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Drones on the Offensive

According to the plans of the Ministry of National Defense, in a few years the Polish army will have hundreds of thousands of unmanned aerial, ground and marine systems. However, the Polish Armed Forces already have considerable potential in this domain.

KRZYSZTOF WILEWSKI

Unmanned systems are used in all operational domains, and the fact that many armies around the world have decided to create a separate branch of the armed forces for unmanned vehicles proves best that they play a very significant role on the modern battlefield. The Polish Armed Forces have recently joined this group.

The concept of unmanned weapon systems forces was first developed in 2024, and as soon as on January 1, 2025, the Inspectorate of Unmanned Weapon Systems, headed by BrigGen Mirosław Bodnar, was established within the structure of the General Command of the Polish Armed Forces. Deputy Prime Minister and Minister of National Defense, Władysław Kosiniak-Kamysz, often emphasizes that

Training Targets

The beginnings of unmanned systems in military structures were not impressive. They began service in the 1940s in the US Army as targets for training operators of artillery air defense systems. The designer of the RP-5, the first mass-produced UAV for the military, was Reginald Denny.

RQ-9 Reaper

Photo: USAF

Photo: Aneta Wiglasz/1 BPanc

Aerial Drones

FlyEye
Takeoff weight – 12 kg
Wingspan – 3.8 m
Length – 1.8 m
Maximum cruise speed – 120 km/h
Endurance – 2.5 h
Data link range – 50 km

Bayraktar TB2
Takeoff weight – 650 kg
Payload – 150 kg
Height – 2.2 m
Length – 6.5 m
Fuel capacity – 300 l
Powerplant – 100 hp
Hardpoints – 4 hardpoints
Maximum speed – 220 km/h
Maximum endurance – 27 hours
Service ceiling – 8,200 m
Operational altitude – 5,500 m

MQ-9B SkyGuardian
Length – 11.7 m
Wingspan – 24 m
Height – 3.8 m
Maximum gross takeoff weight – 5,670 kg
Fuel capacity – 2,721 kg
Payload capacity – 363 kg internal, 2,155 kg external
Powerplant – Honeywell TPE331-10 (45 kVA)
Maximum speed – ca. 480 km/h
Cruising speed – ca. 310 km/h
Range – over 6,000 nmi
Sensors – optoelectronic head and radar

MQ-9A Reaper
Length – 11 m
Wingspan – 20 m
Height – 3.81 m
Takeoff weight – 2,223 kg
Maximum gross takeoff weight – 4,760 kg
Fuel capacity – 1,800 kg
Payload capacity – 360 kg internal, 1,400 kg external
Powerplant – Honeywell TPE331-10 [671 kW (900 hp)]
Maximum speed – 482 km/h
Cruising speed – 313 km/h
Range – 1,900 km
Sensors – optoelectronic head and radar

Maritime Drones

Ukwiał
Length – 1.5 m
Weight – 175 kg
Operating depth – max. 200 m
Horizontal range – 400 m
It can operate at currents of 2 m/s and sea state 3.

Głuptak
Length – 1.5 m
Weight – 48 kg
Speed – 3 m/s
Range – 1,500 m
Operating depth – max. 200 m
It can operate at currents of 2 m/s and sea state 3.

Ground Drone

RPP Robot
Weight – 75 kg
Frame width – max 60 cm
Propulsion – tracked
Minimum speed – 15 km/h
Battery life – over 5 h
Equipment – advanced optoelectronic head, disrupter with a 30-m range

Photo: Aneta Wiglasz/ 1 BPanc

developing drone capabilities is one of modernization priorities. “Drone forces are the future of the Polish army, the future of all branches of the armed forces. They will include hundreds of thousands of unmanned systems: aerial, ground, surface, and subsurface,” said the Minister in an interview. The adopted plan for the development of Polish drone forces involves significant purchases of unmanned systems in the upcoming years, as well as their production in military units. However, our army already has significant potential in this domain.

