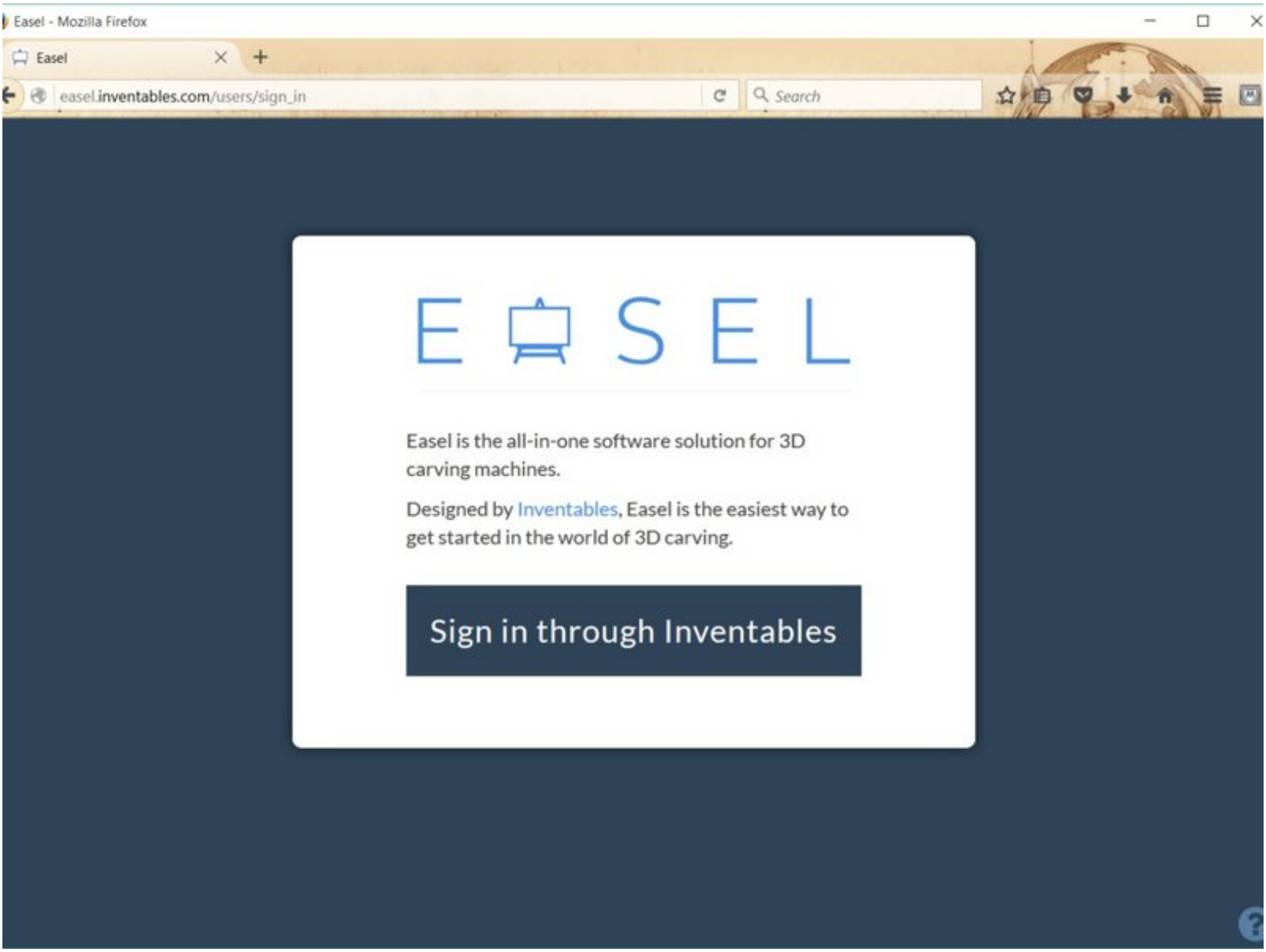
Easy CAM: Creating a Milling File with Easel

This guide will cover the basics of using Easel (from Inventables.com) to create G-code files to mill on BoXZY.

