— RAKO STUDIOS —
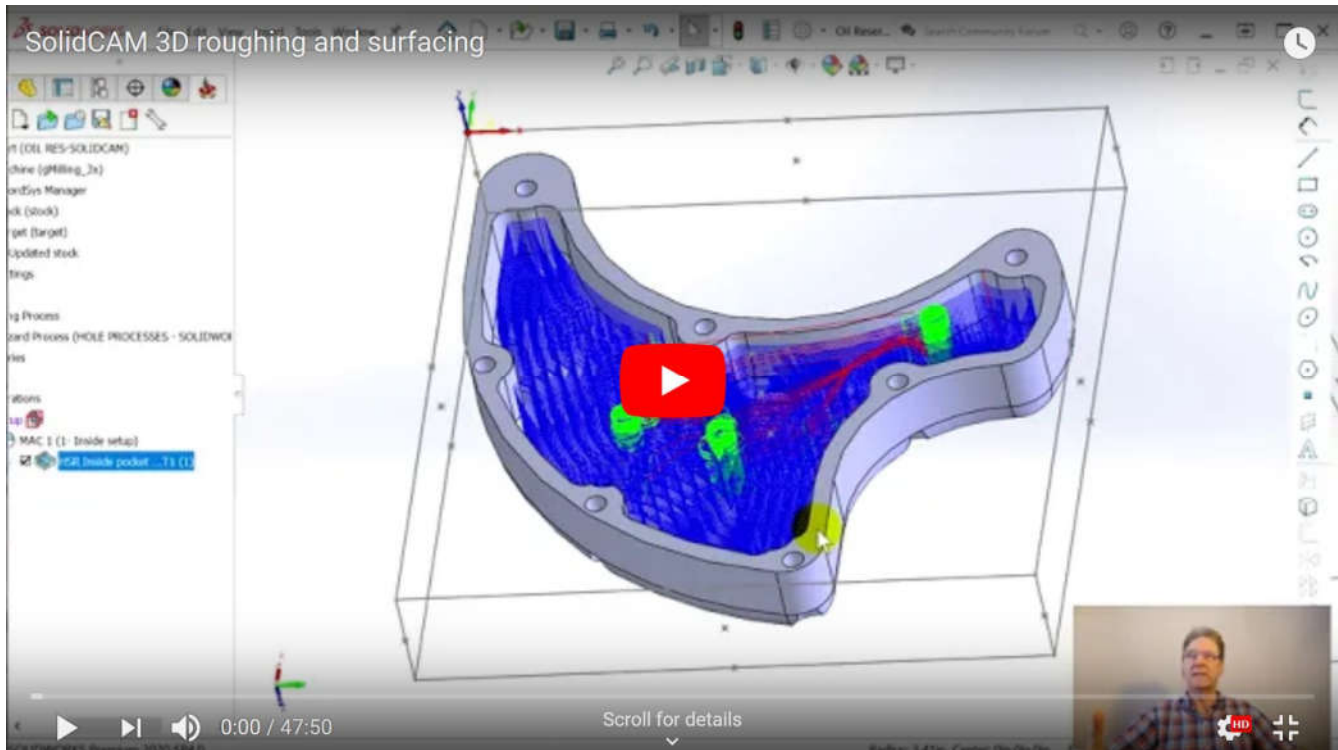
Rako Studios » Media » Suffering-with-software » SolidCAM 2D and 3D adaptive iMachining

SolidCAM 2D and 3D adaptive iMachining

Adaptive toolpaths eliminate sharp corners in the toolpaths to reduce tool loading. SolidCAM has both 2D and 3D operations.


Original prismatic part file here.
Completed prismatic part file here.
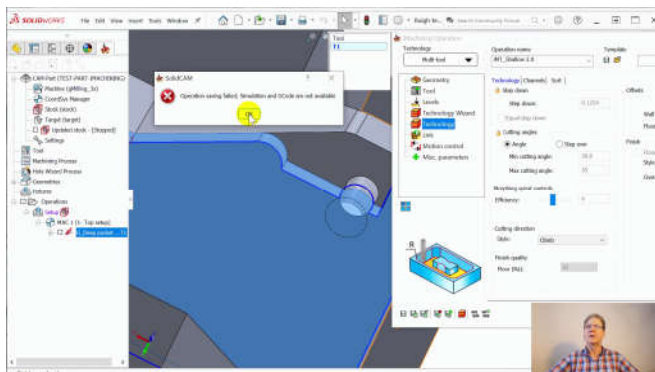Original 3D part file here.
Completed 3D part file here.

SolidCAM calls their adaptive toolpaths iMachining. These toolpaths do not have sharp corners that present a large, almost shock loads, to the tool. Instead, the tool "swoops" and does circular motions. These separate motions might not leave the surface finish you want on vertical walls, or the floor of the part, so you should think of both 2D and 3D iMachining as roughing operations. One feature of the toolpaths is they use more of the flank of the endmill, extending tool life.

