



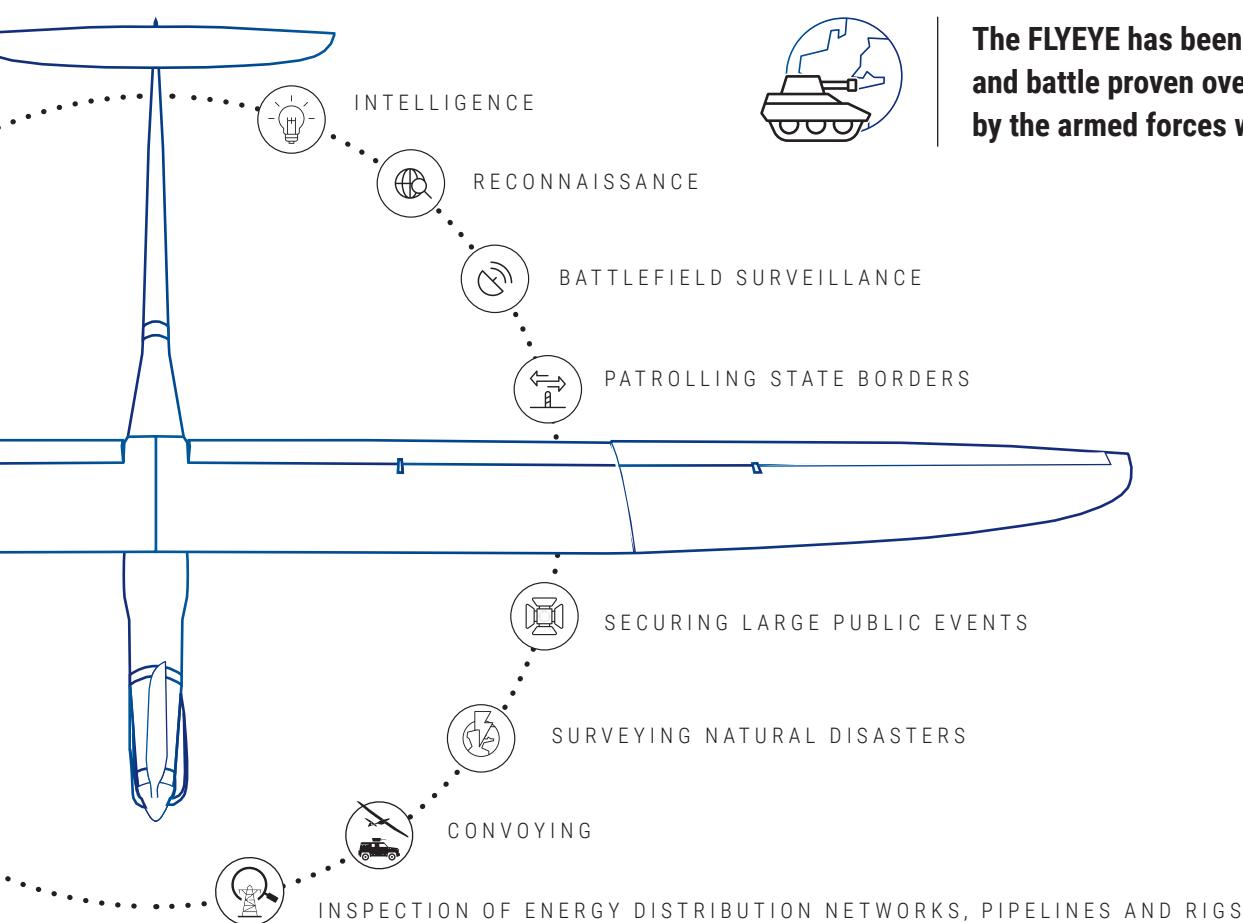
**WB GROUP** 

**FLY EYE**

Unmanned Aerial System

# FLYEYE

Light, compact-sized unmanned aerial system



**The FLYEYE has been combat tested and battle proven over the years by the armed forces worldwide.**

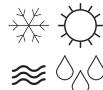
## Main features



Resistant against  
enemy interference



Dual payload for day  
and night operation



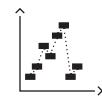
Operating in harsh  
weather conditions



Hand-launched



Adapted to end-user's  
requirements



Frequency  
hopping



User friendly



Fully autonomous  
landing with ejectable  
payload system



Silent mode



Encrypted,  
digital datalink



GCS with  
controller



Maritime  
and tactical antennas

# High-performance GS4 payload

## Full HD-view of stationary or moving targets with 30x optical zoom

- Gyro-stabilised in both the PAN and the TILT axes and have a full 360 degrees of continuous horizontal and vertical motion.
- Digitally stabilized image for a better viewing experience.
- Payload movement and camera zoom features are entirely operated from the ground control station with use of a user-friendly controller.
- "Target Lock" function – allows the camera to observe a target area or object regardless of the UAV's position.



# Ground Equipment

## Ground Control Station

The ground control station consists of a portable, rugged laptop and a user-friendly controller. The "Commander II" dedicated software, designed to meet end-users' requirements, allows for the full control of both FlyEye UAV and the observational head during the mission. While performing observation, the operator can easily monitor, plan or change the mission. The completed mission is logged and saved in the GCS which enables the playback and mission analysis at a later date.



## Ground Data Terminal

FlyEye System contains three different types of antenna:

<b>Standard &amp; Maritime</b>	50 km + High-gain directional antenna system. Allows for long distance flight.
<b>Mobile</b>	10 km + Medium range antenna system. Allows for UAV control from moving vehicle.
<b>Tactical</b>	10 km + Medium range antenna system. Very light version, allows for operation in tactical conditions.

## Power Supply Units

Ground Control Station and Data Terminal can be supplied either from a battery pack or portable power supply station. On the battery pack, the system can work over 10 hours, while portable power supply station, apart from supplying the system, charges both the UAV and battery pack as well.