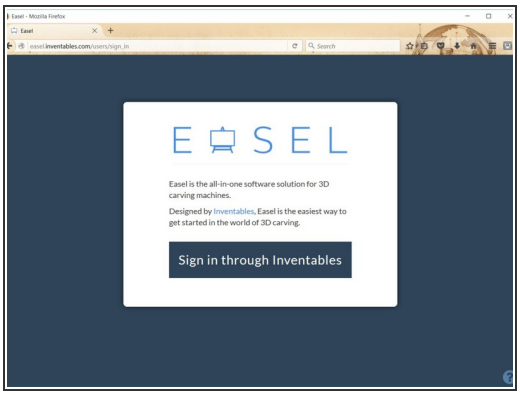
Written By: BoXZY

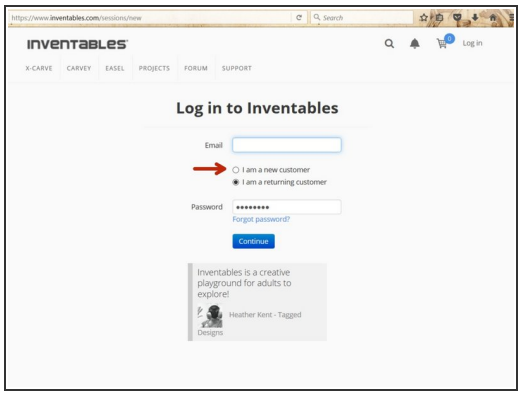


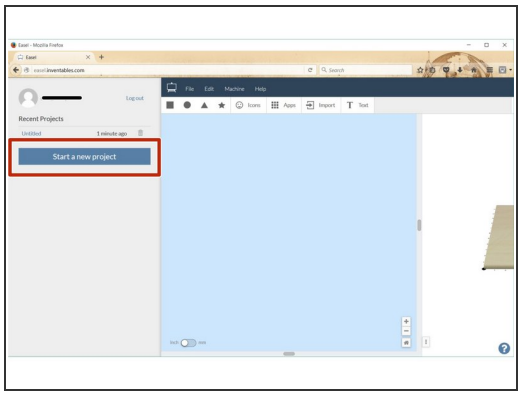
INTRODUCTION

The default feedrate, depth per pass, and stepover for the material you choose will be very conservative when used in BoXZY. We believe this is a positive attribute for a beginner, you should leave them at their defaults.

Step 1 — Start a New Project in Easel

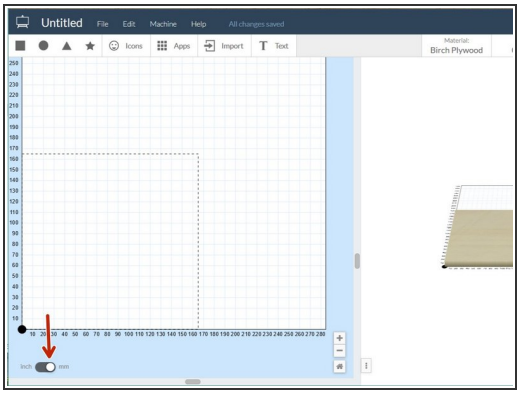


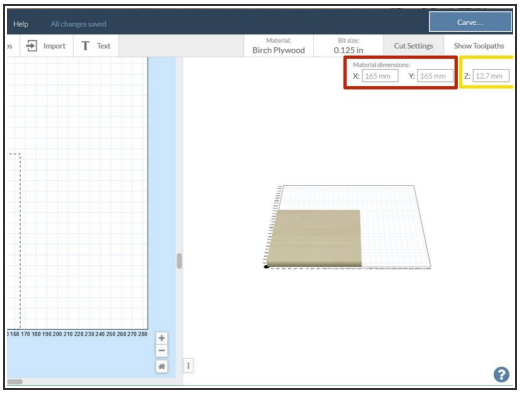


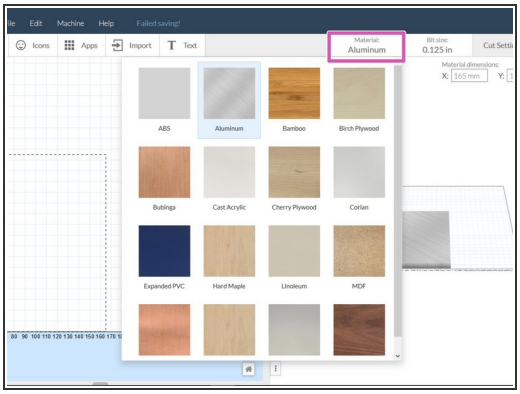


- Go to **Easel.com** and select **Sign in through Inventables**, as shown in the first image.
- **Sign Up** for a new account by selecting **I am a new customer**, as indicated by the red arrow in the image. Enter your information before selecting **Continue**.
- After signing up or signing in, you have the option to continue a project or create a new one. Select **Start a new project**, as indicated by the red box in the third image.

