

NCG CAM

NCG CAM Solutions Ltd.

NCG CAM V11.0



Image courtesy of LTH Castings, Slovenia

New Features for NCG CAM V11

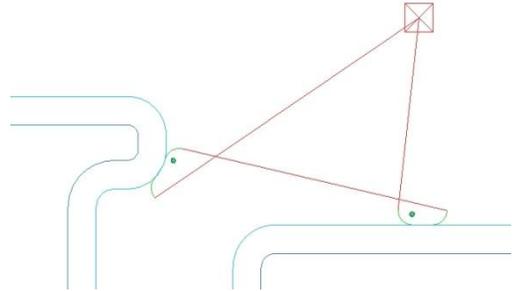
NCG CAM New Features V11– Base Module

Improvements to Along Curve Passes (2D Geometry)

General improvements have been made to the along curve machining to make it more useful for simple 2D machining.

- Multiple points can now be pre-defined and used as start hints.

The ability to specify a set of start hint points has been introduced in the linking, allowing several curves to be machined in a single operation. This enhancement has been applied to some other strategies to improve the linking of multiple areas.



The image above shows the start points and the pass overlap.

-Pass Overlap

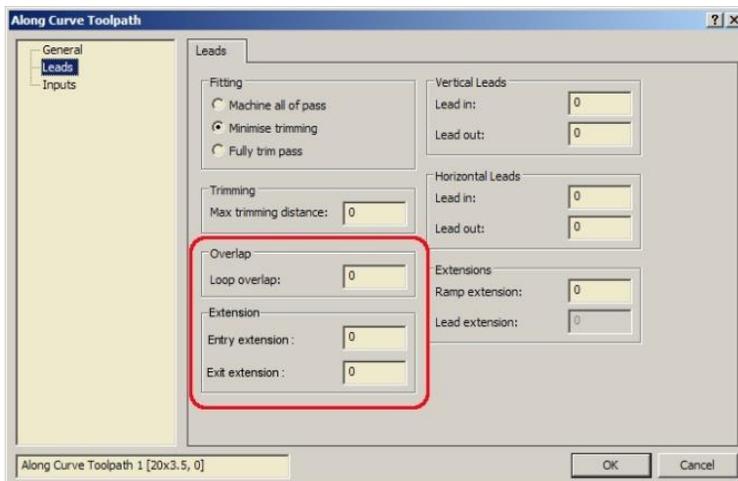
A pass overlap has been introduced for closed curves, this is to allow the cutter to go past the start point to ensure a better finish.

- Pass Extension

The pass extension is to allow the toolpath to extend beyond the ends (open curves), so the cut can start and finish off the part, giving a better result and cutting conditions. The extension can be applied at the start, end or both.

- Automatic Positioning of Start Points

When linking a closed profile will attempt to place the lead in / out towards the middle of a flat section (not on a corner or arc) wherever possible.



The image to the left shows the overlap and pass extension options on the leads page of the linking dialog.

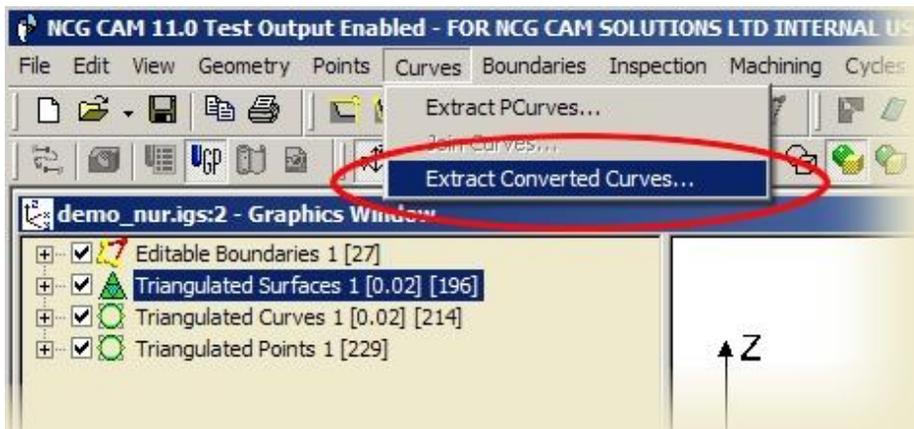
Creation of 'Clean' Curves from the Surfaces

The ability to create 'clean' curves from the surfaces has been added to extend the scope of the 2D machining with cutter compensation.

