CURRENTLY, THE ROLE OF UNMANNED AERIAL VEHICLES IN MODERN COLLISIONS

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Annotation. In the current era, when modern technologies are increasingly developing, the system of military Armed Forces is also unthinkable without modern technologies. This article analyzes the modern unmanned aerial vehicles, their structure, principle of operation, the practice of their application in military fields, the experience of their use in military conflicts by the Armed Forces of foreign countries at present, the development of Uzbekistan in this regard with the help of reliable sources.
Keywords: Armed Forces, unmanned aerial vehicles, drone, combat operations, Skat, Mavinc SIRIUS, Orlan-10, " Lochin"

The unmanned aerial vehicle (colloquially "drone") is a flying apparatus that is not a flying person on board. Such apparatus is controlled automatically, or remotely. Unmanned aerial vehicles can conduct espionage or combat operations.

The absence of a pilot in unmanned aerial vehicles removes a number of restrictions inherent in a drone, which can greatly affect their design:

- Unmanned aerial vehicles can be made in as small dimensions as desired, while pilot-controlled apparatus cannot be made lighter than human mass.
- Unmanned aerial vehicles do not have physiological restrictions on overload when performing maneuvers, which can also affect the design.
- Reliability requirements for unmanned aerial vehicles may be reduced, as this does not pose a direct threat to human life.
- The flight time of drones is not limited to the source of Pilot life support systems.

Figure 1. MQ - 1 Predator is a multi - purpose American unmanned aerial vehicle. ("AGM-114 Hellfire" missiles installed)

Unmanned combat aircraft . At the moment, the world is actively working on the creation of promising unmanned aerial vehicles capable of carrying weapons on board, as well as designed to hit stationary and moving targets on Earth and above ground in conditions of strong resistance from the enemy air defense forces. They are characterized by a distance of about 1,500 kilometers and a mass of 1,500 kilograms. To date, two projects in the BBS class have been presented in Russia: Breakthrough-U, Skat. In practice, for aerial photography, as a rule, unmanned combat aircraft (micro, mini-unmanned combat aircraft and light unmanned combat aircraft) weighing up to 10-15 kilograms are used. This is due to the fact that with an increase in the flying weight of an unmanned combat aircraft, the complexity of its development and, accordingly, the cost increase, but the reliability and safety of use decrease. The fact is that when landing an unmanned combat aircraft, e = mv2 / 2 energy is released, and the larger the mass (m) of the device, the greater its landing speed (v), that is, the energy released during landing grows very quickly with mass gain. And this energy can harm both the drone itself and the property on Earth. The unmanned helicopter and multicopter do not have this drawback. Theoretically, such a device can land at an arbitrarily low speed of approaching the ground. However, unmanned helicopters are quite expensive, and copters are not yet capable of flying long distances and are used only for shooting local objects (individual buildings and structures).

Figure 2. Mavinc SIRIU

"Orlan-10" is a multifunctional unmanned system that stretches in hard-to-reach places, including in search and repair work, and is designed to monitor local objects. Developed by the Russian enterprise "Special Technology Center". It is part of the ESU TK tactical communications control system, thanks to which it is able to broadcast targets of destruction by all combat vehicles (self-propelled guns, tanks, infantry fighting vehicles,air defense vehicles) connected to a single tactical level control system.

The unmanned aerial vehicle has the ability to fly a fairly long distance. Included: up to 600 km and up to 16 hours of flight capacity. The unmanned aerial vehicle makes it possible to conduct long-distance reconnaissance and patrol the territories for a long time.

"Orlan-10" can automatically detect the status of enabled GSM phones, communication stations, radars in the X range. Electronic warfare equipment for" Orlan-10 " allows you to block GSM communications, as well as ordinary GPS receivers.

A distinctive feature of the" Orlan-10 " is its strict integration with Msta-SM self-propelled guns, which allows you to destroy fixed objects, targets, individual soldiers and working radars immediately after the target is detected. The Orlan-10 gun can be used as an artillery spotter.

The production of the" Orlan-10 " weapon is 200-300 copies per year. "Orlan-10" is the largest modern drone of the Armed Forces of the Russian Federation.

"Orlan-10" can carry a different target load for various tactical purposes and tasks.

The Pentagon notes that the" Orlan-10 "is usually used by a" herd " consisting of three unmanned aerial vehicles. The first unmanned combat aircraft carries out optical reconnaissance at an altitude of 1-1.5 km,the second unmanned aerial vehicle performs the function of electronic reconnaissance or electronic warfare, provides a thorough provision of communication for the Ikal of the third unmanned aerial vehicle at a distance.