## Flight Modes

<b>Automatic Take-off</b>	Controls the air vehicle until it reaches a safe altitude before switching to the flight plan mode.
<b>Flight Plan</b>	Fully autonomous flight in which navigation is made by any number of 3D waypoints. Waypoint can create closed flight plan as well as single loitering point. Any waypoint property such as activity, loitering radius and direction, altitude can be change at any time, both prior and during mission. Many alternative flight plans can be prepared.
<b>Camera Guide</b>	The FlyEye follows camera area of view to provide the operator the best conditions for observation.
<b>Convoying</b>	UAV can flight in this mode while mobile antenna is in use. The FlyEye detects the direction of convoy movement and stays in front of the vehicles.
<b>Hold</b>	When necessary, the FlyEye can start to circle immediately in its actual position.
<b>Out of range</b>	UAV can continue the mission after intentionally radio link lost.
<b>Autonomous landing</b>	Initiates the landing of the UAV at a pre-determined landing point.

In any flight mode, the FlyEye individually monitors by itself all crucial flight parameters such as speed and altitude.

### Multiple GCS capability

Video and telemetry are provided to each GCS simultaneously, and each operator can take control over UAV at any time if needed. It cause possibility to enlarge range of operation and simplify observation of tactical squad being close to battlefield.



# Rapid deployment



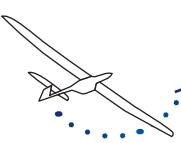
## Tactical backpacks

The minimal set of the FlyEye UAV can be carried by two soldiers inside a set of backpacks. Each backpack is designed to transport parts of the FlyEye Set and allows for the attachment of additional soldier's personal equipment.



## Transport system

The FlyEye UAV can be stored in two transport backpacks allowing for a fast deployment. The operating team can assemble the air vehicle in under ten minutes. The system comes in hard cases allowing it to be transported by the military aircrafts.



## Take-Off

A fully automated launch procedure is followed by a series of pre-flight tests to ensure full functionality of the system. The UAV is hand launched, and the FlyEye aircraft will rapidly climb to a chosen flight altitude before switching to the desired flight mode.



