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Aerodrone future of Door Step Transportation

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ABSTRACT

Aerodrone is compact form of aircraft which derive both lift and propulsion, from a set of two horizontally attached motor for lift and another two of two vertically attached motors for propulsion. It's specification is that the Aerodrone is compact form of aircraft which whole designed as a wing itself. It can land and take-off vertically and can stay in one place in the air. It can't be say as a drone because drone doesn't have vertical rotars. It doesn't consume fuel as it runs re-chargable batterys. It can replace the door-step transportation to another level, where transportation becomes faster and also environment friendly. This paper contains the enhancing of door-step transportation level, which includes design on the basis of creativity skills, and fabrication, which can be used for more than one type of task, development of such an aerodrone, and its advantage.

Keywords- Innovation, Techniques, Creativity, Product Development, Enhancement, Automation.

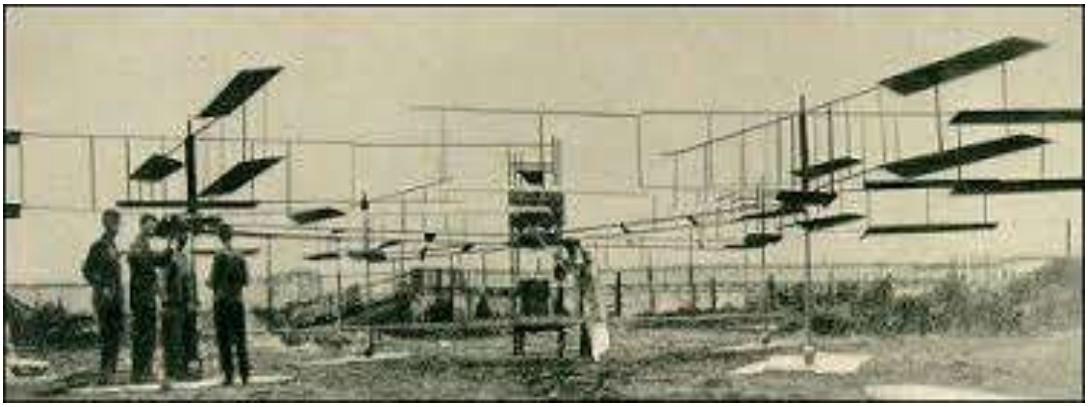
I. INTRODUCTION

The objective of this research is to enhance the door-step transportation at an another level. That can be done with the use of aerodrone. All of you are be aware about the drone and its working and uses, for example the drones are used by the film-industries to shoot videos from various angles with the help of the spy-cam assembly over it, for military it is used as UAVs (Unmanned Aerial Vehicles) or RPAS (Remotely Piloted Aerial Systems) it is used where the manned flights is considered too risky or difficult, they will provide troops with 24 hours " EYE IN THE SKY ''. As we all know that world will never stop developing, the things which were made are modified to enhance the level of living. So that we are planning to make such a drone which can move fast then the drone while handling the weight but it is consists of many new things added to make the drone modified. First the main thing modified is that the vertically fixed motors are assembled over it so that it can move with a higher speed along with the load carrying over it. As this drone consists of vertically arranged motors as like an aeroplane thus this model is know as aerodrone which consists of motors attached both vertically and horizontally.

II. HISTORY

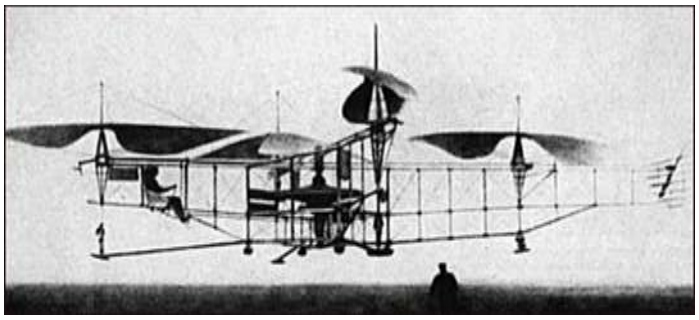
Quadcopters are VTOL (Vertical Take- Off and Landing) aircraft with four propellers or rotors for propulsion. Multi-rotors is a more general term encompassing not only quadcopters but also tricopters, hexacopters, octacopters and all form of rotorcraft with more than 2 rotors.

