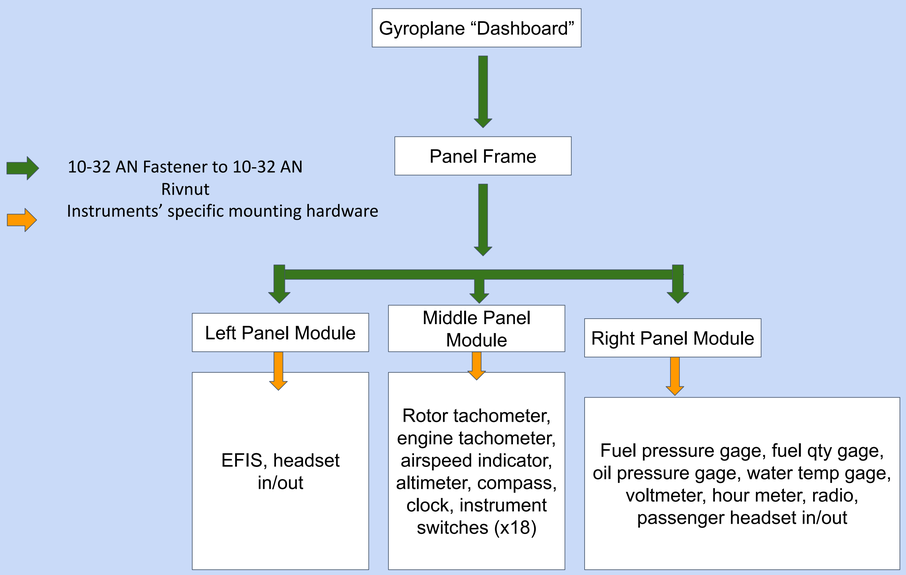
Gyroplane Instrument Panel
By: Ace Gyro Designs
Sponsored by: Popular Rotorcraft Association

SAN DIEGO STATE UNIVERSITY

Problem Statement:

The RAF 2000 gyroplane was designed in the 1980's, and possesses various design flaws. The PRA requested that our team designs, tests, and installs an instrument panel that can support an electronic flight information system (EFIS). This new panel will improve the safety of the aircraft by reducing pilot workload.

System Level Diagram:



Design Advantages:

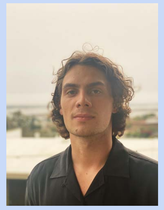
- Fully modular design allows for easy maintenance and accessibility.
- Panel can be upgraded or modified easily and at low cost.
- EFIS improves flight safety by reducing pilot workload.

Team Ace Gyro Designs:

Sam Reilly
Team Lead

Callie Johnson
Manufacturing Lead

Kris Ashley Gallardo
Manufacturing Lead

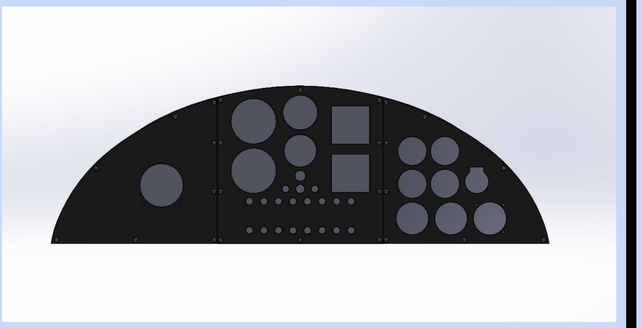


Brendan Good
Design Lead

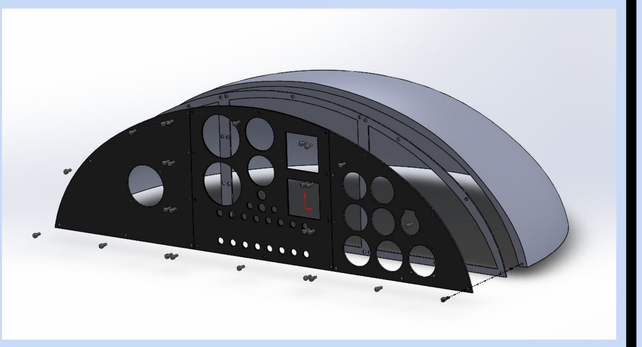
Design Considerations:

- Design for the complex geometry of the fiberglass dashboard.
- Design for our panel to withstand the vibrations induced by powered flight.
- Carefully space instruments, switches and fuses so as to not create geometric interferences or stress concentrations.
- Design must withstand load of instruments and accommodate for forces of flight.
- Plan instrument layout such that the instruments can be easily read every 7 seconds.

Our Design:



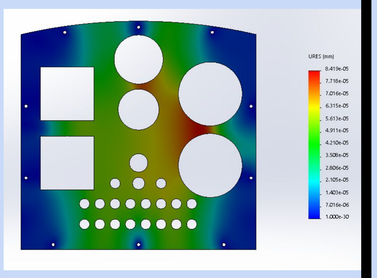
Front View



Exploded View

Analysis:

Our team performed exaggerated force analyses on the panel modules to simulate the forces induced during flight.



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