## Landing

Two-phase, patented landing procedure allows for a safe landing in various environmental and weather conditions. During phase one, the payload released on a parachute over landing point preventing damage of the camera. During phase two, the aircraft performs a close traffic circle and lands precisely in the pre-determined location.

# Long term support



## Maintenance Levels

**O-level** (operational level) – an ongoing field maintenance for minor damage repairs. Each UAV is equipped with a toolkit. The users acquire skills to enable them to carry out minor repairs during a dedicated training course.

**I-level** (intermediate level) – the repair and maintenance of more serious damage or faults with the UAV. This can be carried out by WB GROUP or be assigned to a third party, who will receive training from WB GROUP's engineers, depending on the requirements.

**D-level** (depot level) – the general overhaul of the UAV is being carried out by the manufacturer once every 200 flights.



## Training

The FlyEye mini UAV is a user-friendly system and no prior aviation experience is required. WB GROUP provides a two-week tailored program, which consists of lectures, simulation training, and outdoor flight exercises that introduce students to progressively more difficult navigation tasks and scenarios. All training is delivered by FAA-certified professional instructors.

# Multiple Safety Levels



## Automatic return

The return procedure starts automatically if communication between the base station and the UAV is lost for a period of time. After passing this time point, the UAV will start to fly to a pre-defined emergency landing position. The operator can interrupt the return procedure and continue the mission if the communication is restored.



## Spin and stall recovery

The air vehicle is able to detect stall and spin allowing the autopilot to correct the movement of the aircraft so it may return to normal flight. Stall or spin may appear due to turbulence or wind shear, especially during performing turns at low speed.



## Speed sensor failure detection

The air vehicle is able to detect the failure of the dynamic pressure sensor used to measure the air velocity. This type of failure can be caused by either the freezing or clogging of the Prandtl tube. After detection of a failure, the flight is continued at a constant angle of inclination without the speed stabilization. A speed sensor failure is indicated on the GCS.



## Operation without GPS

FlyEye mini UAV is capable of operating in GPS-denied environment. In case of a GPS jamming or failure, the system automatically engages a precise odometric navigation subsystem. The subsystem computes the UAV location, using the position at which the GPS failed, wind speed, wind direction, and magnetic field data. The operator is informed about the situation, and can either continue the mission or return to a predefined location in order to perform an emergency landing.



## Locate on Command recovery device

The FlyEye has a built-in, GPS-based, long-range (50km) locating system. The FT-LoC2 consists of the unique ID remote tags, the search station, and the antenna. The system is power efficient and operates in the areas without GSM infrastructure.

## Technical Specifications for FLYEYE UAV

Endurance	<b>2.5h +</b>
Data link range – LOS	<b>Standard antenna 50 km (mobile / tactical antenna optional)</b>
Operational Frequency	<b>C Band</b>
Mission preparation time	<b>&lt;10 min</b>
Flight altitude above take-off point	<b>1000 m AGL</b>
Maximum altitude	<b>3500 m AMSL</b>
Type of propulsion	<b>Electric</b>
MTOW	<b>12 kg</b>
Maximum payload weight	<b>2 kg</b>
Cruise speed	<b>60-120 km/h</b>
Maximum wind speed during take off	<b>12 m/s</b>
Maximum wind speed during mission	<b>18 m/s</b>
Environment conditions	<b>-20°C to 50°C; 95% Humidity</b>
Launch method	<b>Hand launched, no equipment required</b>
Recovery method	<b>Fully autonomous</b>
The minimum crew needed to complete the mission	<b>2 people</b>
Construction material	<b>Composites</b>
Wingspan	<b>3.6 m</b>
Length	<b>1.8 m</b>

## COMPATIBLE PRODUCTS

**PIK** Communications Integration Platform

**CIS / AMSTA** Counter Intruder System Advanced Monitoring of Stand-off Areas

ICMS **TOPAZ**

**FONET** Digital Communication Platform

**WARMATE** Loitering Munitions System



[www.wbgroup.pl](http://www.wbgroup.pl)



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QIII/2022