Since adaptive toolpaths reduce the loads on the spindle and machine, I am very interested in it using in my gantry-style router. This machine is much less stiff than a Haas or even a Tormach, but it can do aluminum and has a 2-foot by 3-foot working area. The SolidCAM salesperson claims they used iMachining at a trade show to machine steel in a gantry router.

SolidCAM includes 2D iMachining in their base package, priced around $5k. To get 3D iMachining, you have to buy an extra-cost module. That is around $2k, but you will probably get a deal, depending on the time of year. VisualMill has clear pricing; all other companies treat pricing like A-bomb plans.
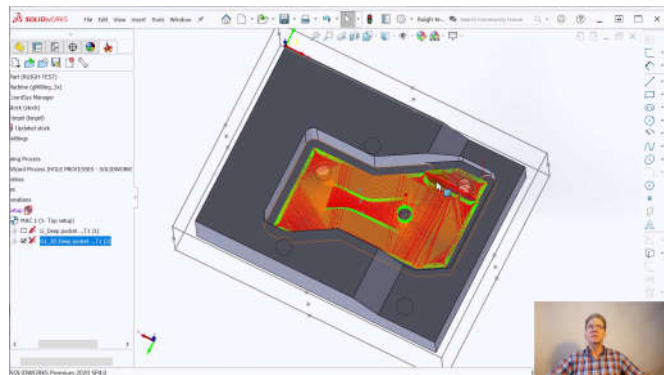
.
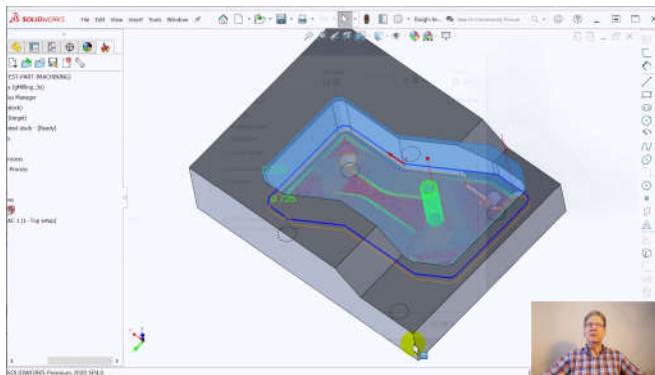
2D iMachining has a different dialog box construction compared to the regular 2D toolpaths. While I could see there are a lot more parameters to choose, I did not understand why not even the tool selection could use the same dialog box as the other 2D toolpaths. Once you plow through the toolpaths, SolidCAM will make a very nice adaptive toolpath as above.

.

I switched to 3D iMachining to do the pocket. One mistake was not suppressing the 2D pocket I already made. iMachining is stock aware, so it will do its strategies based on the actual stock condition.
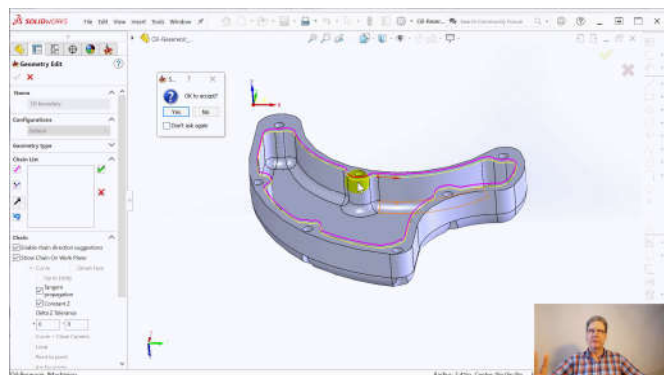

.

When I tried to make a shallow 2D iMachining pocket under the deep pocket, the operation failed, with an error "Operation saving failed; Simulation and GCode are not available". This was followed by error, "Simulation and GCode are not available ; Save operation failed". I guess they feel they have to tell us twice.

I tried everything and could not get this second pocket made with 2D iMachining. I went so far as to reboot the computer and start the part over from scratch, but I kept getting that same error. This is likely my error, but it is exasperating when it wastes an hour and still doesn't work.

With 3D iMachining, the whole solid body model, or "target" is the selection you machine. Then you spend your time putting in boundaries to keep the cutting where you want it.
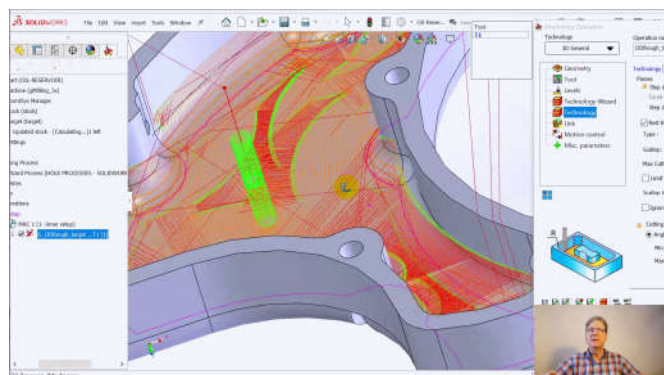
When you limit the cuts with boundaries or levels, SolidCAM makes some impressive toolpaths. I would want to see how these work on my machine before passing judgement.