

Foam Cutter Guidelines

- The kerf of the hot-wire cutter depends on wire speed - and a smaller tip means that the wire will move at a slower speed at the tip than at the root. Slow speeds also lead to warping of the foam. Bear this in mind if you have a small or particularly slender tip profile. I'd advise aiming for larger than the minimum stated in the brief - if your wing comes out horribly melted I'll have to replace it with something that works. Some pictures of an attempt made to cut an aerofoil with a very small tip are provided below. These pictures are an exaggeration as the tip of this particular aerofoil was extremely small. But this should give you a good idea why you should avoid very small tip profiles.

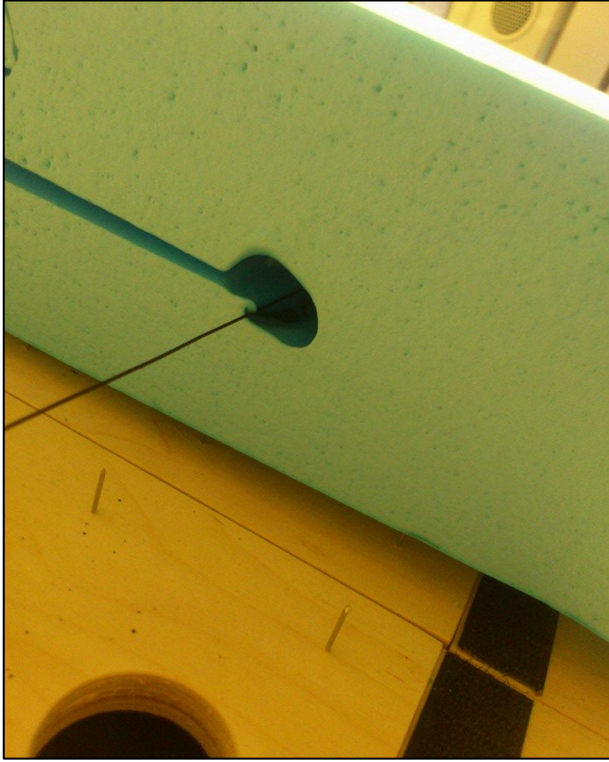


Figure 1 - Wing tip during cutting



Figure 2 - Wing and foam residue after cutting

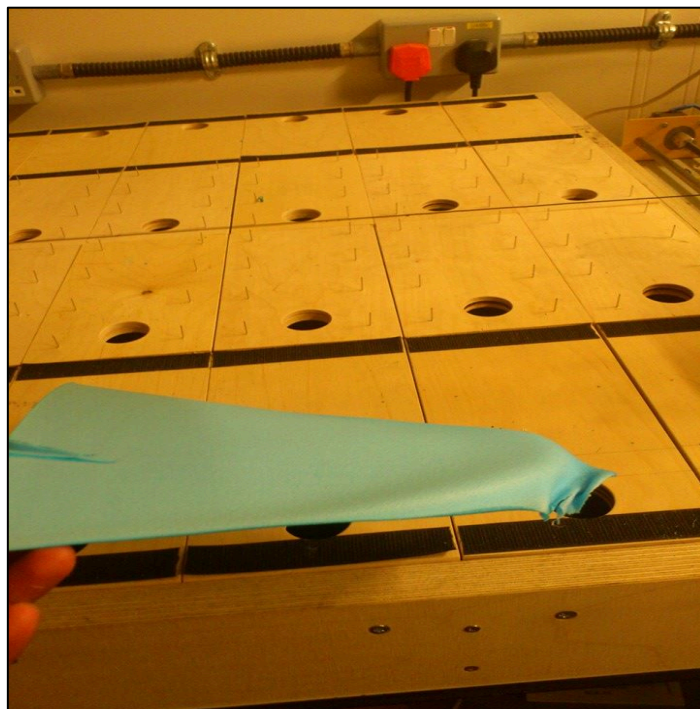


Figure 3 - Wing tip after cutting

- It's difficult to determine whether an aerofoil with a small or thin tip will cut without actually doing it - I'll attempt to cut anything reasonable, but if it fails then I'll have to modify your geometry - if there's not an easy fix then you'll receive a standard profile. You need to balance your aerodynamic drivers with some conservativeness against manufacturing considerations.
- A couple of questions have been about issues with highly dissimilar root and tip profiles - you need to have the same number of coordinates at the root as at the tip, so check this before querying further.

Tips on the graphical output from gCodeGen

- The blue outline in the gCodeGen output figure is the path of the hot wire, including allowance for kerf - this means that the trailing edge will not be closed in the figure, but the wire thickness will close it.
- The black outline is the path of the cutting heads - they'll follow a complicated path, particularly the tip, but if anything is looking like it may cut through the middle of your wing or other unusual behaviour, then check your settings and aerofoils. You have the source code to the gCodeGen script so try to understand why unusual things are happening before you ask in the Q&A discussion board.

Submission files

- A single zip file named 'Group xx' where xx is the group number
- This zip file should contain the following files
 - root.aero and tip.aero files
 - settings.txt file
 - cutting.tap file and cutting-mirror.tap file
- You could also include files for a back up aerofoil shape in the case where cutting of the primary aerofoil fails