Step 2 — Setting Up Your Easel File

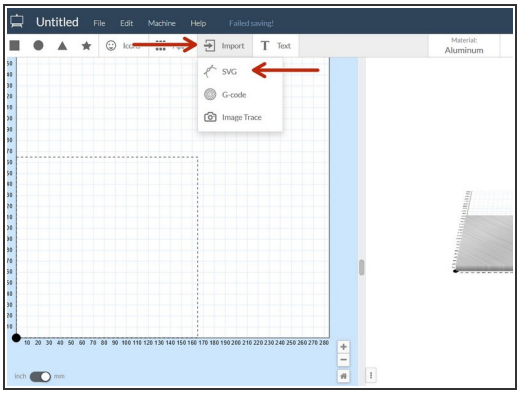


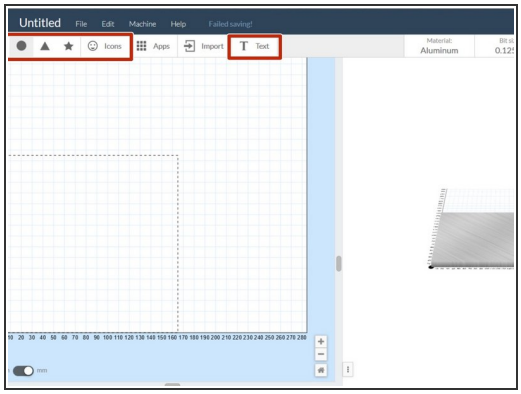


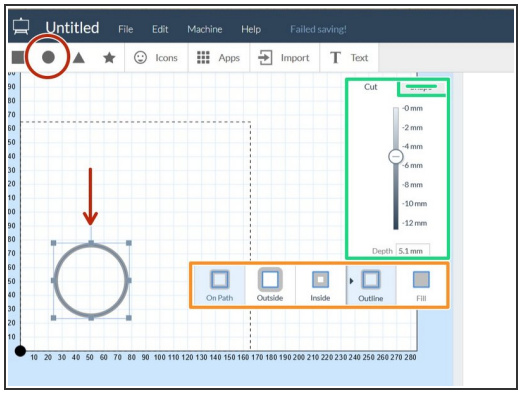


- Select **mm** from the bottom of the Easel main screen to set the project units in millimeters, as indicated by the red arrow in the first image.
- Next, edit the values in the *X* and *Y* **Material Dimensions** box, as indicated by the red box in the second image, and set them to **165mm**.
  - Set the **Z dimension** as the thickness of your material using the **Material Dimensions** box, shown in yellow in the second image.
- Next, set your material type by selecting the **Material** tab, as indicated by the purple square in the third image. Then, select the material type your preview will display.

Step 3 — Creating a Shape in Easel





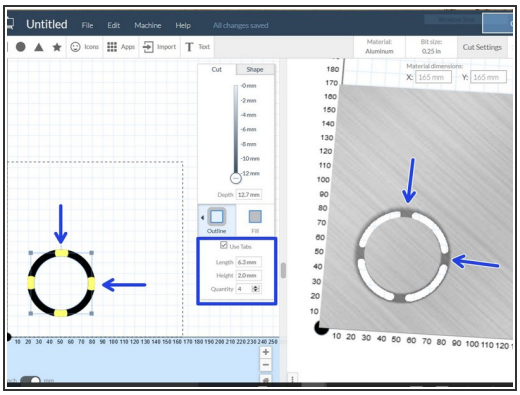


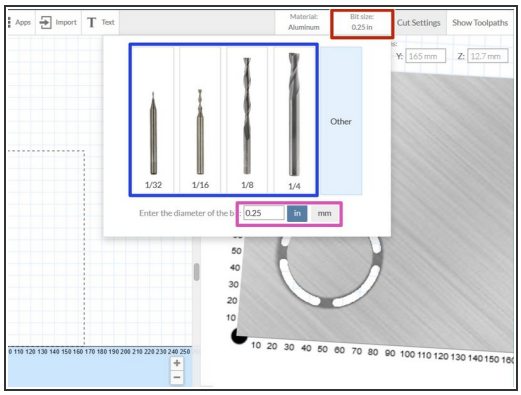
- You can import an SVG file to convert to G-code by selecting **Import**, then **SVG**, as indicated by the red arrows in the first picture. Then, select the SVG file you want to import.
- You can also create shapes like squares, circles, triangles, and stars, as well as write text and import Easel icons, as shown by the red boxes in the second image.
- Select the **Circle** and draw a circle using your mouse. You will then see a new tool open up, as indicated by the green box in the third image. This is the **Depth of Cut** tool. It allows you to set how deep you mill into your material.

