Long Endurance Multi-Rotor Drone

Project

Develop a multi-rotor drone with the following characteristics:

- Has a 2 hour flight time
- Can carry a 5 kg payload
- Fuel source readily available
- Autonomous flight capabilities
- Easily transportable by pickup truck

System

Structure Subsystem

- Chassis
  - Octagonal Main Plate
  - Chassis Rails
- Arms
  - Landing System
  - Motors
- Payload Systems
  - Control system plate
  - Payload Rails

Electronics Subsystems

- Pixhawk 2.4.6
- Power Distribution Board
- Electronic Speed Controller
- Frsky RC Receiver
- GPS Telemetry

Power/Motor Subsystems

- 2x Foxtech Engine 2.4 kW
- 2x 12S Batteries
- KDE Motors
- Propellers 27.5”x8.9

Results

Final Dry Weight: 40.26 lb
Final Dimensions: 2.6 ft x 3.3 ft x 1.5 ft
Cost to Build: $16,130.66

Thank you to Idaho National Laboratories, Jackson Graham, and Jeremy Bradford.

Trenton Griffiths, Jacob Kaiser, Zachary Nelson, Patrick Ollerton, Zachary Page