

Shijia Zhou

Personal SolidWorks Project

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Choose the final project for me is fairly hard for me because at the first I was wondering what things is cool and suitable for my ability to do. I researched guitar and helicopter but it is not the one I want. After a while, I get inspiration by the first project, zero energy house. We discussed use wind power to provide energy for the house, so I looked up some pictures for wind turbines. Finally, I choose to design a wind turbine blade and hub, which makes me feel interested and curious.

I knew it is a difficult project and it would take a lot of time to work on it. I definitely learned how to use rotate entities, convert entities and use the curve guide to make the loft more ideal. For the wings, I created ten reference plane and on each of then insert the different data to create airfoils and then use loft to make a wings. For the hub, I made a column and draw some lines. Then use circular sketch pattern to make three same part and finally used extruded cut. However, the most difficult part is how to get the dimensions for each part and then let assembly can fit together. I researched wind turbine to get some databases. But still a lot of part need to figure out. By self-explore study and asking TA, finally, I finished all the part.

After this project, I become more familiar with SolidWorks. Not only the technique I learnt in class, but also some other new features, such as how to use mates, rotate entities and circular sketch pattern. Moreover, I understand use assembly instead of trying to sketch in the same plane and be able to know which feature should use to get the results. In the future, I still would try my best to improve my SolidWorks skills and learn more new techniques. Overall, due to this project, I am much more comfortable with the program.

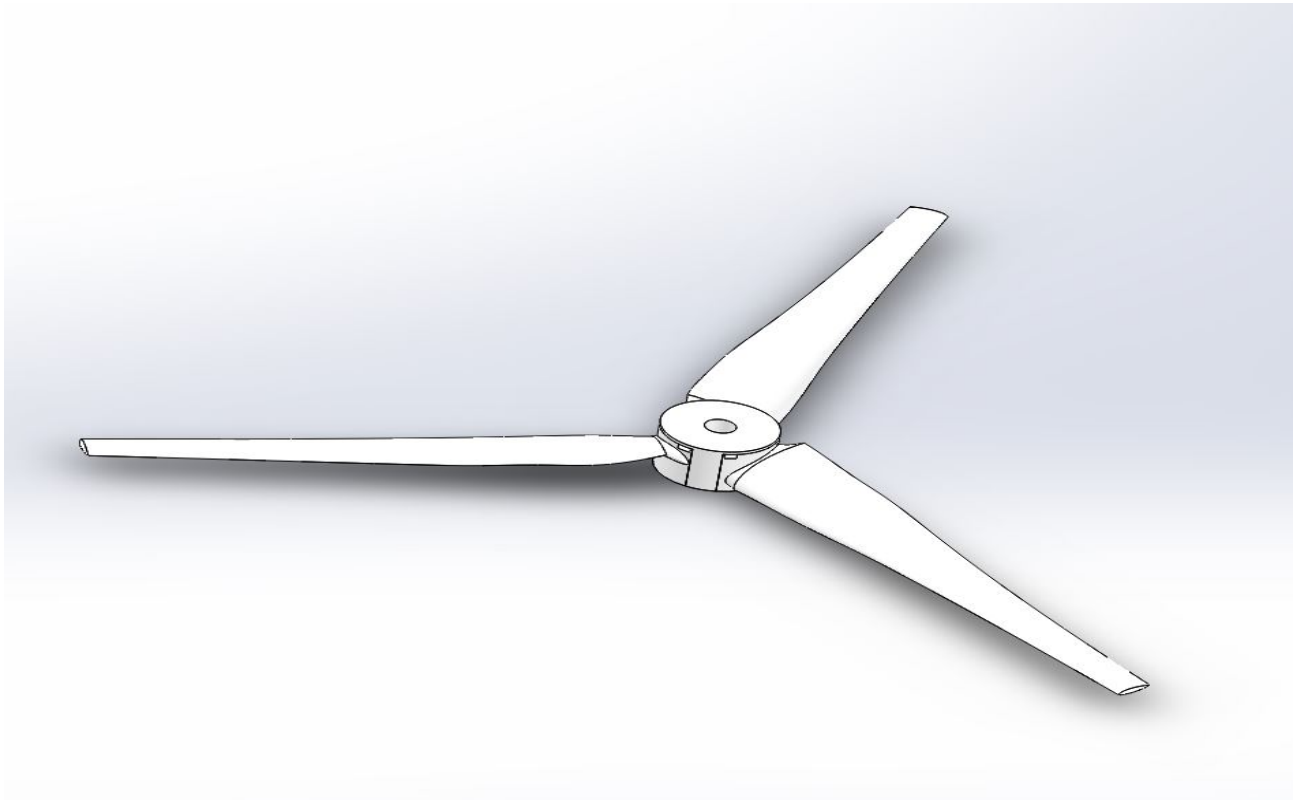
## Comparison to a Real Wind Turbine Blade & Hub



