

Design and Fabrication of Agro Spraying Drone

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Abstract: The main source of income in India is agriculture. The production rate of crops in agriculture is based on different parameters like temperature, humidity, rain, etc. Which are natural aspect and not in farmers control. The field of agriculture is also depends on some of aspect like pests, disease, fertilizers, etc. which can be control by giving proper action towards crops. Pesticides may increase the efficiency of crops but it also effects on human health. So the main focus of this project is to design agriculture (UAV) for spraying pesticides. The use of pesticides in agriculture is very much important to agriculture and it will be simple if we use intelligent machines such as drone using new technologies. This paper gives the idea about drone used to reduce human efforts in various operations of agriculture like spraying of UREA, fertilizers, etc. This paper explain the development of hexa copter UAV and the spraying mechanism. In this paper we also discuss combination of sprayer module to hexa copter system. The discussed system involves designing a prototype which uses simple cost productive equipment like BLDC motor, Arduino, ESC wires, carbon fiber blade, etc.

Index Terms: Unmanned aerial vehicle, flight controller, Thrust

I. INTRODUCTION

Agriculture in India constitutes more than 60% of occupation. It benefits to the backbone of Indian finance. It is very important to improve the productivity and efficiency of agriculture by providing safe cultivation of the farmer. The various operations like sprinkling of pesticides and sprinkling fertilizer are very important. Though spraying of pesticides has become inescapable it also proves to be a harmful procedure for the farmers. Farmers especially when they spray urea, take to many provisions like wearing appropriate outfit masks and gloves. It will keep away any harmful consequences on the farmers. Staying away from the pesticides is also not completely possible as the required result has to be met. Hence fore, use of robots in such cases gives the best of the solutions for this type of problems, along with the necessary productivity and efficiency of the product.

II. NEED OF DRONE

High-tech drones allow farmer, and the drone pilot that operate them, to increase efficiency in certain aspects of the farming process. From crop monitoring to planting, livestock management, crop spraying, irrigation mapping, and more. It is very simple to operate agro spraying drone for famers and it reduces farmer efforts and time. This drone is cheap in cost so every farmer can afford this technology.

III. CONCEPT



Figure:-Hexacopter Spraying Drone

IV. WORKING

The 6 propellers of a drone or hexacopter are fixed and vertically orientated. Each propeller has a varying and independent speed which allows a full range of movements. An UAV also known as “Unmanned aerial vehicle” has nozzles in-built in it so that spraying is done efficiently as well as accurately according to given commands. UAV involves 6 motors which supply equal and opposite thrust on the ground so that the UAV may lift off in air. This is newton’s third law of motion i.e. every action has an equal and opposite action.

A typical unmanned aircraft is made of light complex materials to lower weight and strengthen maneuverability. Complicated material strength permits UAV to cruise at very high altitudes. Drones are equipped with totally different state of the art technology like a infrared cameras, GPS and optical device (consumer, industrial and military UAV). Drones are guided by remote ground control systems (GSC) and additionally known as a ground cockpit. A pilotless aerial vehicle system has two elements, the drone itself and the control system. The nose of the unmanned aerial drone is where navigational systems are present. The rest of the body is packed with drone technology systems since there is no area needed to accommodate humans. The engineering materials used to build the drone are extremely complex composites designed to soak up vibration, which decrease the sound made. These materials are very light weight

V. LITERATURE REVIEW

- Nimbalkar Aishwarya Satish has published a paper entitled “Agriculture Drone for Spraying fertilizer and Pesticides”. In this paper authors has given detail about implementation of Agriculture drone for automatic spraying mechanism. In this paper they also explain what precautions the farmer should have to use to avoid harmful effects of pesticides and fertilizing effects as well as cost effective technology using components such as PIC microcontroller for the control of agriculture robots.
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VI. CONCLUSION

After studying the above paper, we study that agro spraying drone are much better designed and construction and are more accurate than conventional method. Drone is the future of agriculture and other industry. We used better technology to reduce cost and to increase efficiency, so this can available in affordable price for famers. It improve the production rate of agriculture. By giving proper guidance to user so anyone can handle this technology, without any technical background. The drones can used instead of labor's to cut production cost and it also helps to be reduce harmful effect of pesticides on human being. With drone technology, larger area can be covered and with less cost on production. Which aids the farmer in increasing their income and reduce hard work.

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