SECURITY DRONE SYSTEM

INTRODUCTION

The project is mainly about developing a perfect security drone system covering a specific area that may not be able to be covered by humans, with low cost by reducing human resources and more accuracy with no human mistakes and blind spots. The Security Drone System will deal with the rising theft, especially in difficult-to-surveil places like remote outdoor power plants. This autonomous system eliminates the need for traditional security personnel and provides continuous, round-the-clock surveillance and response capabilities. As a result, it provides advantages in various industries that demand higher security standards.

PROBLEM STATEMENT

Private and military security organizations are responsible for safeguarding remote and vulnerable sites that need cost-effective, accurate, and 24/7 security coverage; our Security Drone System is a solution. Unlike conventional security measures, our product leverages advanced sensors, artificial intelligence, and autonomous flight to provide continuous surveillance and rapid response capabilities.

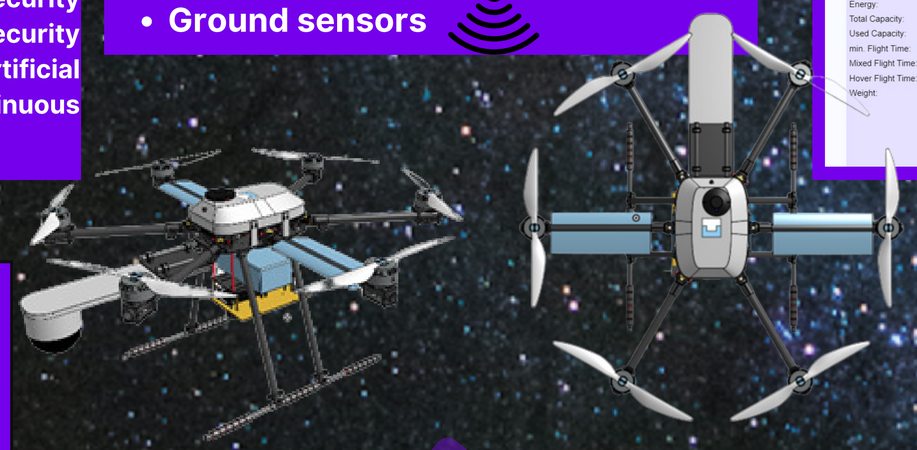
CONSTRAINTS

- One of the most critical constraints that we face is the cost
- IR motion sensors have false positives and are affected by weather.
- Difficult climatic conditions.
- Integration of multi-systems into a single system
- Scalability

PROTOTYPE DESIGN

The system consists of:

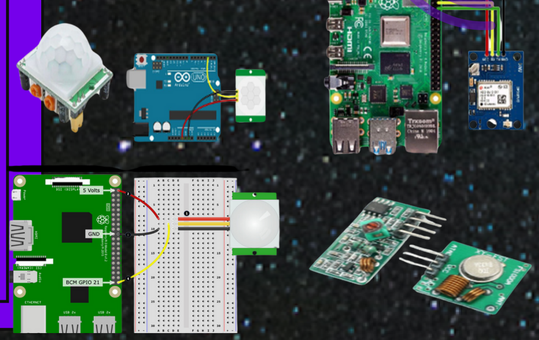
- Drone
- Charging box
- Ground sensors



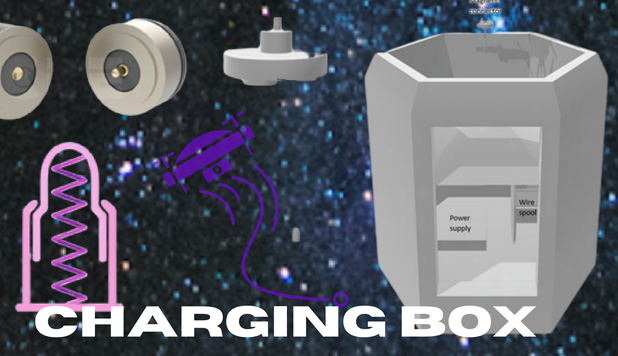
TARGET SPECIFICATIONS

Metric	unit	acceptable value
weight	kg	(15-20)
airspeed	km/h	(50-60)
oprtationg temperture	celsios	(-10 to 40)
virtical speed	m/s	(4-5)
response time	sec	<30
charging time	min	(60-90)
maximum payload	kg	(0.3-2)
maximum weight to take off	kg	25
camera reslution	pixel	(2-50)
altutide	km	3
flight time	min	(22-28)
range	km^2	(6-8)
Battery	mAh	(10000-18000)
Diameter wheelbase	mm	(840-860)
Weight of airframe	kg	<3
Material	list	-
Range covered	km	(4-8)

GROUND SENSOR

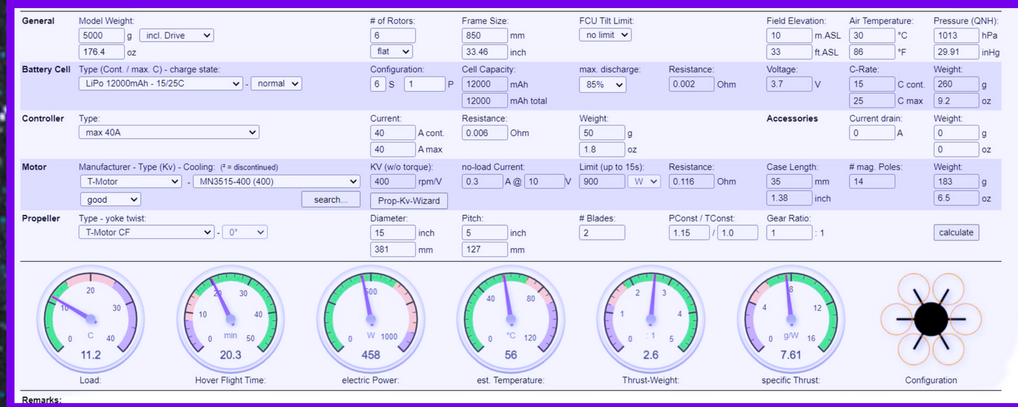


CHARGING BOX



TESTING / VALIDTION

simulation using Ecalc +- 15%



CONCLUSION

The system can enhance surveillance and security measures in remote and vulnerable areas, thereby minimizing reliance on traditional security personnel. It may revolutionize the management of security systems, especially in challenging environments.

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