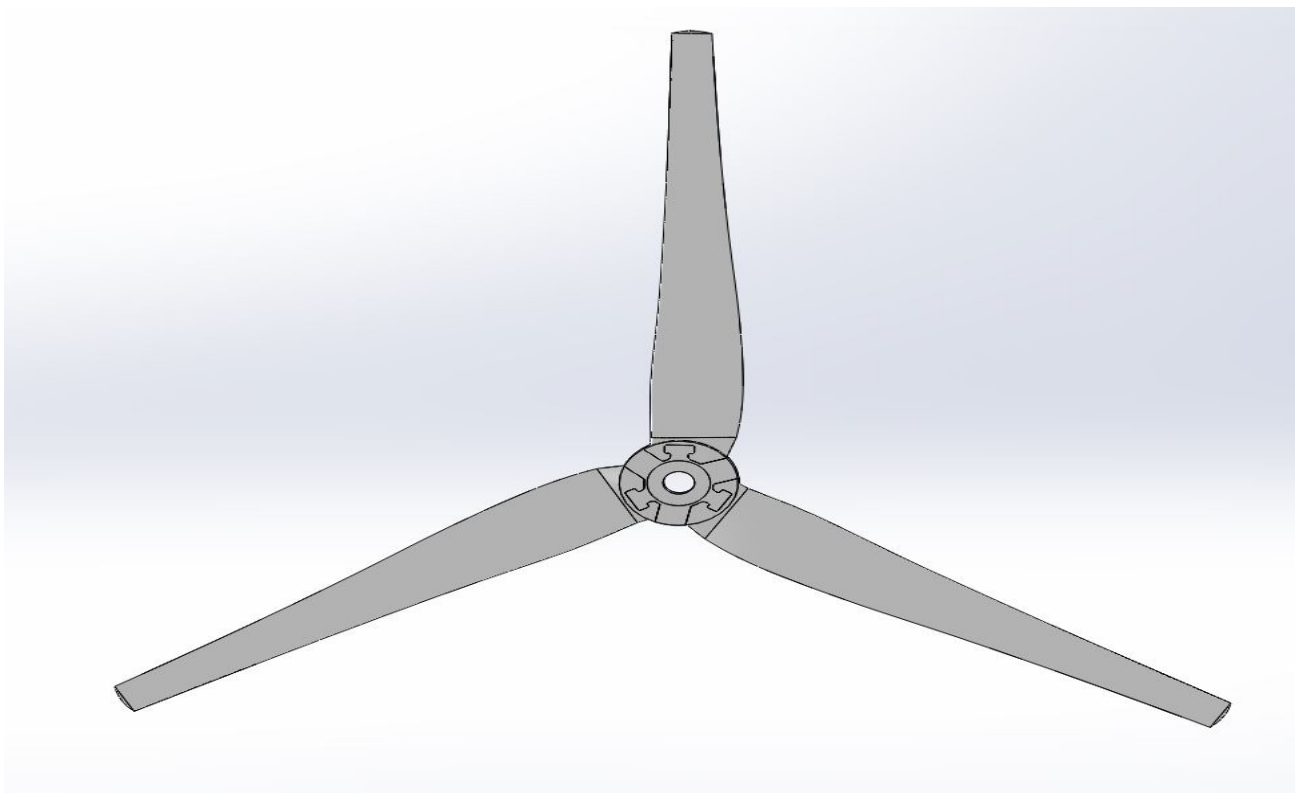
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<http://www.instructables.com/files/deriv/FCJ/OKS3/H1DVMHXD/FCJOKS3H1DVMHXD.LARGE.jpg>