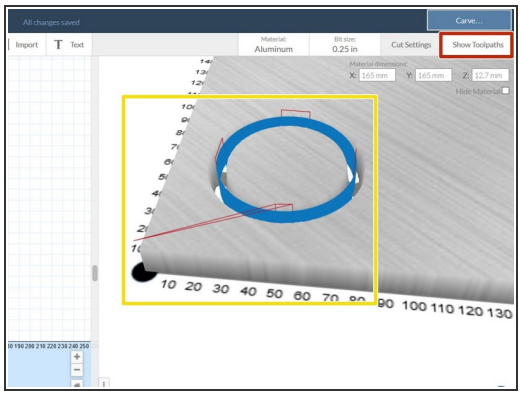
  ⓘ You can determine the dimension by sliding the bar or entering it manually at the bottom of the **Depth of Cut** tool.

  - **Note:** if you wish to cut through your material all the way, measure and set your depth of cut to be *no more than 0.5 mm* so that you can get the most out of your sacrificial board.
- You can select where you'll cut relative to the shape, as indicated by the orange box in the third image. You can cut **On the Path**, **Outside** of it, **Inside** of it, **Outline** it or **Fill** the entire area.

Step 4 — Playing with Settings in Easel

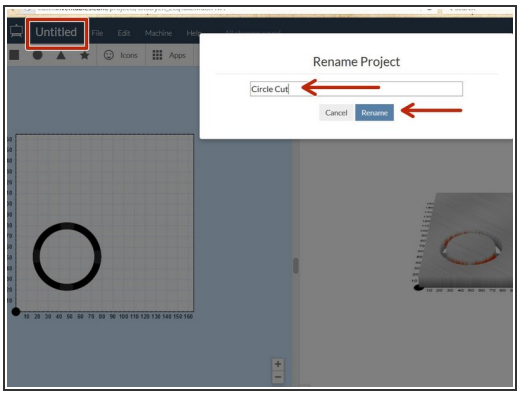


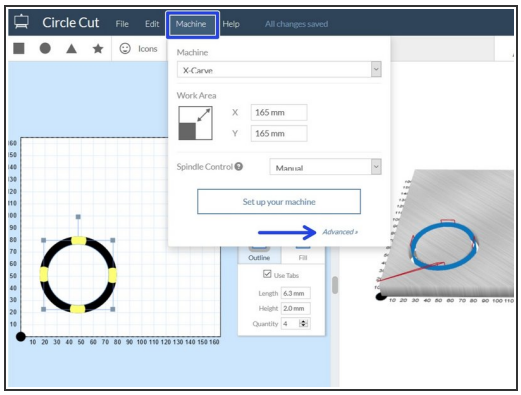


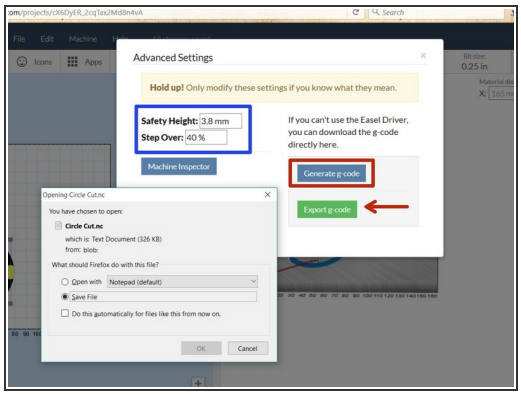


- Next, you have the option to create **tabs**. **Tabs** are used to secure your cut-out part to the material. After the file is complete, you will have to cut the tabs to free the part from the material. The blue arrows in the first image point out tabs in the file preview.
  - In the **Tab** menu, shown in the blue box in the first image, you can set the number of tabs, their width , and their thickness to your liking.
- Next, select your **Bit Size** with the **Bit Size** menu, as indicated by the red box in the second image.
  - In the Bit Size menu, you can select from commonly used bits, as indicated by the blue box in the second image.
  - You may also enter the **Bit Diameter** manually by selecting **Other** and typing in the value, as indicated by the purple box in the second image.
- To view your toolpath(s), select **Show Toolpath** as indicated by the red box in the third image. You'll see a graphical representation of the G-code for your toolpath in the preview window, as indicated by the yellow box in the third image. The toolpath describes the motion of the bit.

