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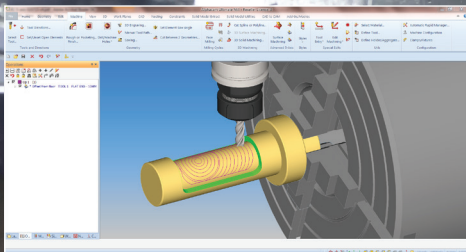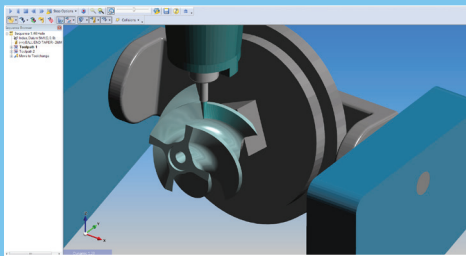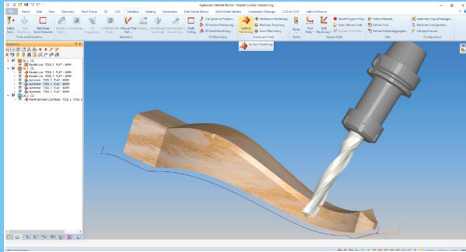
Alphacam Advanced 5-Axis

Alphacam seamlessly integrates 4 and 5-Axis simultaneous machining within its machining environment to allow a range of multi-axis cutting strategies to be applied to the most complex tooling or components.

BENEFITS

- **Intuitive, easy-to-use graphical user interface**

- **Ideal for the rotary machining of automotive and aerospace components**

- **Wide range of advanced options providing complete control of the tool**

- **5-Axis modules include full machine simulation to aid visualization of the machining process**

- **Interactive machining simulation**

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5-Axis machining is now common place in all areas of manufacturing as high technology machines have become more affordable along with design demands requiring more complicated tool paths
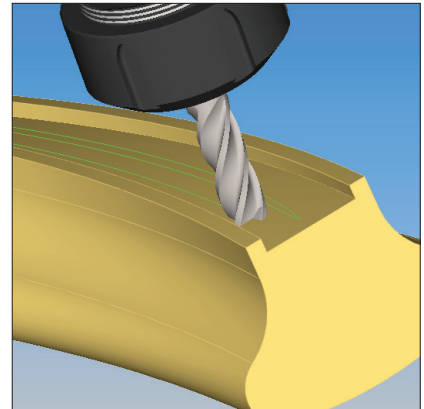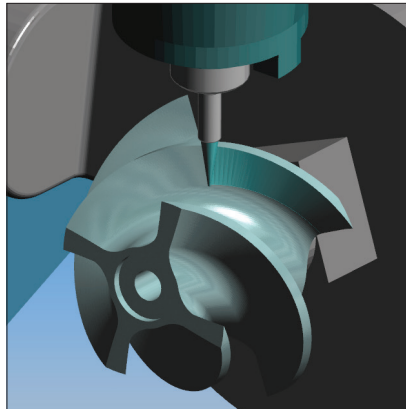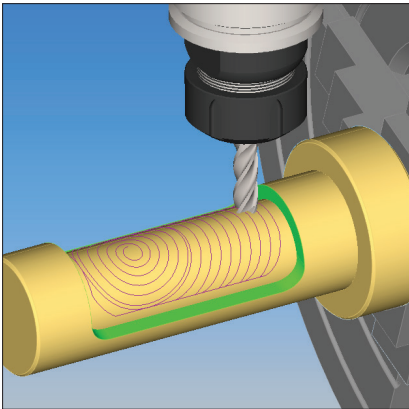
Alphacam offers a wide range of 4 and 5-Axis strategies applicable to solid and surface geometry. Alphacam has now made this easier to use with the operational style interface yet still have all the control required for the higher demands such as :

- SWARF cutting for machining of variable taper walls

- 5-Axis finishing across multiple surfaces with control over lead/lag and side tilt angles

- 5-Axis profile machining for slotting, de-flashing and trimming of sheet forms

- Full support for all common tool profiles, including lollipop cutters

- Easy-to-use machining strategies are geared to maximize productivity and quality

4 and 5-Axis simultaneous machining offer key advantages over conventional indexed 3-Axis machining:

- Improved surface finish and extended tool life are achieved by orienting the tool to maintain optimum tool to-part contact at all times

- Improved access to undercuts and deep pockets - through tilting the tool or component allows shorter series tooling to be employed, eliminating the need for secondary setups

- Reduced fixturing, as the cutter can be presented to the component at any required angle

Turn Milling
Use the 4th axis rotary attachment on the milling machine to produce a turned shaft using milling cutters rather than using a lathe for a partial operation. This process relies on the percentage engagement of the milling cutter while rotating the component which is made simple using Alphacam and its Multi-axis machining strategies. The same principal is also used to produce cam forms.

5-Axis Finishing
5-Axis finishing across multiple faces is similar to a parallel lace or scanning tool path but controls the tilt relative the surface which is driving the cycle.

SWARF Milling
Side Wall Axial Relief Feed. This is common practice when driving the side of the tool along a surface which tilts from side to side, this is in common practice on many aerospace parts. The tilt is controlled by the surface wall and the tool lift controlled by the base surface or bounding curve.

5-Axis Curve
The 5-Axis curve option runs the tool once along a curve, with the tool axis parallel to the drive surface. This technique is very useful for de-flashing.

5-Axis blend between
An ideal method for machining fillet surfaces where a cut needs to start parallel to one curve but finish parallel to another.

Advanced 4 & 5-Axis Milling
The advanced 5-Axis module provides total control of 4 and 5-Axis tool paths using solids, surfaces or wireframe geometries. Advance 5-Axis has additional functionality beyond the standard 5-Axis and is ideal for more complicated components such as blings and blisks where tool path plus entry and exit path control with is of a very high importance.

Tool Path control
5-Axis tool paths can result in large movements of the machine tool from what can be a very small cut on the component. These movements can cause severe damage the part and machine. Alphacam provides methods for collision avoidance where the cutter and holder are checked for collision and the necessary tilts applied to move away from the potential collision area.

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