

UKRAINE

# An Ally Called Drone

By Sandro Maddalena





Ukraine, Lviv region. A drone expert teaching soldiers the theoretical basics of piloting. The lessons are carried out in collaboration with the Victory Drones association, a civilian organization that teaches soldiers how to use drones on the battlefield.

Ukraine, Kyiv region. A young engineer at work at the secret Dronarnia factory. Engineers have shifts of up to twelve hours a day in order to supply the army with the drones that soldiers need on the front lines.



## **How Ukrainian civilians are using homemade quadricopters to fight the enemy**

The amount of artillery shells that NATO has promised to deliver to Ukraine this year is the same as that used by the Russian army in a month and a half of warfare. If we also consider the relative ease with which Putin can swell the ranks of his army after the bloodiest battles, it's clear that the two countries cannot adopt the same war strategy. Since the Russian invasion, Ukraine has been facing a numerically superior enemy that also has a multitude of ammunition depots. The idea that has spread in military circles and civilian associations which actively help the Ukrainian resistance is to fill the substantial lack of resources by increasing the use of drones on the battlefield. Drones can in fact significantly reduce the risks for soldiers during reconnaissance missions and can make artillery more efficient. If necessary, they can also be used as remote-controlled bombs to

destroy armored vehicles. Day after day, in apartments, offices and basements, dozens of small secret factories have sprung up, where planes and multicopters are built in a more or less artisanal way to be used in the defense of the country. In many cases, the engineering teams that design and assemble drones are made up of young people who didn't work in this field before the war. Thanks to their talent and commitment, spy and combat drones are delivered to the military at a fraction of the cost of those purchased from well-known military production companies overseas. The growing demand for drones has generated the need to train thousands of new operators. Once again, the solution to this problem has been provided by members of civil society, and the Victory Drones association organizes practical and theoretical lessons to teach soldiers how to fly drones on the battlefield.



Ukraine, Kiev region. Two employees at work at Evgeny's secret factory. Evgeny became interested in drones during the pandemic as a hobby to kill time. Since the Russian invasion of Ukraine, he has created a secret drone factory where about ten people work. The models produced here are mostly combat drones.



Ukraine, Kyiv region. A team of radar transmission experts testing equipment that can improve the signal for flying drones.



Ukraine, Kyiv region. Roman divides his life between working as a dentist and developing drones. Together with his colleague and friend Anton, he is trying to build small ultra-fast drones for the army. Here Roman is buying some components for his drone at a warehouse.



Ukraine, Kyiv region. Soldiers training to fly drones using a flight simulator at a secret unmanned aerial vehicle factory.