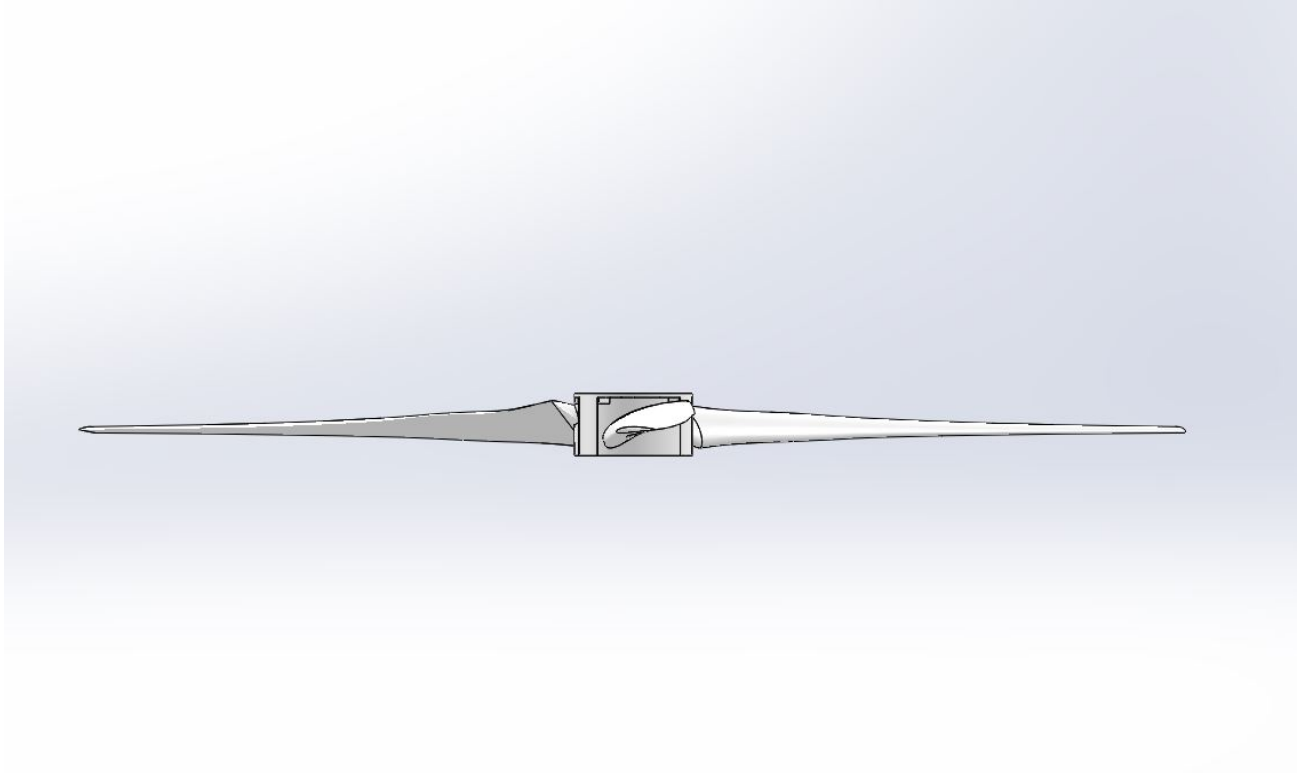
Isometric View:



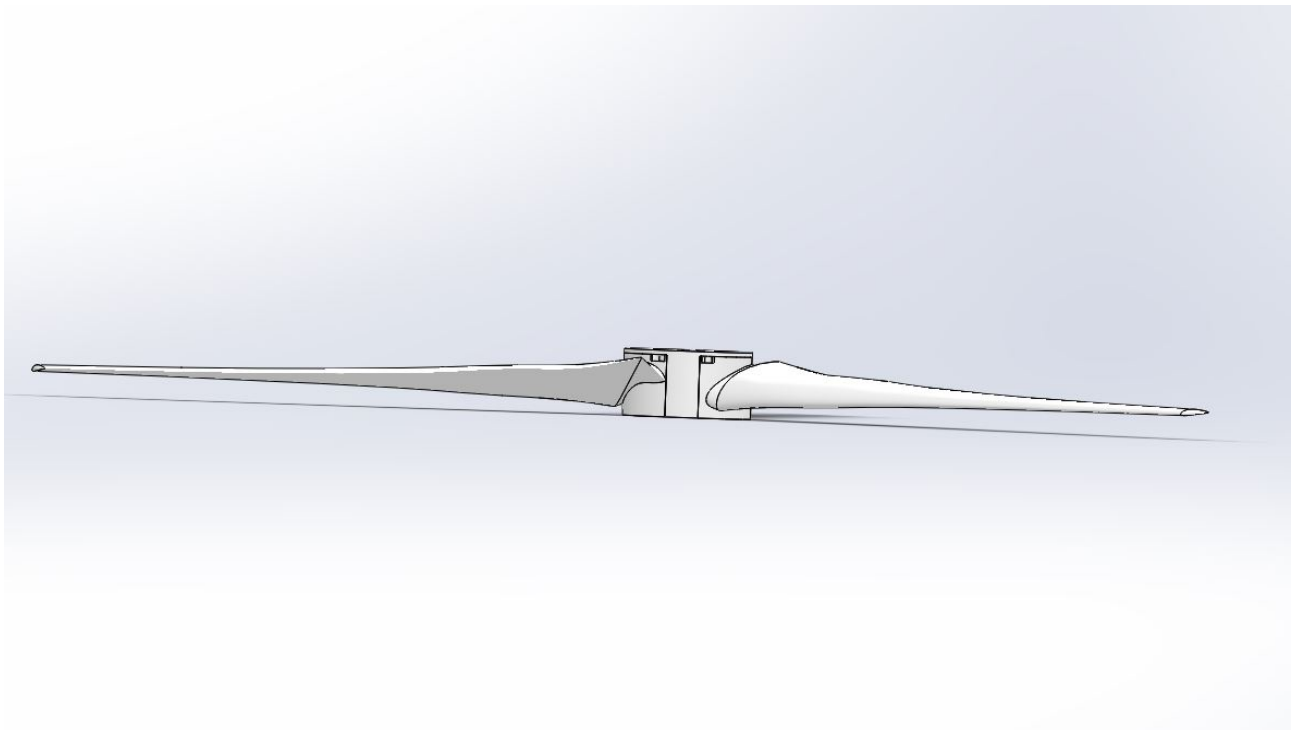
Top View:



