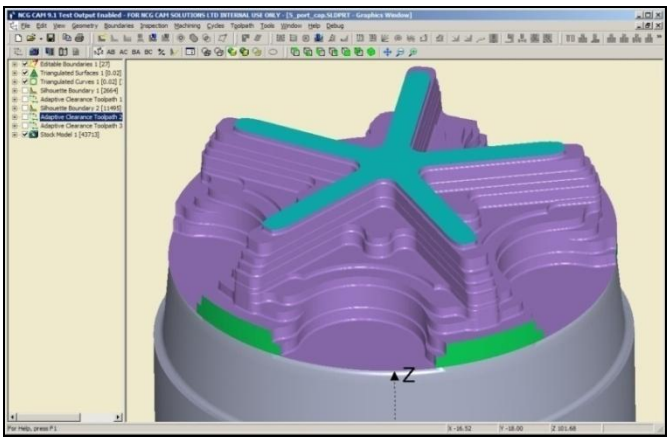
New feature for roughing with solid carbide cutters

***Above** - All the machining moves have lead in/out arcs to maintain a smooth machine motion. The cutting moves are also smooth, flowing profiles without sudden changes of direction*

The linking order is very important, so the linking is done at the same time as the passes are calculated.

After each level has been cleared using all the flute length, additional passes can be made to reduce the size of the terraces on the 3D form.

These additional passes will be either profile or clearance passes as required, depending on the material remaining or the shape of the part.



Rest Roughing Performance

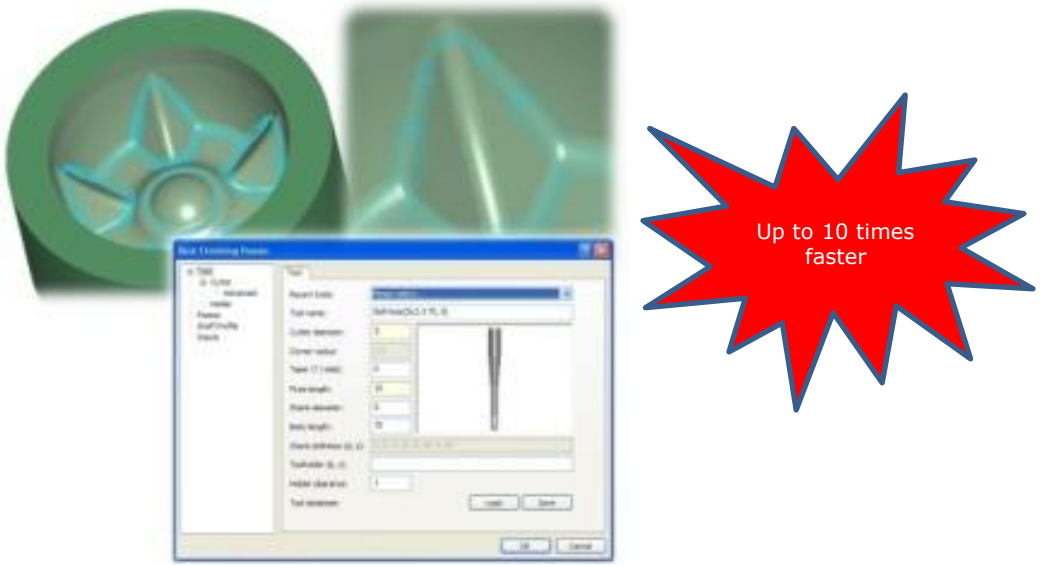
A new, highly optimised algorithm for calculating the rest roughing is now included in **NCG CAM** V10. This new algorithm gives a speed improvement of more than 4 times across a wide range of example parts. Speed improvements are greater still on some larger jobs.

Rest Finishing Performance

Recent improvements to **NCG CAM** have made the rest finishing complete in 50% of the time, when supporting tool-holders.

Combined with the use of parallel processing, the speed increase is even greater.

Benchmarks show a speed increase by up to 10 times can be seen, when comparing with **NCG CAM** V9 running on a 8 processor PC.



