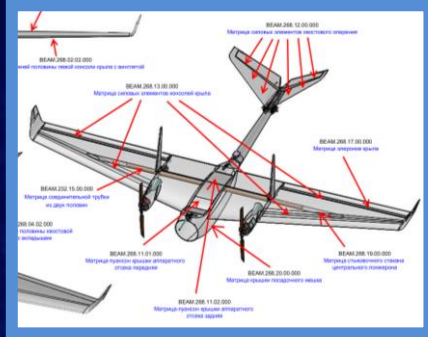
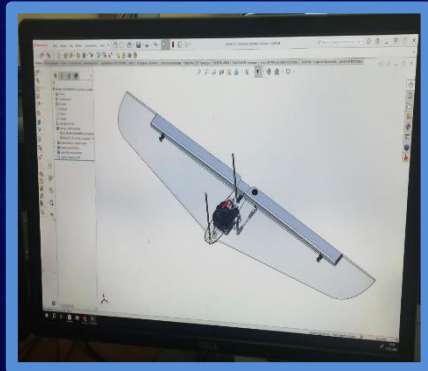


Creating unmanned technologies of the future



RUE «SCIENTIFIC AND PRODUCTION CENTRE OF MULTIFUNCTIONAL  
**UNMANNED SYSTEMS»**

NATIONAL ACADEMY OF SCIENCES OF BELARUS



UAV development.  
Scientific research.  
Carrying out R&D

Serial production of  
UAS and simulators

Training in the  
management and  
operation of the UAS

Sales of finished  
products.  
Transfer of production  
technology

# SPC UAV Family

## Everywhere for your security





## Reconnaissance UAV "Busel MKR"

- Max. take-off weight – 14 kg
- Max. flight duration – 120 min
- Speed range – 60-100 km/h
- Max. operation radius – 50 km
- Max. flight altitude – 4000 m
- UAV length – 1.69 m
- Wingspan – 3.45 m
- Start method: from a catapult
- Landing method - parachute with sling release system and landing pad

- video monitoring day/night
- automatic target tracking
- issuing target designation to air force, missile forces and artillery, adjusting fire
- relay of radio communications, VHF communications
- use of AI technologies



## UAV "Busel MK2" (bomber)

- Max. take-off weight – 14.5 kg
- Max. flight duration – 90 minutes
- Speed range – 60-100 km/h
- Max. operation radius – 50 km
- Max. flight altitude – 1000 m
- UAV length – 1.69 m
- Wingspan – 3.45 m
- Start method: from a catapult
- Landing method - parachute with sling release system and landing pad

- striking various ground targets
- video monitoring day/night
- automatic target tracking
- issuing target designation to air force, missile forces and artillery, adjusting fire
- use of AI technologies



## UAV "R-100" ("kamikaze")

- Max. take-off weight – 28 kg
- Max. flight duration – 30 minutes
- Speed range – 150-250 km/h
- Max. operation radius – 100 km (up to 50 km when returning to the starting point)
- Max. flight altitude – 3000 m
- UAV length – 1.70 m
- Wingspan – 1.5 m
- Start method: from a catapult
- Landing method (if necessary) – parachute
- Warhead weight – 5-7 kg

- striking various ground targets
- possibility of TV/IR cameras installation
- using AI technologies for navigation and target detection



### Reconnaissance UAV "Spotter PB-3"

- Max. take-off weight – 5 kg
- Max. flight duration – 90 minutes
- Max. speed – 65 km/h
- Max. operation radius – 10 km
- Max. flight altitude – 300 m
- Payload - TV or IR camera
- Start method: by hand
- Engine type – electric
- UAV length – 1.2 m
- Wingspan – 2 m

- video monitoring day/night
- automatic target tracking
- use of AI technologies



### Strike UAV "Spotter PB-4"

- Max. take-off weight – 5.5 kg
- Max. flight duration – 90 minutes
- Max. speed – 65 km/h
- Max. operation radius – 10 km
- Max. flight altitude – 300 m
- Payload – striking element weighing up to 1.0 kg
- Standard deviation from the hit object – no more than 10 m
- Start method: by hand
- Engine type – electric
- UAV length – 1.2 m
- Wingspan – 2 m

