

AIR SURVEILLANCE

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Introduction

Security is a primary objective of any government or commercial organization who deal with large number of people at any given amount of time. This involves a constant monitoring of such areas and thus surveillance of such situations is very important in establishing a secure environment for the people. Monitoring becomes a very difficult issue without the aid of any of the electronic devices such as cameras and CCTV. Motivation for choosing this project is also due to passion for aviation. The project consists of propeller driven gas filled blimp with a wireless camera mounted on it. The propellers are controlled using a radio controlled joystick thus providing the needed navigation once airborne.

Objectives

- To design the wireless link between the transmitter and receiver in order to control the gas filled blimp wirelessly.
- The blimp required to lift the system is also a major constraint as blimp is not readily available and thus we had to search for other alternatives.
- After implementing the airborne system, a wireless camera has to be fixed such that the area below the system could be monitored.
- The primary concern for this project is the weight factor and that the overall system has to be light enough without sacrificing the important components onboard.

Methodology

Short range wireless communication is the cheapest and reliable medium when it comes to operating wirelessly garage doors, remotely turning on/off the lights or activating any switches or equipments remotely.

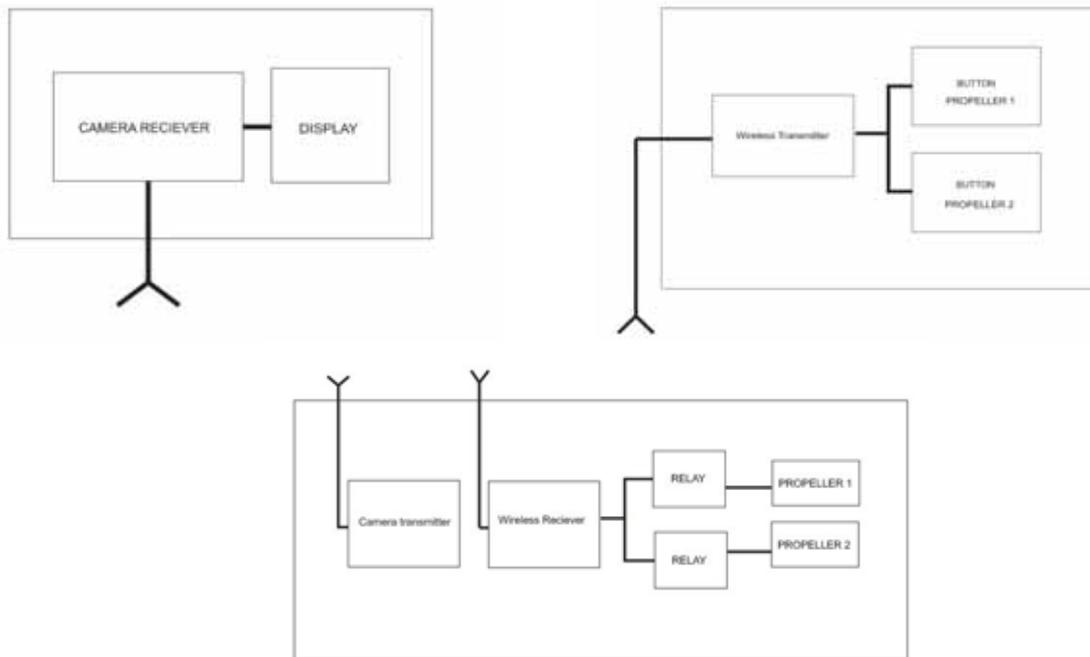
Unlicensed band is used for controlling the path of the gas filled blimp, and also relaying back the video feed from the wireless mounted camera to the ground-staff.

The Uhf band operating on 433 MHz is chosen for this project as to keep interference at a low level and too limit the length of the operating antenna to a few inches.

Encoder/Decoder chips from Holtek Semiconductors are used at work on the transmitter side for encoding as well on the receiver side for decoding.

The transmitter is powered by a 12 volt Key chain transmitter battery for compactness or for ease of availability.

Block Diagram:



Block Diagram of Air Surveillance

Results and Conclusion

The control of the blimp attained during the morning at indoors was 120mts. But the same distance decreased to about 90mts at noon. The images transferred by the camera were in the range of 50 feet. The images received in this distance were clear and clean. After the distance of 50 feet the images resulted in the distortion.

The blimp was filled with helium. We found out that the total weight of the helium required to make the total system air-borne was more than the weight of the total setup plus the weight of the balloon.

This prototype which defines the cheapest way of implementing the idea of air surveillance. With the increase in technology and bigger budget this idea can be made into a large scale models which then could be given to various security agencies and even in the police.

Scope for future work

Our project has a major drawback of the weight factor. The power supply accounted for the maximum weight in our system. And, therefore our project was unable to attain the maximum height.

With the advent of new technology, we look forward for a lighter power supply and also smaller propellers to drive the system more efficiently than at the present.