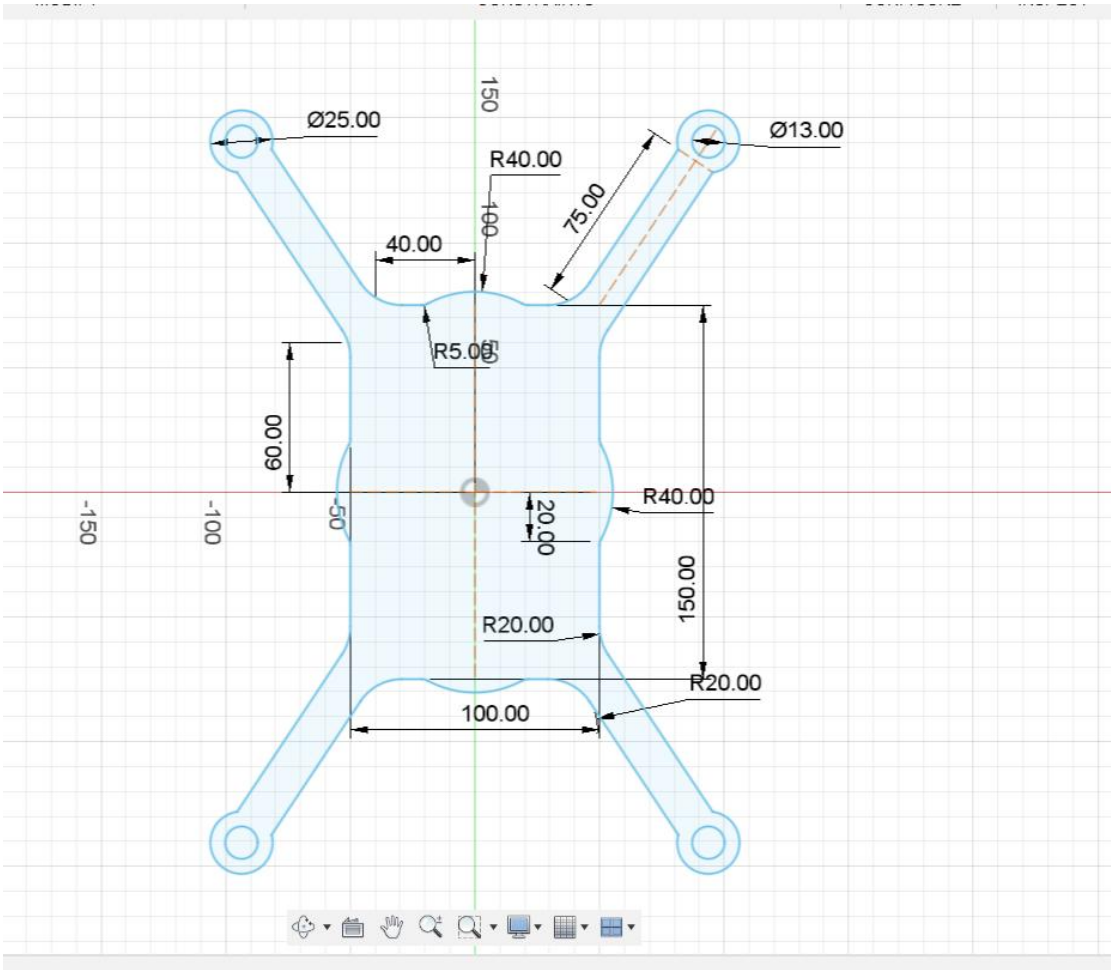
Screen shot of the top down layout sketch



Full parts list

1. Frame
2. Motors
3. Electronic Speed Controllers (ESCs)
4. Flight Controller
5. Battery'
6. Power Distribution Board (PDB)
7. On Screen Display (OSD) Board
8. Camera
9. Video Transmitter (VTX)
10. Transmitter and Receiver
11. Monitor Setup

Calculations

Average Amp Draw (AAD): Determine the average amp draw by dividing the battery voltage (V) by the product of the drone's total weight (AUW) and its power to lift one kilogram of mass (P). This displays the drone's average current draw while in flight.

