Team 508: SAE Aero Design Competition
Geometric Integration

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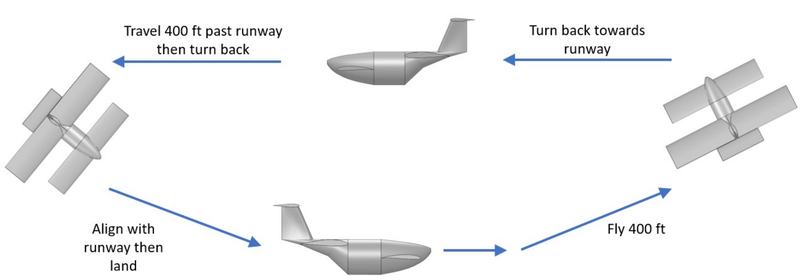
Project Objective

- To design and manufacture a 3D printed radio controlled airplane within the rules of the SAE Aero Design Competition that can complete the required flight path

Flight Mission Requirements

- Two minutes and 100 ft. to take off
- One minute to unload cargo

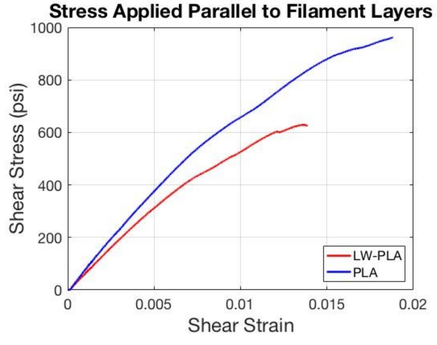


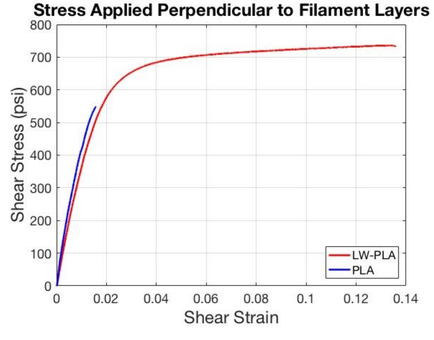
Geometric Requirements

- Dimension
  - Maximum Wingspan of 120”
  - Maximum weight of 55 lbs.
- Material
  - No lead or fiber reinforced plastics
- Cargo
  - Must carry a size 5 soccer ball and one pound box weight

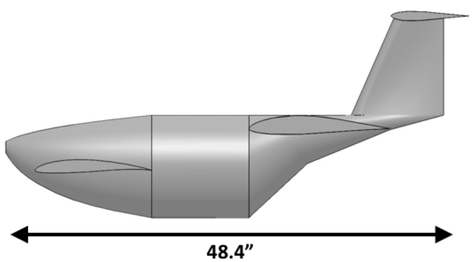
Material Selection

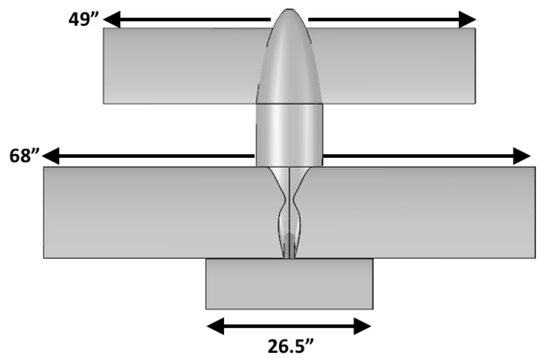
PLA & LW-PLA Shear Stress-Strain Curves





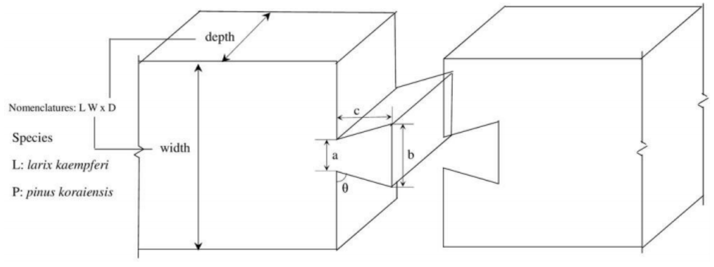
Final Plane Design





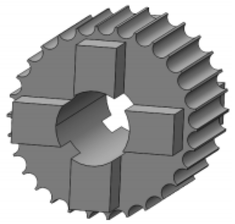
- Canard chord length: 12”
- Main wing chord length: 14.5”
- Tail chord length: 8”

Woodworking Exploration



- Dovetail used to connect canard pieces
- Reduces amount of spars needed
- Lowers the weight of the plane

Control Surfaces



- GT 2 gears and belt fit within the profile of the wing
- Used to actuate control surfaces

Control Surfaces

- Plane takes off in 60 ft. at 25 mph
- Test flight done in Tallahassee with the Seminole RC Club
- Same flight path and competition rules will be followed