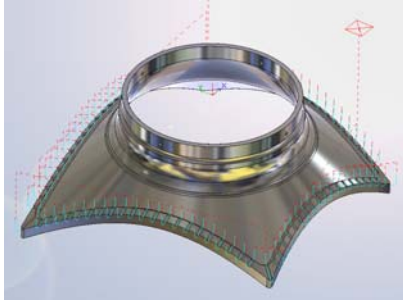


Multi Surface Features

Features can be defined automatically or interactively and are associated to the part geometry. The Multi Surface Feature wizard allows you to create features from model faces and surfaces that can be machined with numerous 3 Axis Milling operations.



Curve Project controls the cutting area by machining between curves across a model

Operations

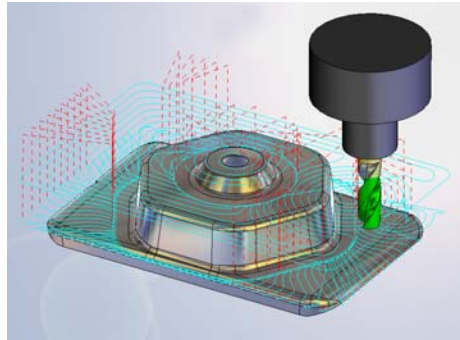
All 3 Axis Milling operations...

- Support rest or leftover machining
- Can be modified to stay contained within an area or to avoid an area.
- Allow contain and avoid areas to be defined with different tool side conditions for On Center, Upto, Past.
- Allow contain and avoid areas to have multiple areas.
- Can optionally machine over the avoid area.
- Have retract options to reduce travel distance between retract and reentry moves.
- Can generate high-speed toolpaths with no sharp corners.
- Support ball, flat, hog nose, tapered ball, tapered flat, and tapered hog nose tools.
- Allow user defined start/end Z depths.
- Consider the tool shank diameter and will modify the toolpath if required to avoid colliding with the tool shank.
- Can gouge detect against tool holder and check toolpaths for invalid arcs, continuity and gouging.
- Provide separate ramp height offsets for lead-ins and lead-outs.
- Can have separate XY and Z stock allowance.
- Can specify the number of levels to make equal for Area Clearance and Z Level operations.

- All cycles except Area Clearance, Flat Area support options to restrict toolpaths to a given slope and up and down milling.
- Allow a global facet deviation to be set for faster toolpath calculation.
- Provide an Arc fitting option to generate toolpaths comprised of line and arc moves.
- Pre-drilled entry points for Area Clearance and Flat Area operations.

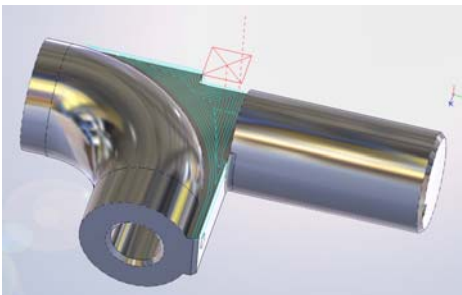
3 Axis Cutting Cycles

- **Area Clearance** (pocketing, lace, adaptive roughing)



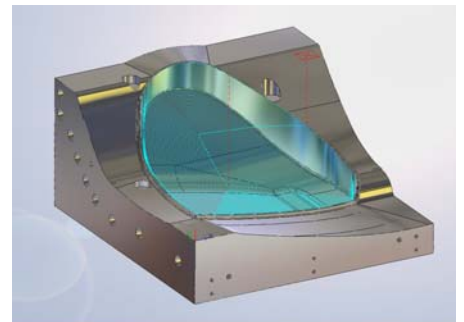
Adaptive roughing can reduce machining time up to 40% over conventional roughing with less wear

- **Pattern Project** (parallel slice, radial, spiral and flowline cuts)
- **Z Level** - generates Z-level passes from a set of surface contours. Optimal for semi-finishing and finishing of steep walls. Options for combination Z Level/Constant Step strategy and helical milling.
- **Flat Area** - uses a roughing pattern to remove material on flat faces. Planar faces are automatically located and machined with the appropriate flat tool.



Flat Area can significantly reduce machining and programming planar faces and improves surface finish

- **Pencil Mill** - creates toolpaths along internal corners and fillets with small radii. Ideally suited to cleaning up after other finishing strategies.
- **Curve Project** - removes material by projecting 2.5 Axis Engrave or Curve features on the 3 Axis feature.
- **Constant Stepper** - generates a semi-finish or finish toolpath with a true constant stepover regardless of the slope being machined.



Constant Stepper creates passes at a constant distance from one another by offsetting inwards along a surface

CAMWorks Modules

- CAMWorks modules are available in a variety of bundles or combinations: 2½ Axis, 3 Axis, 3 Axis with undercut, 4 Axis and 5 Axis Simultaneous Milling; 2 and 4 Axis Turning; Rotary Milling; 2 and 4 Axis Wire EDM

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