

Learning CNC Resources

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General Overview of CAD, CAM, Gcode, Feeds & Speeds, and End Mills



Makersmiths - CNC...Overview V2.1.pdf

CAD and CAM

There are a lot of different options when it comes to CAD and CAM software available. We currently use the following tool chains:

- Fusion 360 - CAD and CAM in one. This is available for non-commercial use for free and is a reasonable cost for commercial use. [Fusion 360 Home](#)
- VCarve Pro - Easy to use CAM software especially for 2d and 2.5d objects. We have a Makerspace License Edition available for users to use. This allows users to install the client on your local laptop and then run the final files on the computer that will be connected to the CNC machines. VCarve supports output to the Roland and Roland Tool Chain. [VCarve Pro Home](#)
- Inkscape: [Inkscape Home](#)

Basic Overview of CAD and CAM for CNC

Makersmiths basic video on CAD and CAM for CNC

CAD Resources - Fusion 360

<https://www.nyccnc.com/fusion-360/> is a great resource with links to a number of great videos. One series is the fusion Friday series which is linked below.

The Fusion Friday series is really good starting point. This is the first one of the series

Lars Christensen on YouTube does a good video series on CAD in Fusion 360.

CAM Resources

This is a good intro video for CAM

This is a video specifically about the settings you need to remember to check in VCarve before saving your GCode for Big Blue or Big Red

End Mills

Places to Buy

Some suggestions for places to purchase endmills for Makersmiths CNC machines are:

Kodiak Cutting: <http://www.kodiakcuttingtools.com/>

Think & Tinker: <http://www.precisebits.com/>

Woodcraft: www.woodcraft.com - online or at the store in Leesburg

Toolstoday: www.toolstoday.com

Amazon: www.amazon.com

Types to Buy When Starting Out

If you're just getting started in wood CNC projects, a 1/4 downcut or 1/4 downcut straight, 2 flute endmill is one you'll regularly use. If you are going to cut plywood, you want to use downcut to avoid tear out of the top surface of your workpiece. These are about ~\$20. If you find that 1/4 is too large to get the detail you want, a 1/8 downcut or upcut straight, 2 flute endmill would also work. If you plan to cut large objects out or clearing a lot of material in your projects, a 1/2 downcut or upcut straight 2 flute endmill is also a good buy, but they are a little more expensive at around ~\$50. If you want to carve signs or do inlays, a 60 degree or 90 degree Vbit is also good to start with.

Solid carbide is what CNC endmills are usually made of. High speed steel is a little less expensive but doesn't stay sharp or last quite as long.

Video about the basics of different types of mills and how they work with wood