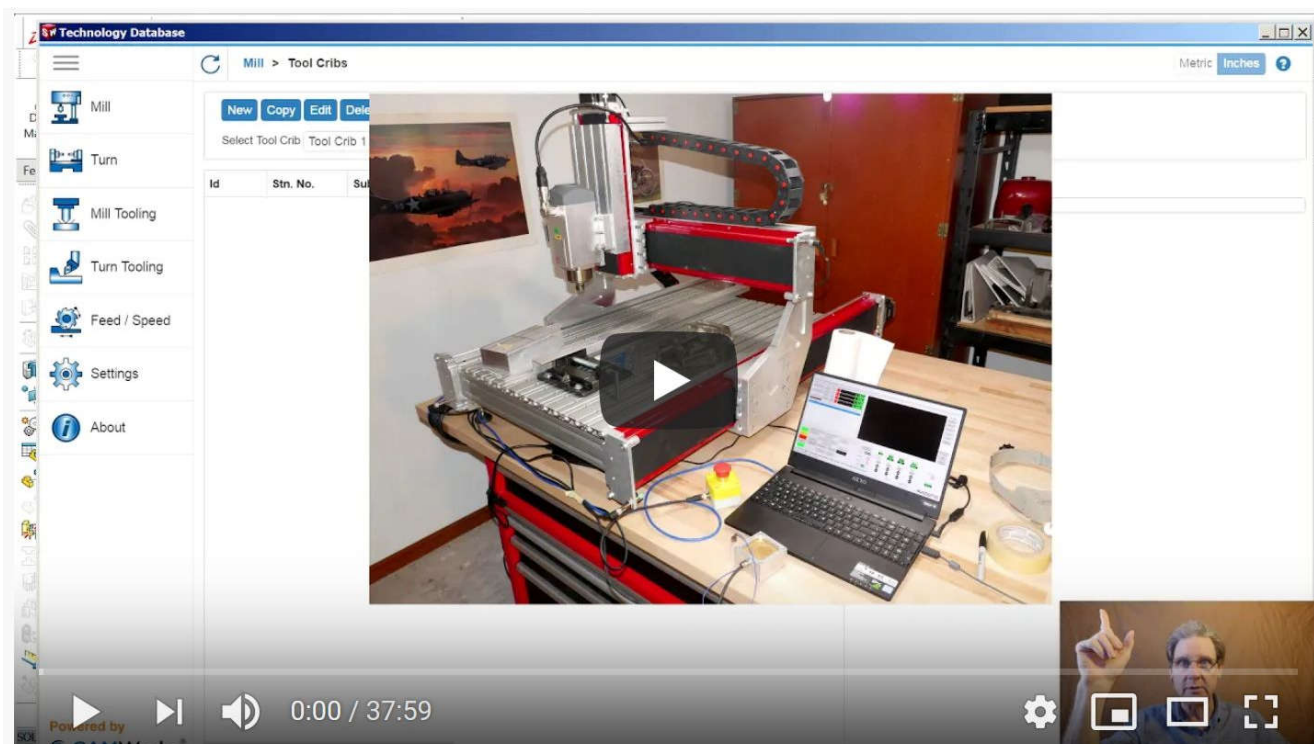




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SolidWorks 2018 and later has a free CAM (computer-aided manufacturing) add-in to make G-code for milling machines.



The first impression of Solidworks CAM (computer-aided manufacturing) made CNC tool-paths that were unusable or useless. This is because I let the program automatically recognize features, and then automatically generate operations to make those features.

It would make toolpaths around the part that cut all the way into the vise. It made toolpaths that were unneeded, like cutting the outside periphery from the bottom after already cutting it from the top. The program could not make one 0.25" feature because it did not have an

end mill small enough. There was no consideration for how to hold the part, and an order of operations that would allow a real workflow.

This video starts with that part. Even when I changed back to large end mills and a 2-inch face cutter, the program predicted about 700 minutes of cutting time. By deleting the redundant operations, making practical decisions on how to hold and make the part, the time got down around 200 minutes. This is still very slow for a pretty small part.

The biggest problem with the free Solidworks CAM is that it does not have a perpetual license. If you stop paying your Solidworks maintenance, the CAM stops working, despite Solidworks having a perpetual license.

If you upgrade to Solidworks CAM Professional, which is the same as CAMWorks Premium, you get a perpetual license, at a cost of \$2400 (\$3000 with maintenance). This gets you VoluMill and some other enhancements, but it is still not a 3D program.

If you buy CAMWorks Mill program, that is full 3D, at a cost quoted to me in 2020 of \$5500 for the program, \$1500 for maintenance, for a total cost of \$7,000. That is a bit out of my price range of \$5,000, but worth looking at.

CAM programs are expensive. MasterCAM dominates the market, but costs over \$10,000. Other high-end packages include GibbsCAM, HyperMill, Unigraphics/NX, SolidCAM and Esprit. I saw a web price for SprutCAM of \$8,000, but I am not sure it was valid.

CAMWorks is a mid-range package, as is Visual CAM, BobCAD, OneCNC, EZ Mill, and Smart CAM. OneCNC deserves special mention because they let you sell your license to a third party, unheard of in the CAD world. I tried to sell my AutoCAD 14 on eBay and Autodesk came along and had eBay remove the listing.

Speaking of Autodesk, Fusion 360 has a capable CAM package, and the whole thing is free for hobbyists. Problem is you have to put all your files in Autodesk's cloud, and have no control if some new CEO at Autodesk decides to pump the stock price by not offering Fusion 360 for free. So it is not really a perpetual license, but one they feel like giving you for free every year, while they are in a good mood.

I also refuse to use any AutoDesk product after the way I was treated as a legal customer of AutoCAD 10, 11, 12, 13, and 14. A few years ago I tried to get a printout from my AutoCAD 14 I still had on an old Windows XP box. What an evil, unusable, non-intuitive program. I had forgotten how bad it was.

I also remember how they created the AME (advanced modeling extension) in release 11 which I learned for a year, then the promptly dropped for another 3D scheme in R12, that worked completely differently.

And all this reminiscing brings to mind how Autodesk would change the menu structure every release. I forgot where they ended up with the "Align" command, so I just typed it in the command line.

No, no Fusion 360 for me, so don't look for that video.

In general I found the SolidWorks CAM to be a little hard to deal with. They brag about doing things automatically, but the things it does are often wrong. I think I want a simpler package that is more manual and deterministic. You can do everything by hand in SolidWorks CAM, but that is for another video.

After letting Solidworks CAM/CAMWorks do everything automatically in the previous video, this one shows you how to fix the obvious problems. It also warns you to not do things automatically after the first time, since that will just put in the same mistakes.

The next video will be making a little test part an engineer buddy made to evaluate Solidworks CAM. The program did not choke on the part, but it made the same kind of mistakes that it did on this first and second impression part.