



## Mechanical/Environmental Sustainability Project

### Unmanned Aerial Vehicle Design – Phase II

#### Mission Statement

Design and build an efficient Unmanned Aerial Vehicle (UAV) to lower the cost compared to the current market using SolidWorks CAD software and rapid prototyping 3D printers.

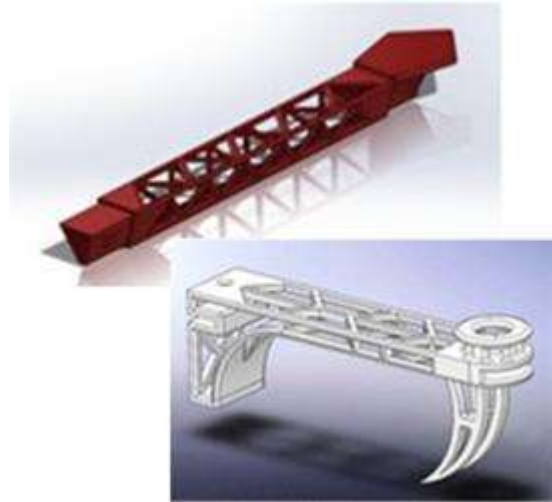
#### Synopsis

Early on the team decided to breakout into two separate design teams due to logistics and to essentially have a best design demonstration.

The first teams design was constructed of a truss design to help minimize the weight and amount of plastic being used. The truss design allowed the team to run the electronic cables through the arm instead of exposing the wires. It also featured an external battery strap that required strips of Velcro or zip ties. The UAV also has insert able arms that must be screwed in to “lock” into place. The motor mounts required some drilling and separate motor mount plates. After the first build improvements in ease of use were easily identified.

The second team targeted areas where it might be confusing or too time consuming to assemble all the parts. They first made the arms clip-in instead of having screws to assemble. A battery compartment was designed so that you can open and close it for quick and easy access. Fillets were added where needed to help reduce high stress areas and to make the structure more stable. A significant new feature was added, mainly, a camera mount specifically designed for a Go-Pro camera. The motor mounts were changed to enclose the motors and to have a separate mounting plate. After several design iterations the final design resulted in a very light weight UAV.

Two teams, two designs, resulting in two UAV flying in the air. In the STEM community we live in today there never is just one “best” anything. This project bore this out.



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