Flying Time: By dividing the battery capacity (Capacity) by the average amp draw (AAD), you can get the flying time after you know the average amp draw (AAD). Make sure you convert the capacity (from mAh to Ah) if needed to convert to ampere-hours.

Method 01

Calculate Battery Energy
Battery Energy = Battery Capacity × Battery Voltage / 1000
Battery Voltage = 4× 3.7V = 14.8V
Battery Energy = 3000mAh ×14.8V / 1000 = 44.4Wh

Calculate Average Power Consumption
Average Power Consumption = Average Current Draw × Battery Voltage
Average Power Consumption = 10A × 14.8V = 148W

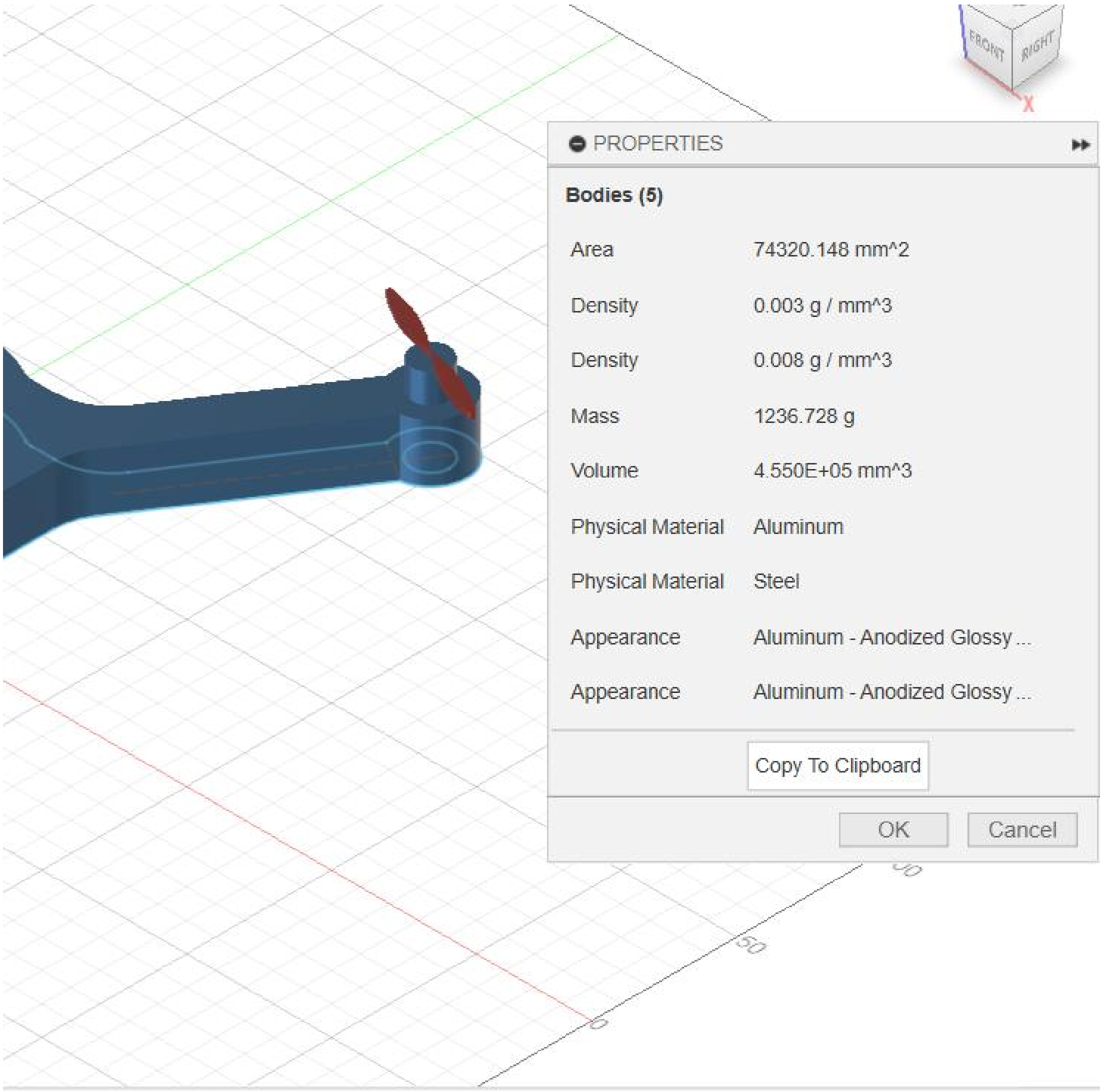
Calculate Average Power Consumed by the Motors
Average Power Consumed = Average Power Consumption / Efficiency
Average Power Consumed by Motors = 148W / 1 = 148W