National intrest believes that "Orlan-10" was used in the invasion of Ukraine without approval in the following three scenarios:

- AFA-man (car), 800 (1500) m
- TV-man (Car), 400 (900) m
- IR-man (car), 300 (600) m
- RTR-built-in cell phone detection range 3500 m

In the "Orlan-10" itself, a GPS / GLONASS antenna of the g5ant aviation class is installed, which is able to filter noise up to 3.5 dB.

For" Orlan-10", experimental target loads are widely used.

- The unmanned aerial vehicle "Orlan-10" was used to carry out air-to-air monitoring tasks of the situation on the surface of the earth during search and rescue operations after the crash of the Tu-154 near Sochi.
- Used by the Russian group in the Syrian Civil War, losses were recorded.
- Used in the conflict in Donbass in 2014.

Even during the Russian invasion of Ukraine (2022), it was this type of unmanned aerial vehicle that was used. These unmanned combat aircraft performed the following tasks in this war:

1. Monitoring of military equipment columns of the Armed Forces of the Russian Federation to identify ambushes of the Armed Forces of Ukraine. Since unmanned aerial vehicles are difficult to hit with air defense systems, this allows the Armed Forces of the Russian Federation not to risk tracking Army Aviation helicopters.
2. "Krasnopol" provides guidance of corrected missiles to mobile devices of the Armed Forces of Ukraine.
3. It has the ability to deliver an intelligence shot. As an example, a missile attack on the Retrovil shopping center.

National Intrest notes that such scenarios are more intended for trench warfare.

In 2013, a minimum of 2 copies of "Orlan-10" with a portable Launch Complex, Control Station and a set of spare parts will cost 5 million rubles (about $ 166,000), which is considered much cheaper than analogues of unmanned aerial vehicles of its class. For the first time, a gun show was organized at the Max-2013 Air Show.

The main features of this device are as follows:

- Weight of the load-up to 5 kg

- Engine-internal combustion engine (gasoline a-95)
- Launch method — from a collapsible catapult
- Landing method-with parachute
- Air speed-90-150 km / h
- Max. flight duration — 16 hours
- Max. Range of application of the complex-up to 120 km from the ground control station (up to 600 km in autonomous mode)[19]
- Max. flight height above sea level — 5000 m
- Max. permissible wind speed at the start — 10 m / s

• Soil operating temperature range from -30°C to +40 °C.

Further development of the Armed Forces in Uzbekistan is becoming increasingly advanced. In particular, more extensive work is being carried out on the use of unmanned aerial vehicles, their control, repair.

Production.

In January 2022, a research and Production Center for Unmanned Aviation complexes was established under the state committee of the defense industry, which established the production of unmanned aerial vehicles named “Lochin”, which fully meets international technical requirements and standards. It should be noted that this national project, intended for use for two different purposes, was first mastered and launched in Uzbekistan in Central Asia. The center was fully equipped with such technological equipment as the necessary Assembly assemblies, technological and special equipment, inspection (test laboratory) devices for the production, assembly, repair and maintenance of unmanned aviation complexes.

Figure 3. Unmanned pilot device “Lochin”, developed in Uzbekistan.

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The center is fully equipped with such technological equipment as the necessary Assembly assemblies, technological and special equipment, inspection (test laboratory) devices for the production, assembly, repair and maintenance of unmanned aviation complexes. The state committee of the defense industry is providing the center with specialist personnel in the field of unmanned aviation through training, retraining of young personnel, organization and professional development of internships in leading foreign countries.

The unmanned aerial vehicle “Lochin” of the aircraft and quadcopter type, developed under the national brand, is designed to be used for several purposes, in addition to performing tasks such as reconnaissance, strike, real-time observation, information retrieval, artillery fire process control, cartography, topogeodesy, crop defoliation, reserves, roads in agriculture, oil and gas, forestry, Railways, geology, search fields, it provides social infrastructure as well as the ability to monitor and use important objects for other purposes”,

In addition, Uzbekistan is purchasing this type of equipment from the world's leading unmanned aerial vehicle manufacturing countries.

AeroVironment of the United States delivered to Uzbekistan four unmanned aerial vehicles "RQ-11 Ravenmini UAV" in 2019

Also, this company will supply small unmanned aerial vehicles "Puma 3 AE" to Uzbekistan within the framework of the program of foreign military sales of the United States: (Forighn Military Sale). Unmanned aerial vehicles under an agreement of $ 8.54 million from the US Army contracts command will be delivered by November 30, 2022.

Although the US Department of Defense did not disclose how much "Puma 3 AE" DRO will be presented under the contract, "Shepard Defense Insight" estimated one such drone at about $ 225,000. According to this, about 38 unmanned aerial vehicles will be brought to Uzbekistan.

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