The early pioneers actually first attempted rotor flight using multicopters, because using more than one rotor seemed to be natural solution of the problem of VTOL flights



No.1 Quadcopter :-Gyroplane

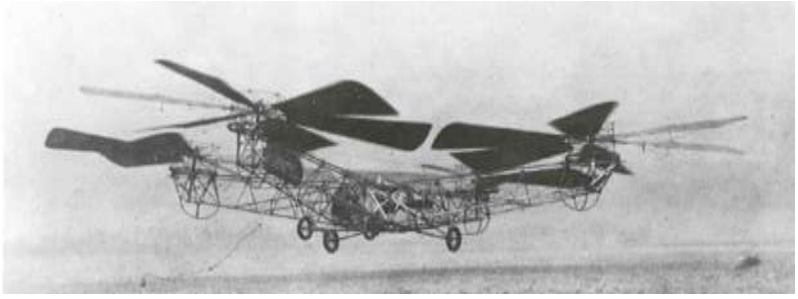
The very first experimentally attempts of taking off with a rotorcraft were mostly done with multi-rotors. Around 1907 Jacques and Louis Breguet, French brothers, built and tested Gyroplane no. 1 quadcopter. They managed take-off, although the designed proved to be very unstable and hence impractical.



No. 2 Quadcopter :- Oehmichen

In 1924 french engineer Etienne Oehmichen flew his quadcopter a distance of 360 m setting a world record. In the same year he flew a 1 km circle in 7 mins and 40 secs.

Around the same time George de Bothezat built and tested his quadcopter for the US army, completing a number of tests flights before the program was scrapped.



No. 3 Quadcopter :- De bothezat Quadcopter

With the the advent of electric motors and especially microelectronics and micromechanical devices, years ago it became possible to build reliable and efficient multirotors. Modern multicopters have an electric motor mated to each rotor, sitting directly below or above it. A flight computer constantly monitors the orientation of the copter and corrects for instability by changing not the pitch of the rotors but simply the rpm of the individual motors/rotors. This fixed pitch design is much simpler than the complex swashplate mechanics that are required for single rotor helicopters.

This design has proven to be hugely successful and the most modern VTOL drones and hobby aircraft are now multicopters rather than singlecopters. The modification of these multirotors are further done over two sides one goes to huge modification that is used for travelling purpose that is aeroplane and after some years the modern quadcopters are introduce with a small scale which is known as drones or quadcopters with a small scale. These drones or quadcopters are used in the film industries to take movie shots.

This have an disadvantage of having the decrease in speed while picking up a certain limit of load so to overcome it, we have planned such an aerodrone which has vertical motors which will push it forward in higher speed.

III. FEATURES

Aerodrone is actually a drone having a pair of motors attached horizontally for the lift and a pair of motors attached vertically for the forward push. The left and right turn is done with an aid of the speed variation of the vertically connected motors with the help of the speed variator motors and voltage controller in the circuit. This voltage controller will drop and increase the voltage according to our need for turning.

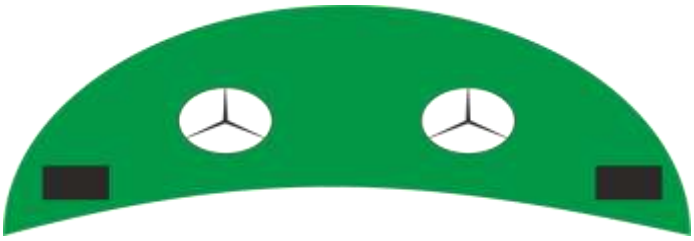
RF CONTROLLER is used in this model with the help of which it can be controlled with an limit of 4-6 km. The main advantage of RF remote controller is that it can control a device with the use of radio frequency which helps it to operate behind the obstacles which it faced. A normal remote control can't operate the device when the obstacles are between it. So the RF remote controller is used in it.

