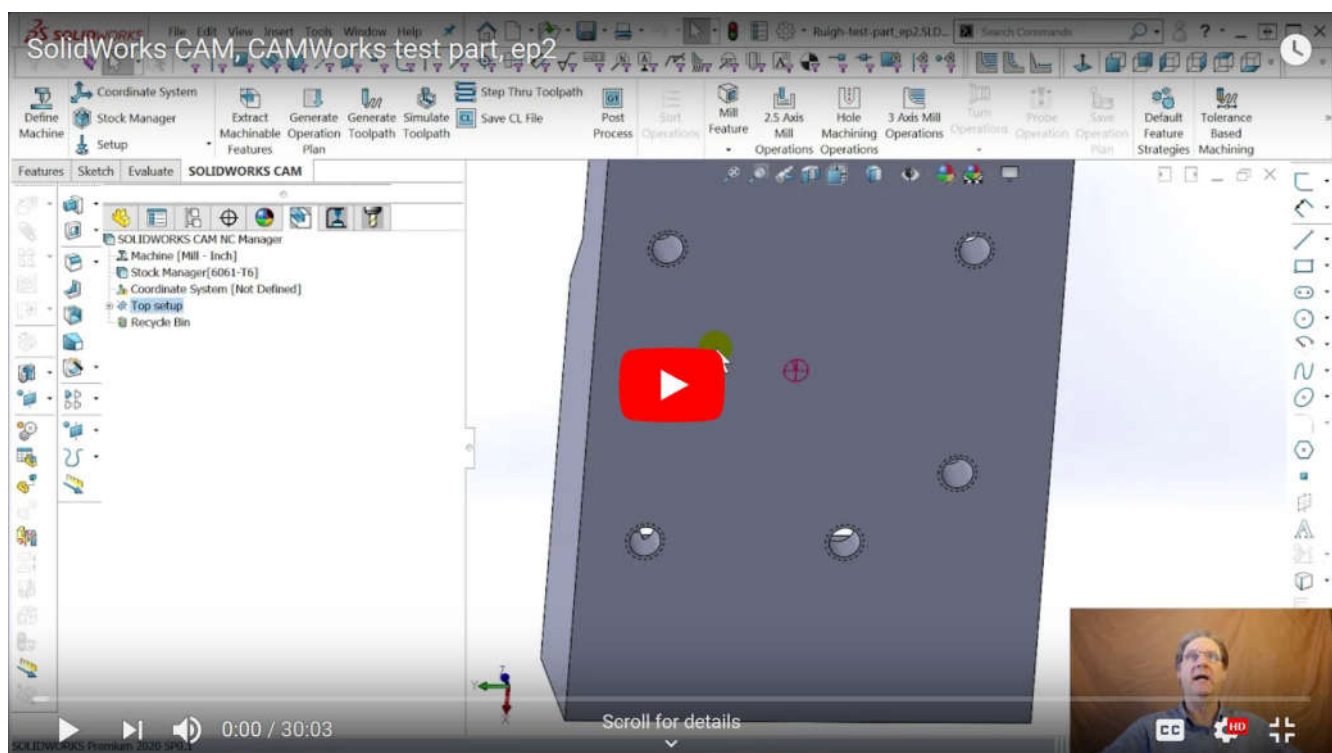




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SolidWorks 2018 and later has a free CAM (computer-aided manufacturing) add-in to make G-code for milling machines.



Original part auto-recognized here.
 Test part after pockets in ep1 here.
 Test part after holes in this ep2 here.

In this episode I take the test part made by my pal Dave Ruigh and add the five tapped holes. When Dave tried automatic feature recognition, SolidWorks CAM/ CAMWorks decided to do the two through-holes from the top, and the three blind holes from the bottom. This is yet another reason to not expect your CAM program to do anything automatically. You might start there, but you will have to

correct a lot of mistakes or cutting of air. This happens a lot, like when CAMWorks decides to cut the perimeter of the part both from the top and the bottom. It also cuts down to the vise, not a good thing.

That being said, now that I am getting used to all the quirks and weirdness of CAMWorks, I am beginning to respect it, even if it is hard to like. It does way better simulation than BobCAD CAM, and I can see the Technology Database might a way for a shop owner to capture intellectual property from his workers.

As a one-man operation, I don't need a Technology Database in my CAM program. I **am** the technology database. In order to know how to modify and fill in the Database, I could just as easily do that on a part-by-part basis.

It is obvious you have to tediously check all the automatic things, whether feature recognition or what the Technology Database is deciding to do for tool selection and speeds and feeds. The defaults are for a mill with a 30HP spindle, so be sure to go to the Tech Database and change that to match your machine.

I have avoided showing how to mess with the Technology Database just because it is so tedious and is so much like programming and so little like machining. If I wanted to be a database administrator I would have taken computer science in college.

The programmers even insist on using their jargon, with the entries called "records" like in a database. How about "line items" or "tool table" or any other plain English that maybe even a machinist might speak? Pretty soon we will have to learn SQL and start slinging Join commands and parsing instructions.

I just want to cut some metal guys, OK?

I have another problem in that there is no specific tool information in the Database. That tedium is left for us, the users. The programmers are too busy and important to bother with something that would have real value to me.

For instance, I like the look of Viper endmills by Destiny Tool back in Silicon Valley where I used to live. I would like the Tech Database to have the whole Destiny Tool catalog inside it, with all the part numbers and info, with the matching speeds and feeds called up automatic.

The tedium of entering all that information is left for thousands of users to do redundantly, instead of the software company doing it **once**.

What will happen will be similar to electronic CAD, where the tool vendors will take the initiative, and make files that the various CAM programs can import so you have their whole catalog of tools inside the CAM program to select from.

Then maybe in a decade or two, the CAM programs will actually check for the tool downstairs in the machine shop, and if not there, order it from Amazon or whoever ends up with the entire retail shopping market.

One day, if we dream, things might work like that. Until then, watch me take a half-hour to put five holes in a chunk of metal. I uncovered a bug where if I selected the holes by the cylindrical face, it would split the resultant features into different holes, and make one a metric tap instead of a 1/4-20.

The solution there was to be sure to only select the holes by their edges, not their faces. Then CAMWorks put all five holes into the same "hole group" and correctly called out a 1/4-20 tap.

One disappointment was that CAMWorks did not have an easy way to select the depth of the holes. I had to go back to the solid model tab and look to see how deep Dave had made the holes, and type that in by hand to get the proper result in the CAM tab. That is pretty pathetic.

Doing an automatic feature recognition on the whole part makes a bunch of wrong stuff, but I will see if I can just recognize the holes and see how CAMWorks does with that simple and hopefully more deterministic task. The next video will be doing the perimeter and slopes.