IN THE DEPTHS OF THE SEA

When it comes to maritime designs, research and development work on relevant solutions began in Poland already in the 1980s. At the time, Gdańsk University of Technology (PG) was a leader in this field, and it was the scientists from this university who developed the Ukwiał system – the first unmanned maritime vehicle introduced into service.

The Polish Armed Forces purchased seven such underwater vehicles, which detect mines and explosives in the sea and destroy them with Toczek charges. The unmanned systems used to equip the 206FM minehunters, and after the vessels were withdrawn from service, Ukwiał systems were used in Project 207 minesweepers.

Apart from Ukwiał, which remained in service after the modernization, the Polish Navy currently uses the following unmanned systems: Gavia, Głuptak, Double Eagle Mk III, Double Eagle Mk II SAROV, Hugin, and AUV62-AT. All the listed vehicles, except for AUV62-AT – an 8-meter-long drone which perfectly simulates enemy units and is therefore used to train soldiers in combat against submarines – are drones designed for mine warfare or reconnaissance tasks, such as observation of the seabed and critical infrastructure located on it, or monitoring anchorages.

LORDS OF THE SKY

Although the Polish military can boast only a few maritime unmanned systems, there are hundreds, if not thousands, of unmanned aerial vehicles in the arsenal of the Polish Armed Forces. Remotely controlled flying systems have been in service in the Polish army since the turn of the 1950s and 1960s, when the first targets of this type appeared in air defense training. However, the first unmanned aerial vehicles with tactical capabilities were introduced to our army in connection with the mission in Afghanistan. In 2005, the operators of the Polish Special Forces were equipped with several UAVs, the first of which were Israeli Orbiter reconnaissance drones.

Over the past two decades, the Polish Armed Forces have significantly expanded their UAV capabilities. Although the Orbiter drones have been put into well-deserved retirement, they have been replaced by several dozen domestically produced FlyEye reconnaissance drones. In addition to reconnaissance designs, which include several types of rotorcraft used for military geography, the Polish army also has drones that can track and destroy targets. They include both foreign systems (the American RQ-9A Reaper and RQ-9B Skyguardian, as well as the Turkish Bayraktar TB2), and Polish ones (Warmate loitering munitions, and the Gladius search and strike system, which is being built and developed based on the requirements of the Polish Armed Forces).

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The sheer diversity of aerial drones used by the Polish Armed Forces is best illustrated by the fact that the smallest drone used by the operators of the special forces, the Black Hornet Nano, weighs 32 grams, while the largest, the Global Hawk, weighs over 14 tons.

ON-THE-GROUND PYROTECHNICS

While the range of tasks performed by unmanned aerial vehicles is very wide, all ground drones used by the Polish military execute tasks related to pyrotechnics. They are machines designed for sappers, which pick up and dispose of explosives and hazardous materials.

The Polish army was equipped with such devices at the beginning of the 21st century, and most of them are designs developed by Polish engineers from Sieć Badawcza Łukasiewicz – Przemysłowy Instytut Automatyki i Pomiarów (PIAP, Łukasiewicz Industrial Research Institute for Automation and Measurements). The first models, in 2004, were called Inspektor, later followed by Expert, Balsa and RPP (Patrol and Sapper Robot). The only foreign design put into service in Poland has been the American Talon IV robot.

BRIGHT FUTURE

Considering the current drone potential in the Polish Armed Forces and the experience gained from the war in Ukraine, it can be assumed that in the upcoming years the Polish army will seek to acquire as many small FPV (first-person view) drones as possible. They are operated using a controller and a small screen (often in the form of virtual-reality glasses). When equipped with explosives, they can be used to attack soldiers hiding in fortifications, as well as vehicles and tanks. According to a decision made by the Ministry of National Defense in June, selected military units will manufacture such drones as part of a pilot program. Importantly, the ministry wants soldiers to have competencies that will allow them not only to produce this type of drones, but also to design their next generations.

When it comes to slightly larger designs – ranging from aerial to maritime and ground-based systems – it can be expected that our military, following the example of the Ukrainian, Norwegian, and Estonian armies, will want to first introduce into service ground-based combat and logistics drones. Clearly, it is difficult to imagine the battlefield of tomorrow without unmanned systems. ■