Step 5 — Generate Your G-Code





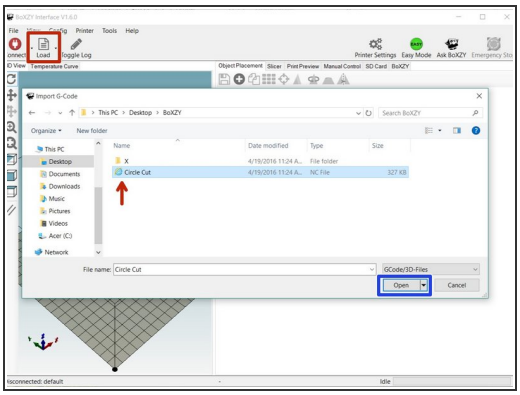


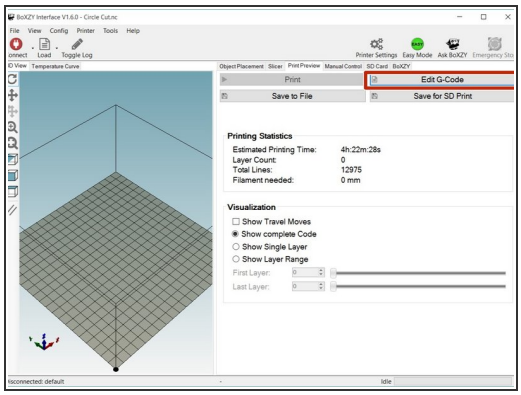
- **Rename** your file by selecting the **Untitled** file name, as indicated by the red square in the first image. Type in your new project title and select **Rename**, as indicated by the red arrows in the image.
- Next, select your shape or SVG import file and then select **Machine**, as indicated by the blue box in the second image.
  - Select **Advanced** from the **Machine Menu**, as indicated by the blue arrow in the second image.
- After selecting **Advanced**, a new window will open where you will see your **Safety Height** and **Step Over %**, indicated by the blue box in the third image.

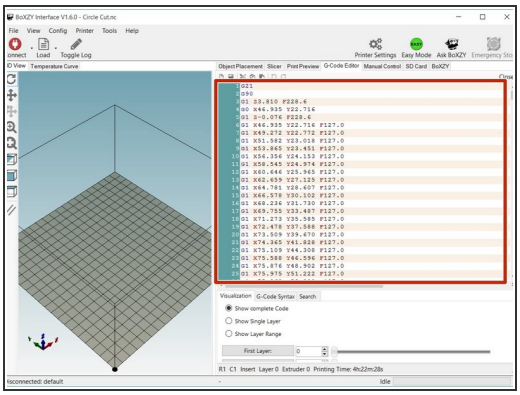
  Safety Height is the retraction height of the bit when it moves between the toolpaths. You can adjust this to avoid clamps or differences in material height.

  Step Over % is the percentage of the bit diameter that actually cuts the material. The smaller this value is, the less material you cut with each pass. This is used primarily in the **Fill** cut of a toolpath. You should leave this at its default.
- Select **Generate G-Code,** as indicated by the red box in the third image. The G-Code will begin to process.
  - The **Export G-Code** button will reveal itself after you select **Generate G-Code**, as indicated by the red arrow in the third image. Select it and a Save window will open. **Save** your file. It will be sent to your web browser download folder.

Step 6 — Open Your G-Code in the BoXZY Interface







- Move the G-code file you just created in Easel from your download folder to your **BoXZY Folder.**
- Open the BoXZY Interface and select **Load**, as indicated by the red box in the image. Select your file and select **Open,** as indicated by the red arrow and blue box in the first image.
- View your G-code in the interface by selecting **Edit G-Code**, as indicated by the red box in the second image.
- Your new G-code will appear in the G-code window, as shown by the red box in the third image.
- Now you have created G-code with Easel! You're ready to set up BoXZY to mill your file.

Step 7 — Playing with Easel

- Easel has a lot of great features to help you create G-code and the milling toolpaths.
- Play around with the Easel interface to learn the ins and outs of the software.
- Return to Creating a Milling File for BoXZY.
- Return to 2.3 CNC Milling with BoXZY.