

QUADCOPTER AS A MONITORING TOOL

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Анотація:

В статті розглядаються способи застосування квадрокоптерів в якості засобу моніторингу.

Ключові слова: квадрокоптер, дрон, спостереження.

Abstract:

The article deals with the methods of using quadcopter devices as a monitoring tool.

Key words: quadcopter, drone, observation.

Multicopter is a flying machine with an arbitrary number of bearing screws located in one plane, rotating diagonally in opposite directions. The name *quadcopter* which is also called a *quadrotor helicopter* or *quadrotor* refers to apparatus with four rotors. [1]

Aircraft of the same type began to develop in the middle of the twentieth century, but due to mechanical complexity and high cost, they did not become widespread in the world.

The new generation of multicopters was somewhere on the brink of the 2010s, already as aviation models and unmanned vehicles. This was made possible by the advent of light and sensitive piezoelectric gyros that were used in radio controlled models of helicopters and modern microprocessors. Also, the equipment of the coppers with powerful and reliable unmanned electric motors powered by lithium polymer batteries, greatly simplified the mechanical design of the apparatus. [1]

Today, multicopters have a number of limitations such as a small battery life and relatively low carrying capacity. These restrictions are significant in terms of freight traffic, but it is not a big problem if using this aircraft as a means of monitoring and control in a wide variety of industries.

Agriculture

According to Mikhail Gorlovsky, one of the founders of the company Agrodron (offers high-tech drone and UAV for the needs of industry and agriculture), working with farmers is very specific and all farms are different. Some are guided by innovations, others are not. New items are usually interesting for agroholdings. They want with the help of technologies at least to create orthophotomaps of their fields. Farmers also know about technology, but they are not in a hurry to implement them.

Agroholdings have long been receiving extra profits, while realizing that it will end once. Therefore, it is necessary to introduce innovations that can optimize costs, increase yields in certain areas.

The largest number of requests for Agrodron comes in orthophotos, or insertion of trichograms. The choice of approach to the task depends on the specification. Firstly, we need field maps to understand their size, the remoteness of the sites. Then the technique is selected. If there are many small fields, it is worth using copters. [2]

Winemaking

Winemakers in France use drones in their craft. Copter flies over vineyards and passes video on the condition of the harvest to enterprising farmers. This allows to prevent inbreeding of insect pests in a timely manner, to avoid dehydration of the soil and, if necessary, to add nutrient elements to areas with slag-rich vine. And thanks to the infrared camera, you can control the level of maturity of the berries. [3]

Rescue of people and fire protection

The rescue services are looking for lost people. Swiss engineers have trained a quad-squeezer to navigate in the woods: the device scans the area around, finds tracks, trampled by a man, and flies over them at an altitude of about two meters.

In order for the robot to not break the tree, scientists at the University of Zurich have developed special software for him – in essence it is an artificial intelligence trained by a neural network. Developers promise that after the final revision of the program to find the lost it will be enough to send to their quest for up to six quadcopters.

Firefighters use quadcopter machines to detect and evaluate forest fires without risk to humans. [3]

This is just a small example of the use of these newest machines in favour of people. After all, the drone can be equipped with any equipment that will allow monitoring work under the most extreme conditions without risk to human life.

СПИСОК ВИКОРИСТАНОЇ ЛІТЕРАТУРИ

1. Мультикоптер [Електронний ресурс]. – Режим доступу : <https://uk.wikipedia.org/wiki/Мультикоптер>
2. Дрони на службі у аграріїв [Електронний ресурс]. – Режим доступу : <https://propozitsiya.com/ua/drony-na-sluzhbe-u-agraryev>
3. 20 способів применения дронов сегодня и в будущем [Електронний ресурс]. – Режим доступу : <https://robo-sapiens.ru/stati/20-sposobov-primeneniya-dronov-segodnya-i-v-blizhayshe-budushhem/>

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