This project encompasses designing, fabricating, and installing a mounting system for a fuel tank redesign. This solution will be available as a kit package and components were designed to be modular. The main tank will be mounted via an adhesive-bracket system which will be attached to the keel of the vessel, with vibration dampening pads interfacing between the tank and keel. The auxiliary tanks will be mounted to the mast using a clamp and an adjustable extruded aluminum cradle with a pin bracket fastening system.

**DESIGN ADVICES**

- **KIT-READY**: Our system is designed to be placed within RAF kits, featuring easily manufactured components with a straightforward installation process.
- **STABLE**: Our system is designed to exhibit superior stability, achieving an FAA-specified safety factor of 1.5 in various flight scenarios.
- **MODULAR**: Our system is designed to be modular and adaptable to different RAF-2000 styles. The auxiliary system can be adjusted to fit various RAF configurations.

**PROBLEM STATEMENT**

Finite element analysis was conducted on various components within the design to verify the strength of components before physical testing occurred.

**TESTS AND RESULTS**

- **Load Test**: A load test was conducted on our auxiliary mount to verify the integrity and strength of our mast clamping bracket.
- **Deflection Test**: A load test was conducted on our auxiliary mount to determine how far the aluminum extrusions deflect under extreme flight conditions.
- **Center of Gravity**: Mock components were simulated in SolidWorks to determine the aircraft’s center of gravity after the system is fully installed.

**FINAL PRODUCT**

Isometric view of the installed main tank.

CAD model of the full system.

Close-up of the auxiliary fastening mount.