- fire destruction (high-explosive, high-explosive fragmentation action) of ground-based stationary targets with known coordinates



### Reconnaissance UAV "Hexacopter-1"

- Max. take-off weight – 20 kg
- Max. flight duration – 30 minutes
- Max. speed – 43 km/h
- Max. operation radius – 5 km
- Max. flight altitude – 2 km
- Max. payload mass – 5 kg
- Payload – easily changeable cameras: TV, IR, multispectral, hyperspectral
- Engine type – electric
- Overall dimensions (without propellers) – 62\*62\*35 cm

- video monitoring day/night
- aerial photography
- automatic target tracking
- use of AI technologies



## Reconnaissance UAV "Burevestnik"

- Max. take-off weight – 390 kg
- Max. flight duration (with optical payload weighing up to 20 kg, with external fuel tanks) – 10 hours
- Maximum payload weight – 80 kg
- Cruising speed – 100-125 km/h
- Max. range of operation – 120 km (direct radio communication), 300 km (using repeaters)
- Maximum flight altitude – 4000 m
- Maximum ferry range with a headwind of up to 10 m/s (take-off from one airfield, flight and landing at another airfield) – 1000 km
- Method of launch and landing - like an airplane from a runway, emergency landing - parachute

- video monitoring day/night
- automatic ground target tracking of determination of coordinates
- recognition and identification of ground objects
- issuing target designation to air force, missile forces and artillery, adjusting fire
- use of AI technologies



## Reconnaissance and strike UAV "Burevestnik MK"

- Max. take-off weight – 450 kg
- Max. flight duration (in the shock version with an optical payload of up to 20 kg and a dropable combat load with a total weight of up to 60 kg) – 4-5 hours
- Maximum payload weight – 80 kg
- Cruising speed – 100-125 km/h
- Max. range of operation – 120 km (direct radio communication), 300 km (using repeaters)
- Maximum flight altitude – 4000 m
- Method of launch and landing - like an airplane from a runway, emergency landing – parachute

- striking various ground targets
- automatic target ground tracking
- video monitoring day/night
- issuing target designation to air force, missile forces and artillery, adjusting fire
- use of AI technologies in navigation and target detection



## UAV "MB-30" (strike kamikaze UAV, launch from "Burevestnik MK" carrier)

- Max. take-off weight – 30 kg
- Max. flight duration (flight when launched from a UAV carrier from an altitude of 2-3 km) – 50 minutes
- Maximum combat load weight – 5-7 kg
- Max. speed – 90 km/h
- Max operation radius (when launched from a UAV carrier from a height of 2-3 km) – 80 km

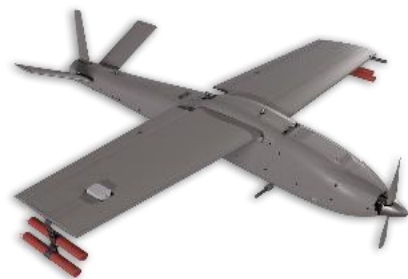
- striking various targets
- Optionally, other types of payloads can be installed on the MB-30 UAV to solve problems:
  - staging various kinds of interference with means of detecting and defeating the enemy
  - increasing the viewing area of the UAV carrier for more reliable identification of ground (surface) targets and without the UAV carrier entering the range of enemy air defense systems when installing an optical reconnaissance system
  - use of AI technologies in navigation and target detection



### UAV "R-50" (target)

- Max. take-off weight – 22 kg
- Max. flight duration at an altitude of 1000 m – 30 min
- Max. speed – 400 km/h
- Max. operation radius – 50 km
- RCS – 0.15 m<sup>2</sup>
- RCS with Luneberg lens – 1.5-2 m<sup>2</sup>
- UAV length – 1.70 m
- Wingspan – 1.5 m
- Start method: from a catapult
- Landing method – parachute
- Engine type – turbo jet

