3D Printed Aircraft Competition
by Plane Jane

Team Members
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Problem Statement
Design a primarily 3D printed aircraft with the goal of maximizing flight duration. Its path of flight must not deviate for more than 3 seconds outside of a designated 300’ x 160’ x 30’ space. Motor power may only be used during the initial 8 seconds of flight.

Final Product

CAD Design

Test
Wing loading tested to see how strong our wing was, where the wing would break, and how much weight it would take to break it. Our goal was to have our wing withstand twice the weight of our whole plane because the maximum force it would undergo during flight is two g’s. Our wing actually held almost 4x the weight of our plane!

Design Analysis

Three airfoils were analyzed in ANSYS. The SD7037 and ALB6020 performed the best with the lowest static pressure acting on them. The SD7037 had the highest lift-drag ratio at a 7 degree angle of attack. The ALB6020 had the highest lift-drag ratio at a 0 degree angle of attack.

Prototype Process

Stress Distribution in Expected Flight Conditions