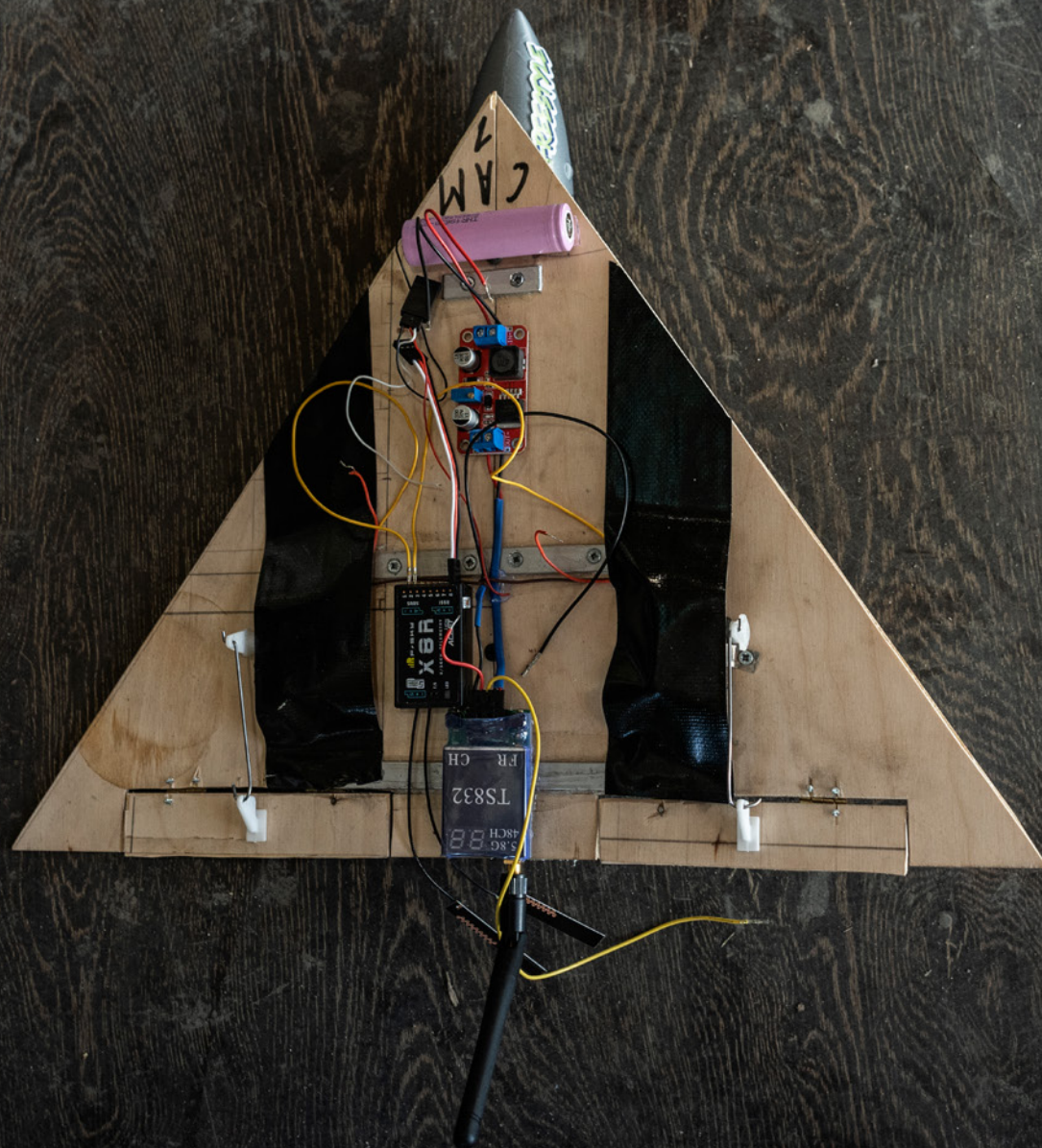
Ukraine, Kyiv region. A drone built by Ros during a test flight. Before the Russian invasion, the young engineer was an IT programmer.





Ukraine, Kyiv region. Dentists Roman and Anton in the latter's apartment fixing details on their prototype drone. For Anton making models has always been a hobby, and it's an important skill when it comes to producing small planes.

Ukraine, Kyiv region. A small model for making kamikaze drones at a secret factory where unmanned aerial vehicles are developed.





Ukraine, Kyiv region. Young engineers working on a multicopter at the secret Dronarnia factory. They work up to twelve hours a day to supply the Army with the drones that soldiers need on the front lines.



Ukraine, Kyiv region. Ros, a former IT programmer, and his girlfriend are seen in an area where drone manufacturers test their models. The young couple are preparing the necessary equipment in order to perform a test flight.



Ukraine, Kyiv region. A young engineer at work at the secret Dronarnia factory. Engineers have shifts of up to twelve hours a day in order to supply the army with the drones that soldiers need on the front lines.



Ukraine, Kyiv region. Ros, a former IT programmer who is now a drone manufacturer, has just finished a test flight for one of his models. In the picture, his girlfriend is holding the joystick that is used for flying the drone.



Ukraine, Lviv region. Two soldiers during theoretical lessons in drone piloting. The lessons are carried out in collaboration with the Victory Drones association, a civilian organization that teaches soldiers how to use drones on the battlefield.



Ukraine, Kyiv region. An employee at Evgeny's secret drone factory examining a spy plane used by the Russians during the first days of the war.





Ukraine, Kyiv region. A young engineer taking care of the details of some electronic components at the secret Dronarnia factory

Ukraine, Lviv region. Young students from the local police school learning how to fly drones under the supervision of experienced pilots from the Victory Drones association.





Ukraine, Kyiv region. The interior of the small secret factory where Ros, a former IT programmer, produces military drones.



Ukraine, Kyiv region. Max, the founder of the secret Dronarnia drone factory, with one of his multicopter models.



Ukraine, Kyiv region. One of the places where drone developers can test their models before the UAVs are delivered to military personnel.

Ukraine, Kyiv region. The room where the models of multicopters produced at the secret Dronarnia factory are stored prior to being delivered to military personnel.





Ukraine, Kyiv region. Ros, a 23-year-old IT programmer, started making drones immediately after the Russian invasion. Here he is assembling a drone at his secret factory. It is clear from the drone's camouflage that it will be used in forested areas.





Ukraine. A view of Kyiv, the capital of Ukraine and the most important center in the production and development of homemade drones.

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