- simulation of the flight of air targets such as UAVs, cruise missiles, jet combat aircraft during live firing of anti-aircraft missiles and aircrafts for various purposes and training of their combat crews  
- if not damaged, the possibility of re-use



### UAV "E-50" (target)

- Max. flight duration at an altitude of 1000 m – 30 min
- Max. speed – 200 km/h
- Max. operation radius – 40 km
- RCS – 0.5 m<sup>2</sup>
- RCS with Luneberg lens – 1.5-2 m<sup>2</sup>
- UAV length – 1.26 m
- Wingspan – 1.25 m
- Launch method: from a catapult or UAV carrier "Burevestnik MN"
- Landing method - parachute
- Engine type – electric

- simulation of the flight of air targets such as a light combat helicopter, light aircraft, UAV

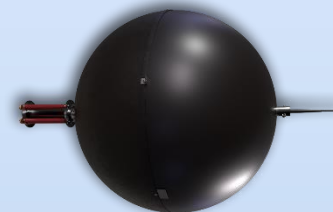


Luneberg lens

## OTHER ELEMENTS OF THE TARGET SYSTEM:

### Universal disposable target

Designed to indicate air targets (such as "helicopter", "suddenly appearing helicopter") in the visible, infrared and radar wavelength ranges



### IR radiation source 9XB2008

Designed to mark air targets in the visible and infrared wavelength ranges



### Target - reusable suspended radar reflector

The target is a product with Luneberg lenses installed on the pylons of the UAV carrier, covered with a radio-transparent cap.





## Unmanned airship "UAS EM"

- Max. take-off weight – 75 kg
- Max. flight duration – 6 hours
- Max. speed – 40 km/h
- Max. operation radius – 50 km
- Max. flight altitude – 500 m
- Power unit – internal combustion engine, 2 pcs.
- Shell length\* – 12.7 m
- Shell diameter\* – 3.20 m
- Max. payload mass – 5 kg

- video monitoring day/night
- perimeter control and search for objects, determination of their coordinates
- automatic target tracking
- use of AI technologies

\*According to customer requirements, it is possible to sell an airship with a shell of a different length and diameter



## Tethered balloon system "AST-2022"

- Max. working lift height – 300 m
- Shell length\* – 13.3 m
- Shell diameter\* – 4.86 m
- Shell volume – 130 m<sup>3</sup>
- Max. mass of suspended cargo (payload and other on-board equipment) – 30 kg

- video monitoring day/night
- perimeter control and search for objects, determination of their coordinates: people at a distance of up to 6 km, vehicle at a distance of up to 14 km

\*According to customer requirements, it is possible to sell a balloon with a shell of a different length and diameter



## Vertical take-off and landing (VTOL) reconnaissance UAV "Eagle"

- Max. take-off weight – 100 kg
- Max. flight duration – 6 hours
- Max. speed – 130 km/h
- Max. operation radius – 120 km
- Max. flight altitude – 4000 m
- Power unit – electric motors, internal combustion engines
- Wingspan – 5.1 m
- Max. payload mass – 15 kg
- Payload – easily changeable cameras: TV, IR, multispectral, hyperspectral, photo cameras. Laser range finder, background radiation measuring devices, atmospheric parameters measurements

- video monitoring day/night
- perimeter control and search for objects, determination of coordinates
- automatic target tracking
- use of AI technologies



## UAV operator training simulator

A simulator for in-depth training of UAV operators in the principles of using an unmanned aerial system, as well as for quality control of training of UAV operators without the use of standard equipment of the system. A system for detailed analysis of completed UAV flights based on recorded telemetry



## Semi-natural dynamic three-axis UAV flight simulation bench

Used for debugging algorithms and mathematical solutions embedded in the flight navigation system and stabilization systems for optical payloads

The simulator together with the bench are part of the HSS-UAV-2021 hardware and software system, which can be used at all stages of UAV development (from conceptual design to serial production), in a single system to carry out semi-natural simulation of the UAV flight (yaw, roll and pitch) and operation of all its main modules and subsystems, including operation of the autopilot software