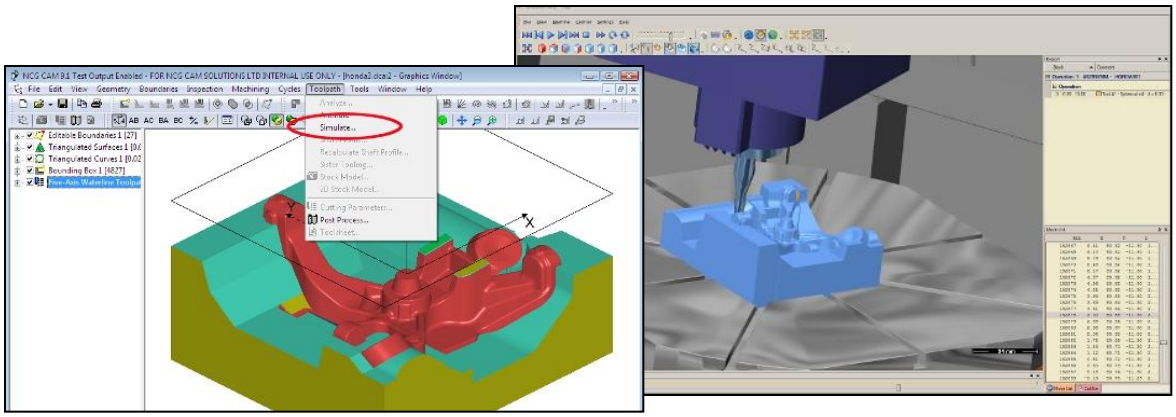
NCG CAM New Features V10 – Simultaneous 5-Axis Add-on Module

Machine Tool Simulation Added to 5-axis

The machine tool simulation allows the user to simulate the machine movement. This is generally very important for 5-axis toolpaths, where it is often difficult to visualise the real position of the machine when animating the toolpath. By running the toolpath through the machine simulation, you can be sure there will be no collision between the machine head and the bed/table of the machine.

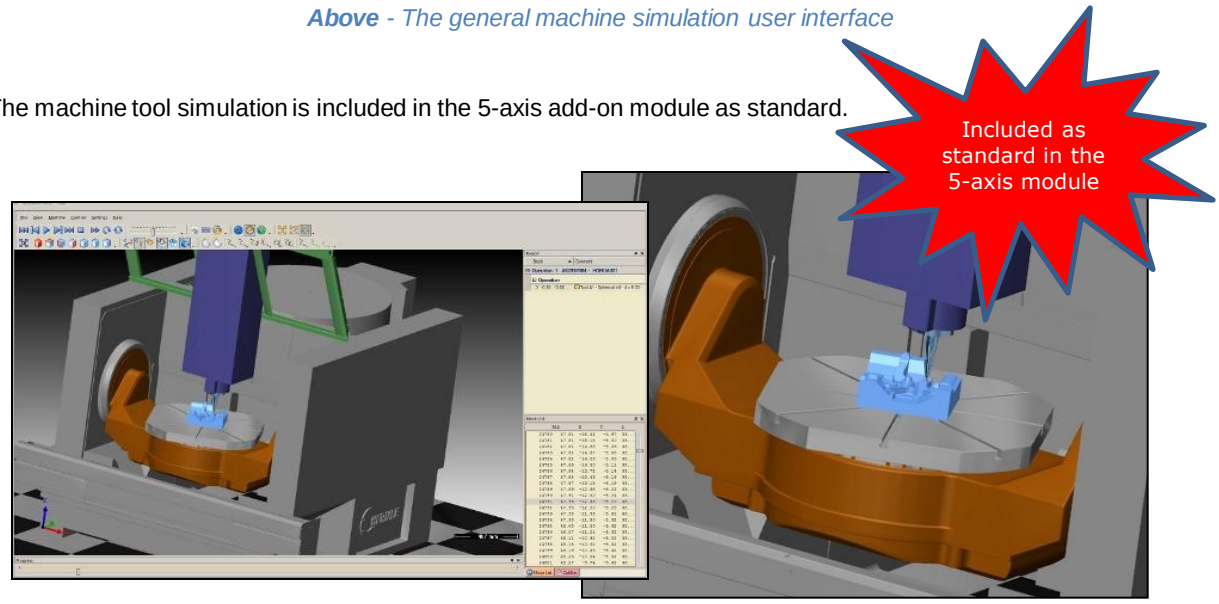
Like the toolpath animator the user can control the simulation speed, zoom in/out. Should there be a collision, it will be highlighted graphically and a dialogue is displayed to inform the user.

First of all, the basic machine needs to be modelled up. The simulation will then check that the head of the machine will not collide with the work piece or bed of the machine tool.
The machine tool simulation is also able to simulate the stock being removed pass by pass.



***Above** - The general machine simulation user interface*

The machine tool simulation is included in the 5-axis add-on module as standard.



***Above** - Zoomed in view of the machine simulation with some of the machine removed for clarity*

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