

Drone Delivery System

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Abstract— Now a days Delivery system is quite ineffective in maintaining timely delivery of products due to difficulties in transportation by enormous increase of traffic. Normally Delivery systems use two wheelers to deliver the product to customer's place but doing so they are not able to deliver the product on time and on scheduled date due to traffic or multiple tasks. So, the solution for this problem is to use drones to deliver packages. Many studies show that drones are capable to do so. Drones are reliable, more efficient and pollution free they can be used to deliver in last mile locations. Delivery drones uses GPS and many sensors to improve stabilized flight which is very crucial as product is with it so that no damage caused to it. This technology comes from concept of task of Adaptive intelligence and automation.

Index Terms—Drone delivery, Automation, Gps drones

I. INTRODUCTION

A drone, in technological terms, is an unmanned aircraft. Drones are more formally known as unmanned aerial vehicles (UAVs) or unmanned aircraft systems (UASs). Essentially, a drone is a flying robot that can be remotely controlled or fly autonomously through software-controlled flight plans in their embedded systems, working in conjunction with onboard sensors and GPS. At the time of delivery details collection, we also ask for exact pinpoint location of delivery point along with other details and at the time of delivery first the drone operator checks the pin location on satellite maps making sure that there are no big obstacles like trees etc. on pinned location and sets the flight plan on the drone and parameters like speed, altitude also he checks the flight path and he will start the flight and monitor its actions by video sent from drone if in case of any misbehavior or emergency cases operator will take control of drone. This system is developed to improve delivery time and reduce pollution

When a product is out for delivery it should be done on time but analysis shows that only 20 percent of orders are delivered on time by using this technology we can improve the delivery time.

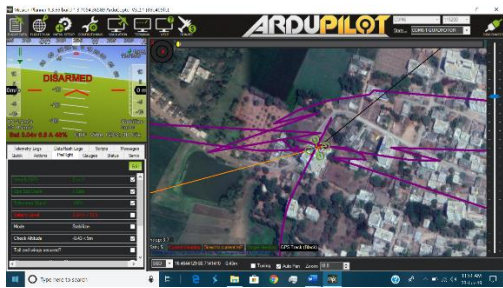
II. HARDWARE CAPABILITIES

The drone is designed in such a way to fulfill all the requirements for delivery of products. Frame used is good enough it can withstand on great impacts and the motors used are of highly powerful enough to carry weights up to 4 kgs, Carbon fiber Propellers are used for better efficiency and Power supply is also good enough having flight time around 40 minutes. Also, the parcel carrying mechanism is of good built so that it doesn't ruin the package. It also has Camera which is mounted on front to see live video to monitor its movements.

III. DRONE SPECIFICATIONS

Arducopter (apm 2.8) is used as main board(controller) of the drone it is a 8-bit processing system based on Arduino it can handle tasks like path following, return to home, position hold and it is compatible with GPS and other sensors to gain accuracy. Mission planner is the software which is used to upload the firmware or program of drone configuration using this software all sensors, motors, radio and everything used is setup and calibrated. The box which is used to carry the parcel with the drone is attached to the drone underneath and this will be connected to receiver to open and close the box when required.

- **Mavlink:** Mavlink is a software which is designed to use for arducopter it acts like ground control station to get all details from drone even if it is on air with the help of telemetry module it gets easy to know pinpoint location of the drone and current air speed, using this mavlink we will input destination location on the map and set the pattern on the map to reach destination. On receiving the product before starting the delivery, the package is scanned for details and they are fed to drone, and it is all set to go.



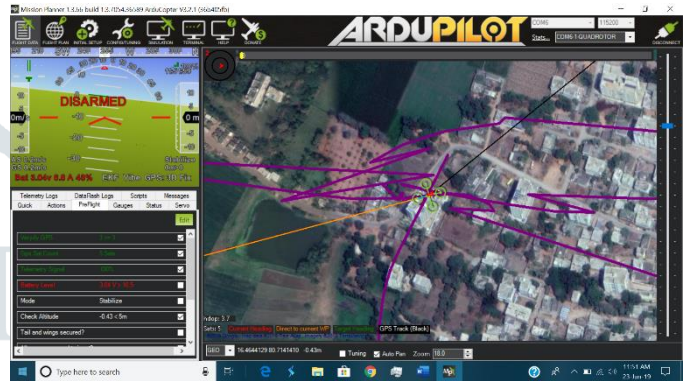
While drone is on air

EXISTING SYSTEM

Most common present delivery systems use two wheelers for delivery of products, and it is not reliable due to present traffic and multiple tasks and it delays the delivery of the product on promised date and time and it makes them loose customers and also using two wheelers to deliver also includes extra cost like petrol and man power as it is human handled operations. Only 20 percent of total orders are delivered on time using this system

PROPOSED SYSTEM

Existing one is quite ineffective, as it takes lot of time to deliver the product. We developed this system where we use drones to deliver the products. When the parcel is ready to deliver the details of the parcel and delivery location are fed to drone including altitude, speed to maintain and the path to reach the destination entire situation is completely monitored by person who is in ground control station also he monitors video output form the drone in case to take immediate control of drone. when the drone reached the destination and it is close to base level of dropping point parcel is dropped using control from ground station after leaving the product drone automatically come back to ground station by same path it travelled. By using this system delivery time can be more or less 40 minutes maintaining constant factor.



Getting parameter values

product	Conventional system	Drone based delivery system
A	50 min	28 min
B	110 min	32 min
C	200 min	38 min

PICTURES :



Drone starting for delivery

IV. SCOPE FOR FUTURE DEVELOPMENT

The analysis of this project show that the future research should concentrate on improving the drone system to act according to some situation, adopting obstacle avoidance system making it more reliable and able to sense the environment conditions as when the drone is on its way to deliver the product there are some cases where some obstacles like trees and some poles encounter in this situation it requires the pilot to take control of the drone. An additional feature like drone automatically coming back to charging station point when there is not enough charge present in it.

V. CONCLUSION

Present system has seen a drastic downfall of timely delivery services losing customers. This Drone delivery system is new development in present century. Extreme efforts are involved in making this project. Through this project, it has been proved that drones can be used in order to deliver the product to customer also this method costs less than using automobile delivery system which was previously used.

From our results we observed that this system is very much efficient than previous one. this system maintains similar

delivery time regardless of distances. For example, there are three products to deliver and using this system drone takes first product with distance of 4 kms it delivers the product within 30 min and same as case for other two products and total delivery time for three products is more or less than one and half an hour as there is no kind of air traffic, making it extremely efficient than using conventional system which does the same in time span of more than three hours based on traffic at that time.

This drone can be developed further making it capable to serve as a medical ambulance. Currently several researches are being carried out on this and if this drone comes to existence it becomes more helpful in medical emergency cases also saves life of people.

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