FPV DRONES: ADVANTAGES AND DISADVANTAGES

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FPV drones are increasingly being used in the war in Ukraine. These are UAVs that are equipped with the «First Person View» function. FPV mode is a function of real-time video transmission using a camera installed in the front of the UAV. The operator controls the FPV drone, focusing on the «picture» from the built-in camera, and not on the tablet display. It is usually a self-assembled drone, the parameters and equipment of which are selected depending on the task and need that it must perform. In addition, the UAV can carry a payload (for example, ammunition up to 2 kg). They perform reconnaissance missions, defensive and counter-offensive combat operations, adjust artillery fire, pursue moving targets, hit military equipment and trenches with high precision.

Advantages of FPV drones. A modern FPV drone looks like a kind of constructor. Engineers select engines, batteries, frames, flight controllers, current regulators, video and radio signal transmission systems, taking into account the necessary technical characteristics, then add a warhead with explosives.

Due to the glasses, the pilots see the area around the UAV as if they were sitting in its «cabin». Installed cameras and modern means of communication allow the pilot to control the aircraft in «real time» mode and at the same time remain at a safe distance.

Unlike monitors or smartphone screens, the glasses do not create glare, so they can be used even in sunny weather. Skillfully controlled, such UAVs are very maneuverable, can quickly change the direction of movement and fly into narrow places, such as tank hatches. Another advantage is speed − some FPV drones accelerate up to 170 km/h. The communication range can reach more than 2 km, although the signal decreases sharply as the altitude decreases.

FPV drones are controlled exclusively by hand, so they are not linked to a GPS satellite system and are invulnerable to electronic warfare.

Disadvantages of FPV drones. Due to its design is made as light as possible the weight reducing leads to the need of light batteries installing (about 10 minutes in the air). Also, the duration of the flight depends on weather conditions, for example, strong wind. Another drawback is its relatively short flight range (up to 8-10 km), which is limited by the battery too and the need to transmit a signal from the UAV to the headset. However, different FPV drones have different parameters depending on the type of tasks.

Controlling such drones requires a high level of skill and training, as the pilot has to manually manage all processes. Training such pilots takes more time than drone camera operators.

A feature of FPV drones, compared to Mavic, is the impossibility of «hanging». This occurs if the operator lets go of the joysticks, unlike an FPV drone that requires every second control and attention of the pilot.

Analyzing the tactics of using FPV-drones «kamikaze», a countermeasure can be a stretched net (metal, textile, camouflage) at a distance from the positions, as well as over the trenches themselves at a certain height.