

Airfoil Design with SolidWorks

➤ choose and find an airfoil design file

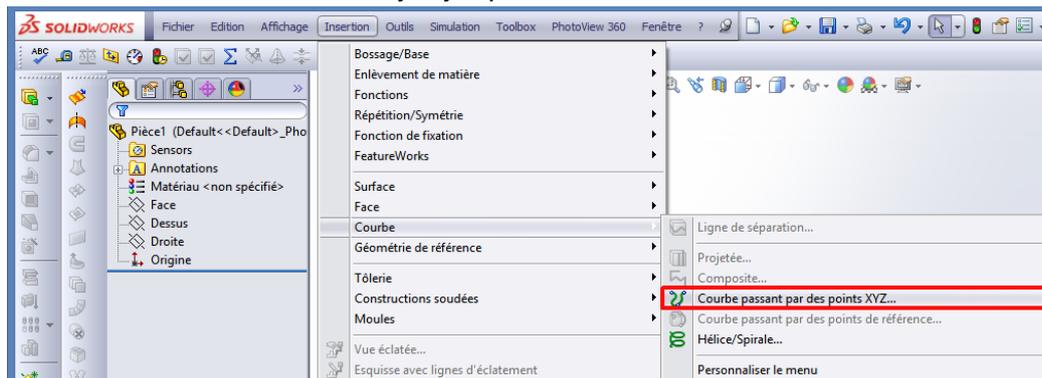
Get it from the web :

<http://airfoiltools.com/> has a nice database

- choose yours
- download the dat file
- change the file type from ".dat" to ".txt"; for exemple : "fg2.dat" → "fg2.txt"
- edit (text editor) the file to remove the comments and add a 3rd column of 0 for the z axis;

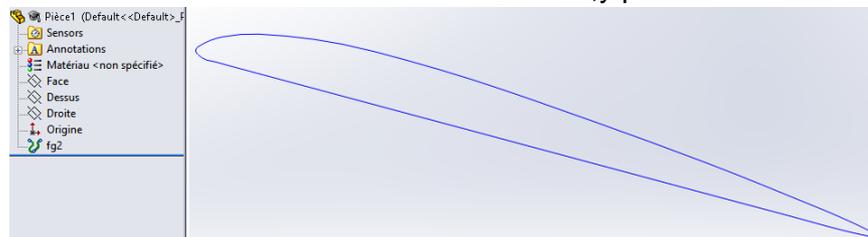
➤ Using our profile with solidworks

- open SolidWorks and create a new part
- use the curve by x,y,z points from the curve sub-menu of the insert menu



- use the curve by x,y,z points from the curve sub-menu of the insert menu
- use the .txt file you just made

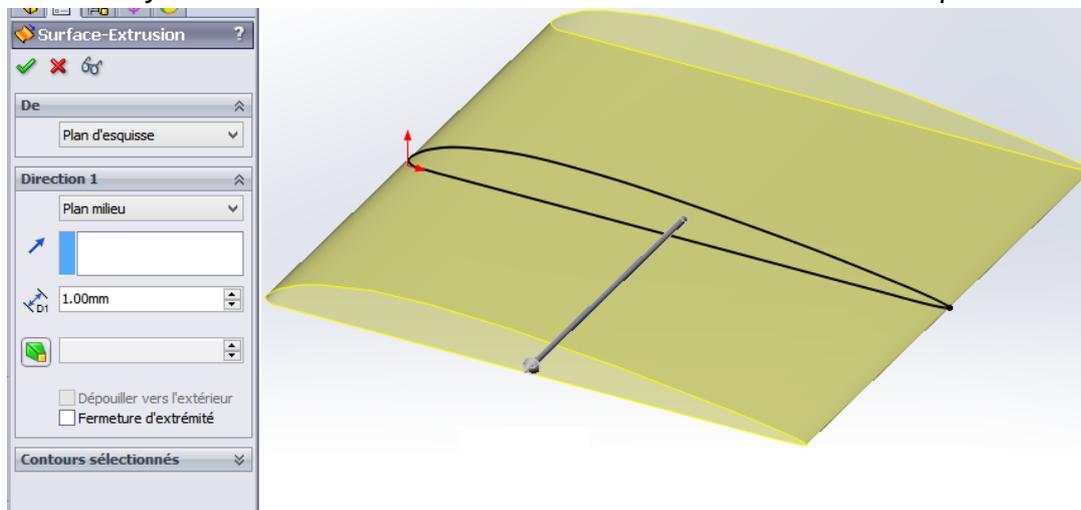
You should now have an airfoil curve in the x,y plane



➤ Sketch drawing:

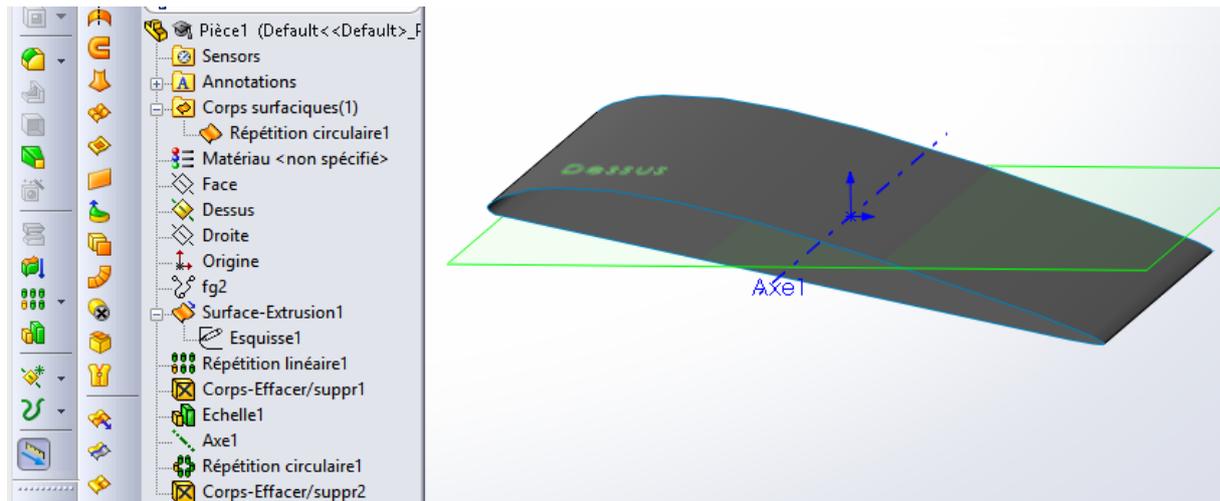
- enter the sketch drawing mode on the front plane
- select the curve and use the convert entity button 

For an easy work it's best to create an extruded surface  from middle plane with this sketch



➤ Now you can move/rotate/resize your surface body to match what you want

Ex:



- I moved the surface to have the middle chord on the origin
- I scale the surface to 15 mm (as usually the .dat file give a 1 unit chord airfoil)
- I rotate the airfoil to 15°

I usually use the body delete on all used surface so later my CFD soft will not use them

➤ create the solid, 2 methods :

a) using surfaces

- close the surface with planes 📏 both sides
- sew the faces and try to make a solid 🛠️

b) using solids

- enter the sketch drawing mode on the front plane
- select the surface and use the intersection button ✂️
- extrude to get your solid with 📏 or 📏 if you search for non rectilign and/or twisted airfoil

Et voilà!