Estimate Flight Time
Flight Time = Battery Energy / Average Power Consumed by Motors
Flight Time = 44.4Wh / 148W = 0.3 hours * 60 = 18 minutes

Method 02

Average Amp Draw (AAD):
AUW = 1236.728 g = 1.236728 kg
P = 170 W/kg
V = 36 V
AAD = (1.236728× 170) / 36 = 5.826 A

Flight Time:
Capacity = 2000 mAh = 2 Ah
Discharge = 100%
Time = (2×100%) / 5.826 = 0.343 hours = 21 minutes



On screen display functionality with GPS location and battery life.

You will require a flight controller including OSD capability, a GPS module for position data, a battery voltage sensor, & an OSD display unit in order to integrate on-screen display (OSD) function with GPS location and battery life within the drone design. Make sure everything is compatible and configured correctly so that important flight data, such GPS coordinates or battery level, may be shown in real time while in flight. This configuration improves flight enjoyment and situational awareness.

Multiple flight modes including altitude/position hold and return to home.

A flight controller that supports altitude/position holding and return to home (RTH) is necessary, in addition to extra parts like GPS, barometer, an accelerometer, and maybe a compass, to incorporate numerous flying modes into the drone design. To enable these modes and guarantee accurate performance, adjust the flight controller's software. These features improve flight stability and safety by enabling the drone to sustain steady flight at a specified height and location and, when needed, to automatically return to a predetermined home point.

LIST OF PROPOSED FUNCTIONALITY:

1) The On-Screen Display (OSD) offers improved flight monitoring by providing real-time GPS location and battery life information.
2) Altitude/position hold, return to home (RTH) for stable flight, and automatic navigation are among the multiple flight modes available.
3) First-person view transmission for an immersive flying experience and real-time monitoring is made possible by the FPV capability.
4) GPS Positioning: RTH functions, waypoint tracking, and precise navigation are all made possible by the GPS module.
5) Enables accurate altitude and position hold with the integration of an accelerometer and barometer for stable flight performance.
6) Configurability: Permits user preferences to be reflected in the OSD layout, flight modes, and other settings.
7) Safety Features: To improve safety during flight, low battery return and signal loss recovery are implemented.
8) Easy-to-use controls make it simple to move between modes and access OSD information, which improves the user experience in general.

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i. Due to its flexible functionality, this drone design can be applied in a number of industries, such as:

ii. Taking excellent pictures and movies from the air to use in cinema, advertising, real estate, and tourism promotion.

iii. Land surveys, topographical mapping, and the observation of building sites and environmental changes are all included in surveying and mapping.

iv. Examining pipelines, electricity lines, bridges, and other infrastructure for safety and upkeep is known as infrastructure inspection.

v. Search and rescue operations involve helping to find survivors or missing people in dangerous or isolated locations.

vi. Agriculture: keeping an eye on the health of the crops, evaluating the field, and maximizing the use of pesticides and irrigation.

vii. Emergency Response: Giving first res ponder in the event of an accident or natural disaster situational awareness.

viii. Security and Surveillance: Keeping an eye on wide areas for security reasons, such borders, industrial sites, or events.

ix. Media and Entertainment: Adding aerial video and distinctive viewpoints to live events, concerts, and sports broadcasts to improve them.

x. Environmental Monitoring: Researching wildlife, keeping tabs on deforestation, and keeping an eye on changes to the environment for the sake of conservation.

xi. Delivery services: Getting small parcels or medical supplies to hard-to-reach places.