

QUADCOPTER DESIGN AND APPLICATIONS IN VARIOUS FIELDS

Harshavardhan, Rishabh Kumar Singh, Rachitkaushik, Saif Ahemad Khan

ABSTRACT

Now days in the time of advance technology creates many positive as well as negative effects into the world.

Onhand, it helps the mankind to make their life easy and comfortable. And on other hand it will create the chances of big destructions. Quadcopter is one of that thing or technology which can become the boon for the mankind and on the other hand it can prove curse for the same. In this paper, we will represent how mankind can be effected by this and how we can use the Quadcopter in the positive way by improving some basic functions of any Quadcopter.

Here we discussed the Quadcopter as small as well as large UAV (Unmanned aerial vehicles). Which makes the importance of Quadcopter more at this time? When the technology advancement is in its boom it is the demand of the society that new and advanced Quadcopter should be bring into the role. Not only for safety but also to makes our country equal to others in terms of advance technology, advance thinking and advance safety purposes.

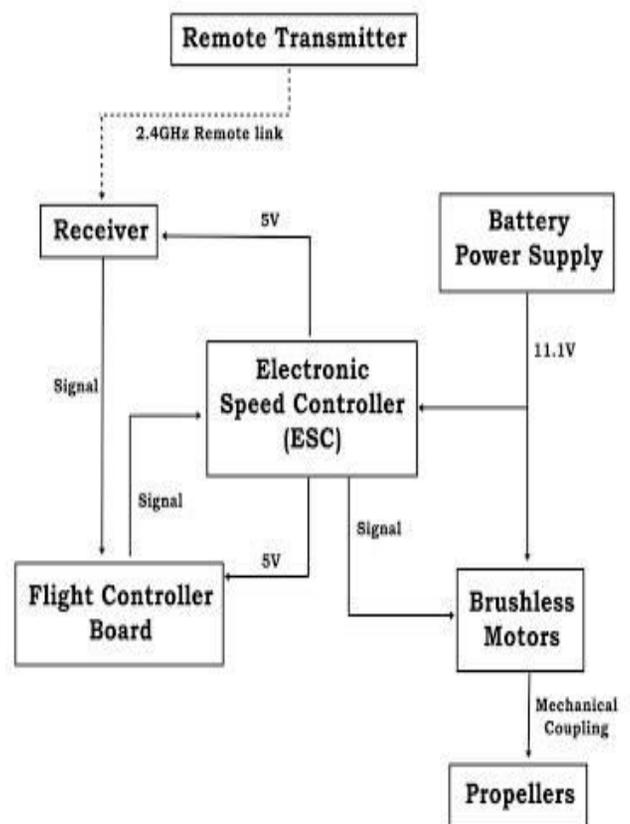
INTRODUCTION

QUADCOPTER is mainly use for safety purposes this is true but it only uses for safety is myth. In military, the Quadcopter is used as the main equipment. Main purpose of this is to get the useful information through this technology by keeping the operator in a safe distance. Many companies use this for delivering the products. It mainly consists of four propellers, one camera, flight controller, electronic speed controller.

A motor, battery, receiver and transmitter. The Quadcopter can be also very useful for taking pictures and making videos. From the distance. It will also give the clear image.

DESIGN OF QUADCOPTER

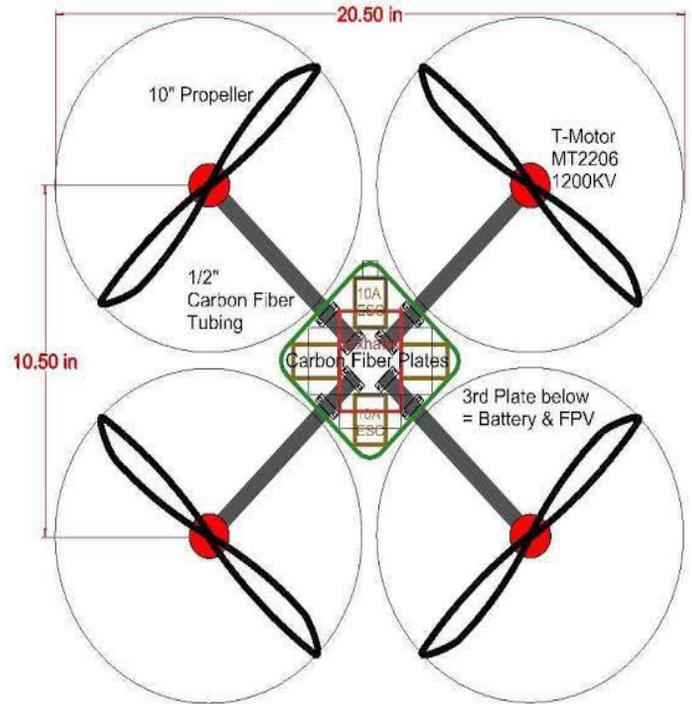
Size of Quadcopter can be varying from a size of insects to the size of a professional UAV. The size of Quadcopter depends upon its application and also the equipment which is use in this like cameras, sensors, weapons. Quadcopter has four propeller which is in cross and plus section. The hover stability prevents the Quadcopter from crashing either through wind or because of its own weight.



