Project Overview

Sponsor: Phil Benham

Problem Statement: Benham Aviation Services is looking for an automatic inflatable barrier that can be quickly deployed and retracted across a runway by one person in order to prevent unauthorized aircraft from landing.

Needs:
- Exhibit appearance of a barrier
- Be self retracting
- Withstand desert environment
- Be solar powered
- Be harmless to an aircraft
- Operable by a single person

Final Design Process

Initial Design Sketch

Preliminary Full System Prototype

Final Assembled Device

Testing

Retraction and Deployment Testing

Inflation and Deflation Testing

Component Heat Tolerance Testing

Sand Resistance Testing

Electrical Design

Electrical Components Enclosure: Solar Charge Controller and PCB Board

System Level Diagram

Complete System Level Diagram of Mechanical and Electrical systems

CAD

Final CAD Design Exploded View

CAD Legend Table

Team Members

Allyssa Elkins - Chassis Lead
Nick Wolford - Inflatable Lead
Jomari Paguia - Control Systems Lead
Marc Tawangco - Electrical Lead
Benjamin Avila - Mechanical Lead
Jason Dziewczynski - Inflatable Lead
Jenifer Rios - PCB Lead
Bianca Yusif - Air Blower Lead
Khalid Nunow - PCB Lead
Sean Connolly - Battery/Power Systems Lead

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