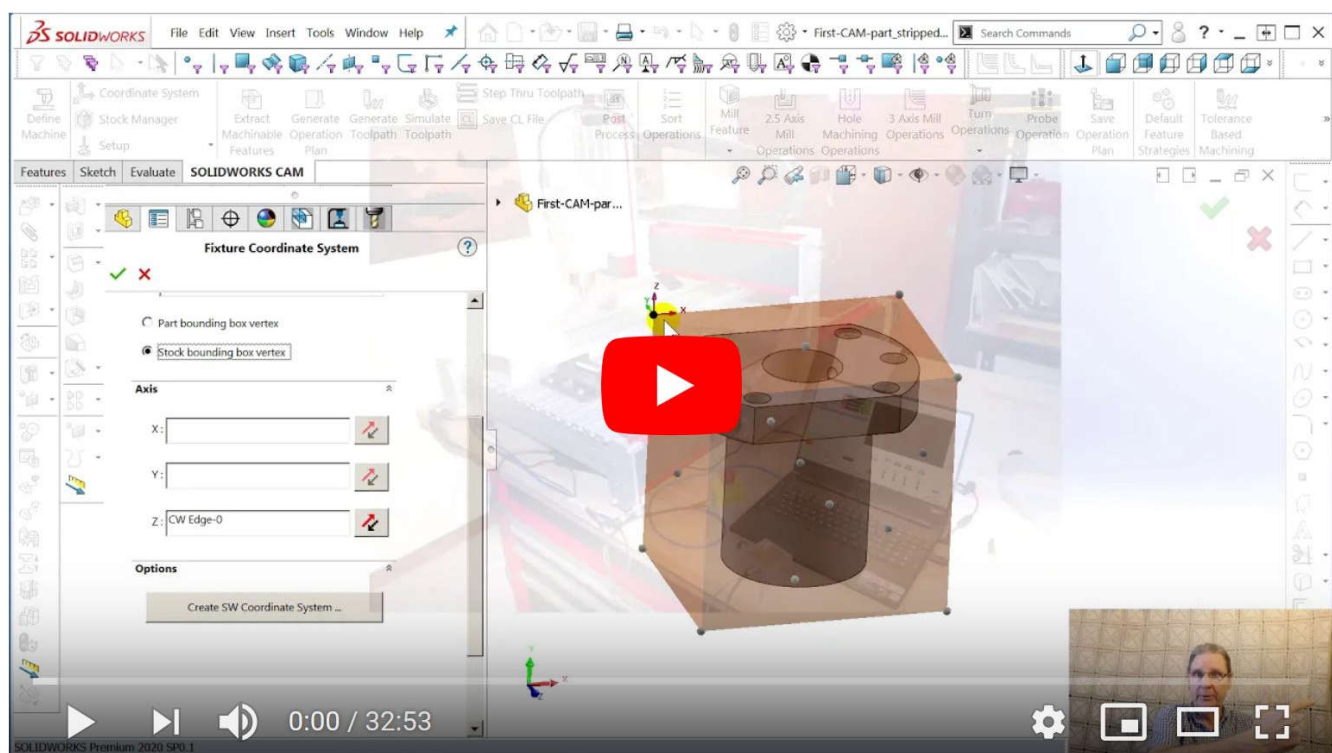




Rako Studios » Media » Suffering-with-software » Solidworks CAM, CAMWorks first impression (youtu.be/CouJH6NK6qk)

## Solidworks CAM, CAMWorks first impression (youtu.be/CouJH6NK6qk)

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



In a classic *chain of dependencies*, I needed a CNC mill to make parts for my Harleys and to make parts for a 3D printer design and a design for a my own CNC mill. In order to machine parts, you have to create a G-code program that you open in the milling machine. There are at least a dozen software packages that do this. These are called CAM (computer-aided design) software, as distinguished from CAD (computer-aided design) packages like Solidworks, Pro-E, Fusion360, and others. Some CAM packages run inside the CAD software for a familiar look-and user interface.

In 2018 Solidworks began including a free CAM package as an add-in. The problem is that it will only work if you are paying current maintenance on your Solidworks. While Solidworks itself has a perpetual license, the CAM package, made by CAMWorks, will die once you stop paying maintenance. If you pay about \$2400 or \$3000 (with maintenance for a year,) you get Solidworks CAM Professional, which is the same as CAMWorks Premium. This gets you VoluMill adaptive high-speed milling. It has many other features, but is still a 2.5-D program.

By upgrading to CAMWorks Mill, you get 3D machining, and other benefits. This cost about \$5k + \$1500 maintenance. It too comes with a perpetual license.



I paid around \$9000 for an Avid Benchtop Pro mill, in the 2 foot by 3 foot size. It was a lot because I got the Avid high-speed spindle package, and the NEMA-34 motor upgrade. I also ordered their tool probe that helps you set the tool height and find "part zero" on the work-piece when you set things up.

Unlike the Axiom machines sold on Amazon for about the same price, Avid says it is OK to cut aluminum and non-ferrous metals. When you download the Axiom manual, it specifically tells you it is for wood or plastic only.

While a gantry-style router is not as stiff as a Haas or even a Tormach, it is run by a Mach4 controller that can do most of the things those mills can do, though not as fast or as rugged. Rather than buying Aspire or one of the CAM packages made for routers, I wanted a metalworking CAM package, and the free one in Solidworks was a fine place to start.

Now, without a perpetual license, I would never do any real work with this software.

Still, it is well worth learning how to use this free CAM package, even if I know I have to upgrade or buy a different program. Since I am an engineer and not a machinist, I need to learn the principles of CAM, which will apply to any software I buy.

Some CAM programs are too expensive for me, over \$10,000. Those include MasterCAM, HyperMill, and Esprit, GibbsCAM and probably SolidCAM, though I have yet to get a quote from them. I need a mid-range CAM program for occasional prototyping work.

Since this is for intense use then set aside for weeks or months, it is very important that the program be intuitive. I thought I had to have a program that ran inside Solidworks, but my experience with the embedded CAM makes me think I should also look at stand-alone CAM packages that have their own user interface.

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 the next video.

One package that looks appealing is OneCNC from Australia. It has that old CADKey look, that I remember for decades ago. There were many engineers that adored that user interface, so I think it is worth taking a look at.

After letting Solidworks CAM/CAMWorks do everything automatically in this video, in the next video I will fix all the things that went wrong, and perhaps show how to just do things manually.