The two horizontal motors are used for the lift movement of the drone and it can be moved up or down with the help of the speed variation motors and its voltage controller whivh drops or increase the voltage so that it can be

lift and land. The two vertical motors push the drone forwards and the same voltage controller are used for turning purpose.

The design of this aerodrone is such that it can be flew through the air which will help it to move forward easiliy. Its design is taken from the aeroplane wings. Aeroplane wings are made in such a way that the air when it strikes to the starting edge of the aeroplane wings the wind separates into two path one will travels from the upper edge while the other path of air flows through the upper edge of wings so that the wings from the upper edge of the wings wants to travel more distance as compared to the lower edge, according to the bernaulis theorem when the speed increases the pressure drops. According to this theorem the air travels more distance from the above edge so that the pressure above is less as compared to the lower edge so that the lower edge pressure will increase which will lift the aeroplane up. While the aerodrone has the same edge but having both side a same surface which will help it to get a forward thrust.

Front view of aerodrone



Top view of aerodrone

This aerodrone has a camera situated at the front of its body which is seen in the front view of its figure. This camera is connected at the remote which will help us to know what is happening at that place. This aerodrone has a stand at the lower surface of its body which will act like a stand during landing or at a rest, while when it flies it will act like a object picker which can carry bags containing the doorstep delivery.

The hotels can make a better use of it, just doing one time investment in this aerodrone, by using it for the delivery purpose. They had to kept a special worker for delivery and provide him a bike and fuel cost every month they just need to control this aerdrone to get rid of the worker issue. The main advantage is that it is replacing human. The salary of worker, providing a bike and pay the cost of fuel every month they just need to do one time investment so that they can overcome their problem. In this way the automation will go on and the human participation will be decreasing along with the profit. Its advantage is that it can fly over the buildings so it will never face a problem like traffic.

In addition of it to enhance its level we have planned a modification in it such a way that it has its own brain which will consists of ultrasonics sensors, gps locator and an automatic working drone.the ultrasonic sensors are the best thing required for an object to detect the obstacles between it. The system is taken from the bat, as bat create his own ultrasonics sound which will get reflect when it will obstruct an obstacle so that they can detect that the obstacles are at the specific distance and make moves towards other side.

The same kind of sensors will be used in this modification which will help the aerodrone detect and determine the direction of obstacles so that it can take a turn to a safer side. Motors are used according to the weight of the object, it is consists of the tray containing at the top of the aerodone which has belts to get fit the object. Now the main is the gps systems which is used for getting the exact location of of the order. We are working on this project to make it working so that the it will replace the hummans for the doorstep transportation aerodrone has its own brain , when the order will placed the GPS system will activate and the address will be directly available on aerodrone and the parcel is attached to the aerodrone with the help of belts, and the aerodrone wil delivered that product by tracking the address, and it can fly over the buildings and it contains ultrasonic sound sensors which will detect the object and it will get a turn. In this way the humans are get replaced by the aerodrone. Its advantages are that it will fly over the buildings which doesn't create the problem of traffics, one time investment has to be done by buying it then the it may usefull for year and years so the salary issue of worker providing a vehicle for that worker will be dissolved. In this way aerodrone will create the doorstep transportation more easily and profitably.

IV.CONCLUSION

Aerodrone will be used for the enhancement of door-step transportation. It will provide us an delivery option more convenient as the sellers will not have to appoint a special person for delivery and the does not provide any specific vehicle for the mode off his transportation and that vehicle will create the pollution. Aerdrone will not create pollution as it works with an aid of chargeable batteries, so fuel consumption is zero in this method and it will be faster than humans as it wouldn't face any problem of traffic because aerodrone will fly over the buildings. Hence in this an aerodrone is very useful for the door-step transportation.

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