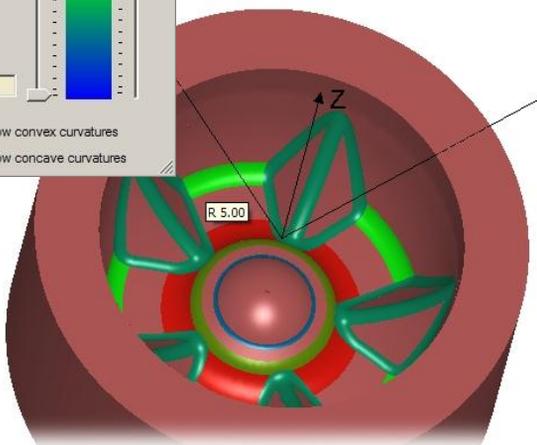
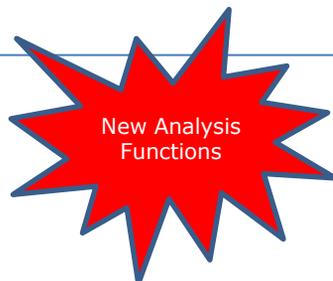
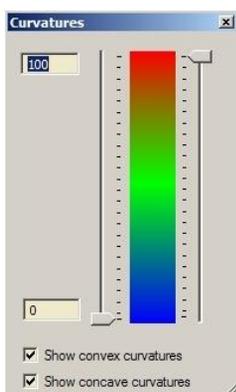
This has improved simple curve creation and manipulation, mainly to:

- Create curves from surface edges with true arcs
- Change direction of curves outside the machining dialog
- Break, extend and close curves

This could also be of benefit to the 5-axis machining too.



Analysis Functions



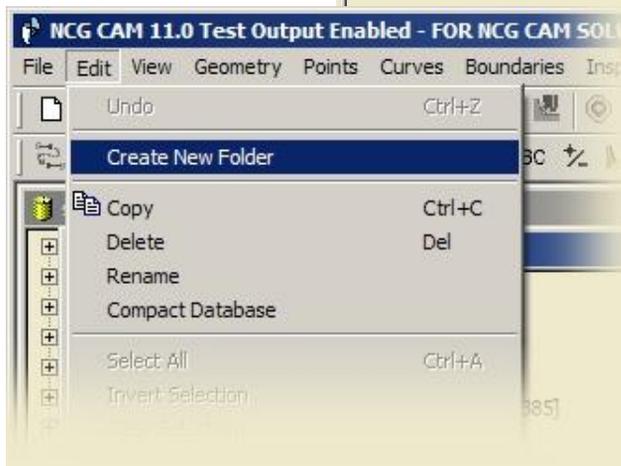
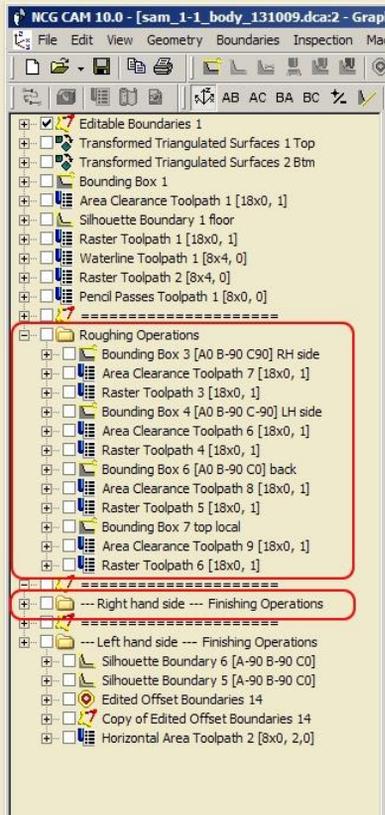
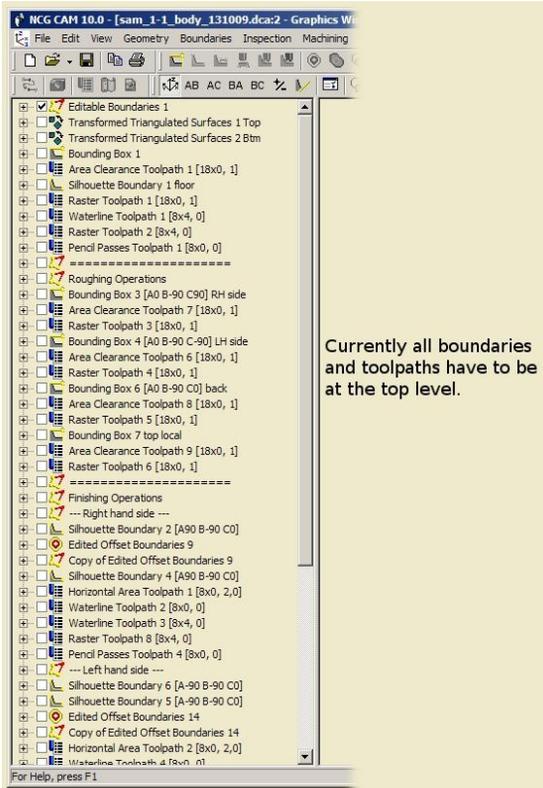
This is a graphical display using a colour overlay and the cursor tool tip to show information about the part that can help with cutter selection and possibly how the job is approached tool-path wise.