MAIN COMPONENTS

FRAME

The frame is very important part of the Quadcopter. It supports all the parts including motor and other electronic parts and also prevent them from vibration. The frame is of different sizes. Size also depends upon the equipment which are also added in it. We have to be very précises while making it because the frame has to be strong and light weight at asametime.



TRANSMITER AND RECEVIER

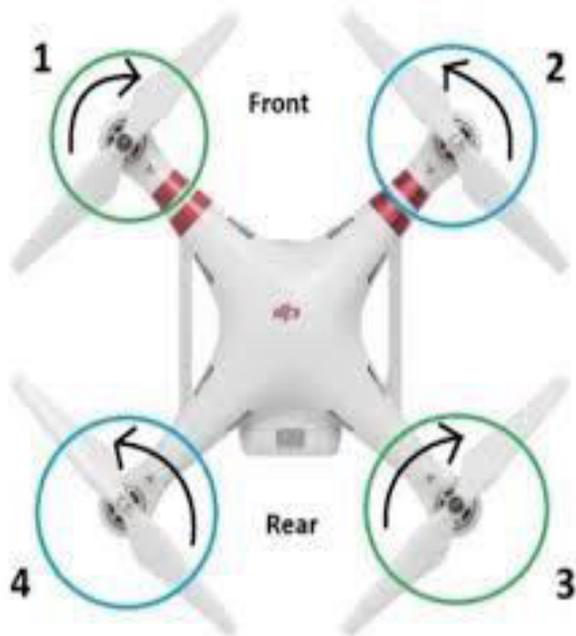
The main function of transmitter and receiver is to communicate with the Quadcopter. It carries the information or message to the Quadcopter in very less time. The instructions which is given to the Quadcopter. The receiver receives the message and transmitter transfers the message to the Quadcopter.

BATTERY

The lipo battery which is also known as lithium polymer battery is used. This battery is differing in amount of energy and voltage. It contains high energy and voltage around 11.1 volt and 14.8 volt.

PROPELLER

The main function of propeller is to generate thrust and torque due to which the Quadcopter can fly for more time. The force generate by propeller is measured in pounds and grams. As it is already mentioned that the four propeller is used in the Quadcopter. Because for high time it has to be in air. Not more than four propellersare present in the Quadcopter. We can say that because of its function it is the most important part of any Quadcopter.



MOTOR

Motor is the final and important part of the Quadcopter. This requires these specifications. There are two motors in this one moves clock wise while other works anti clock wise.

They are connected to the electronic speed controller for example, Q 250 quadcopter is equipped with 5030sizepropellers.

This means we have to look at this table.

KV: 2500
 Number of cell: 2-3s
 Weight: 25 gm

| Voltage. | Propeller | current | thrust. | Speed |
|-------------|-----------|---------|---------|-----------|
| 2(s).7.4. | 5030. | 4.4A. | 210g. | 13530rpm |
| 3(s). 11.1. | 5030. | 8.0A. | 380g. | 18.510rpm |

REMOTE CONTROL

The function of remote control is to control Quadcopter and direction in which Quadcopter move. These function or movements has its own name.

Throttle: Move the left stick forward backward.

Pitch: Move the right stick forwardor backward. It basically uses to increase and decrease the speed.

Roll: Move the right stick to left or to the right. This is used to move the sideway to left or right.

Yaw: Move the left stick to the left or to theright this alter the direction quadcopter.



APPLICATION

- 1) Quadcopter is used in test and research field. This used to evaluate more ideas in manyfield.
- 2) Quadcopter is used by military agencies it is use in search and rescue operation.
- 3) Many companies use quadcopter for delivering their product. It reduces the time and distance also.In this special type of quadcopter is used which can carry moreweight.
- 4) Media use the quadcopter for taking pictures and capturing exact location also quadcopter is used for taking pictures of celebrities.

CONCLUSION

It is obvious that Quadcopter is a useful technology for future and it is also useful for the safety purposes. Military can use this for taking the information which is essential for country's safety. It allows the defense to collect the important information without putting the operator in danger zone. It will set the new commercial industry. Which will allow more occupations and opportunities.

The Quadcopter can be used to deliver the products by many companies. This technology can vital role during any epidemic when Whole area or country is in lockdown position and people do not allow themselves to come from their respective houses. With the help of Quadcopter, we can use to deliver the products, like medicines,Rashaan etc.

Quadcopter have potential to become the vital part of the society but it also can put the negative impact on the society.

It has limitations like, the training is very expensive and sometime launcher is needed to fly them which make them more expensive.

They are more difficult to land then drone. Though we can use it as replica of drone but it will not able to replace drone. It will not able to perform all the functions which drone can perform.

Reason we wanted to improve this technology

1. To save the human efforts.
2. To reduce the risk on human lives
3. Raise the quality of work
4. To be more accurate

REFERENCES

K Lafeur, K Cassady, A Daud, K Shades, BenHe. Journal of Neural Engineering.Youenn Colin, Tony patron, Vinh pho, Blaise Bertrand US patent App 29/487,996 2016, TeppoLuukkonen, Independent research project is applied mathematics Espoo 2011, Aling Lai, US PatentApp 29/509,480 2016, AlirezaNemati ManishKumar, 2014 control conference 3077-3082,2014