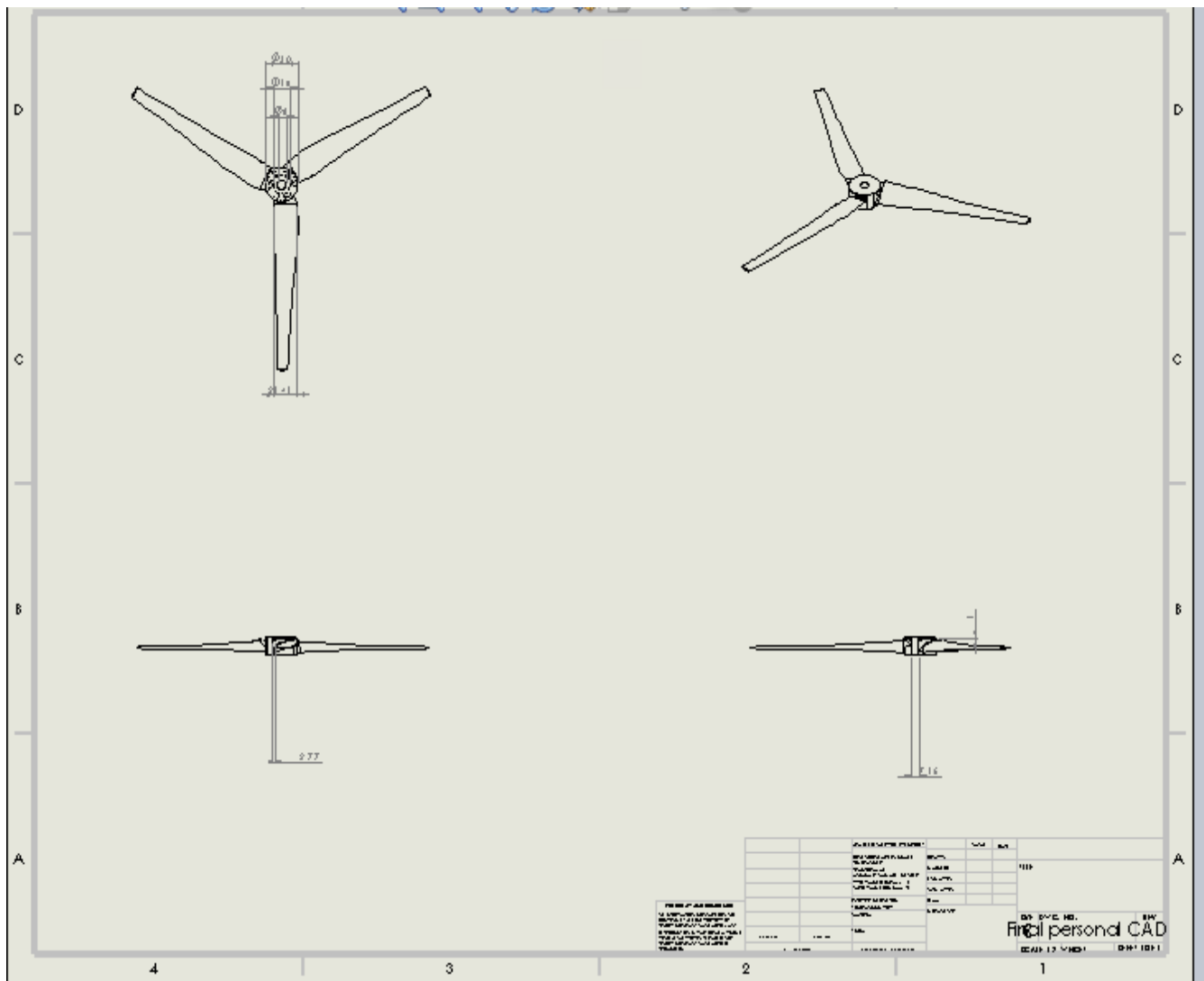
Front view:



Right View:



The drawing with the overall dimensions of the project shown:



-Airfoil Database: [http://m-selig.ae.illinois.edu/ads/coord\\_database.html](http://m-selig.ae.illinois.edu/ads/coord_database.html)

-Airfoil used: NACA4415