- Curvature will allow the user to quickly find out what the smallest radii is on the part to aid cutter selection. The radii limit can be filtered by the use and internal – external radii and be filtered.
- Draft will show draft angles and the cursors contact angle. This will help show where a tapered cutter could be used.
- Stock will graphically show the depth of the remaining stock, using a 3D stock model and the triangulated surfaces. This will work for 3-axis or 3+2 axis jobs.

Folder Management

The management of large or complicated databases has been improved.

A folder can now be in the tree view on the left side of the graphics, and the user can drag other folders inside to be able to clean up the tree view.





True Surface Machining

NCG CAM has historically machined triangulations. Machining the triangulations is quick to calculate and check against for gouge free machining.

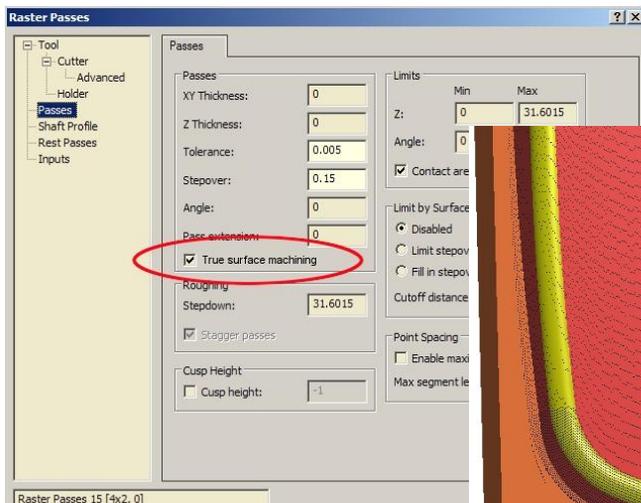
There are some advantages (and disadvantages) to machining the surface data as opposed to machine the triangulations.

Machining the surfaces is more accurate (though machining the triangulations is within the specified tolerance) and will provide a better surface finish.

However, the calculations to ensure the machining is gouge free will take longer in most cases.

Machining the surfaces also spaces the points in the NC Tape file more uniformly, giving a better / smoother machine movement on some machine tools.

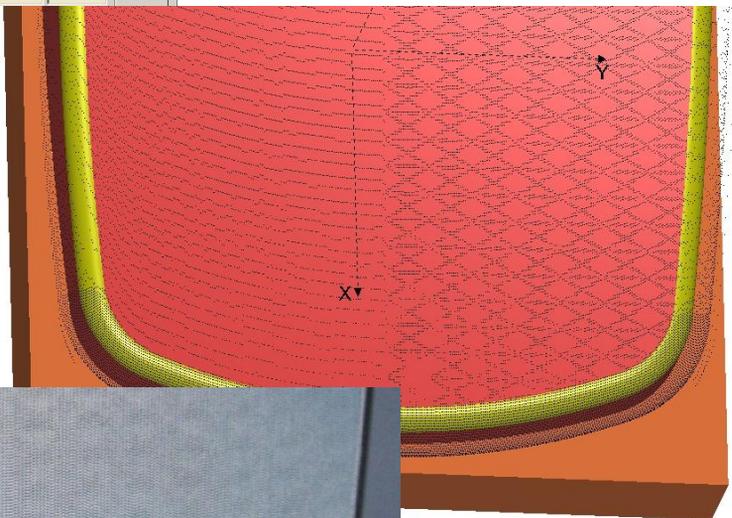
The aim is that customers cutting hard steel should not be able to see the fine witness lines from the triangulation that can be seen on some occasions (depends in the curvature of the part and triangulation tolerance).



Left - Shows the option in the user interface.

Below - Shows points in the tool-path.

Left Side - True surface machining; Right Side - Triangulated surface machining.



For toolmakers the better the surface finish means less hand polishing, which saves time and money. It also reduces possibility of any miss-match or flash caused by polishing rolling or bellling corners.

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