Classroom option



Field option

## 9F2018 simulator for training MANPADS anti-aircraft gunners

The simulator 9F2018 is designed to train and improve the skills of anti-aircraft gunners in destroying air targets using MANPADS without spending anti-aircraft missiles when operating alone or as part of a squad

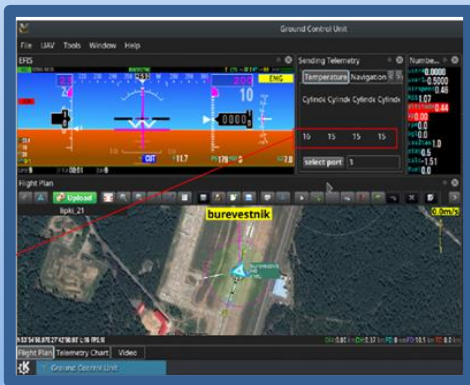
- allows you to reduce the consumption of ammunition
- high realism of the simulator
- maximum proximity to the real working conditions of MANPADS operators
- available in classroom (indoor) and field versions



# Ground control stations

Mobile GCS based on various car types (or stationary):  
Workstations for the UAV operator, payload operator and crew chief

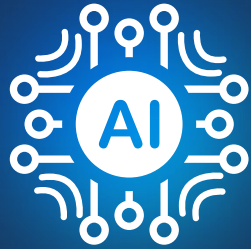
with data transmission system  
for unmanned aerial systems of our own  
production



GCS in a portable case

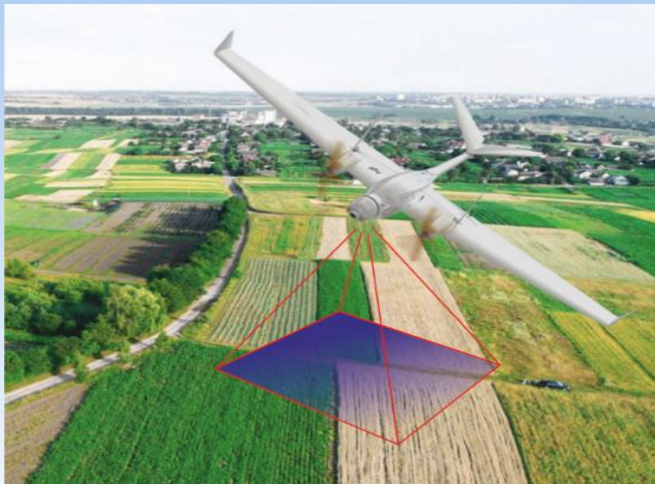


# Artificial Intelligence Technologies



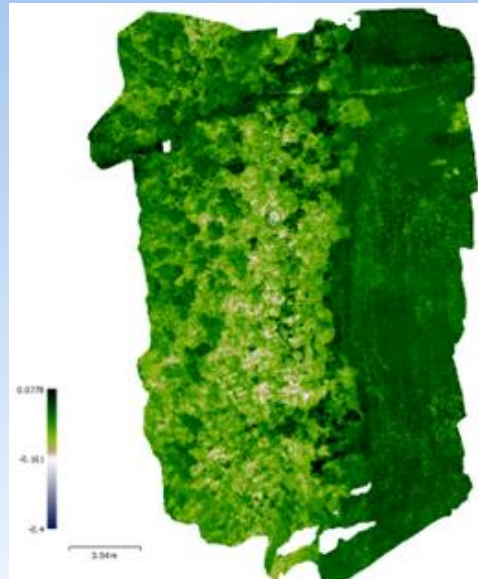
## Autonomous visual navigation system for UAV

For the case of the absence of a satellite navigation system, mathematical, software and hardware tools have been developed based on a neural network model, implementing an autonomous navigation system with an accuracy of 10–20 meters in real time



## A system for localizing forest diseases and invasive plants based on a neural network model and UAV footage

Mathematical, software and hardware tools have been developed based on a neural network model, segmentation of hyperspectral images with the aim of identifying signs of forest plantation diseases at early stages and determining the areas of growth of invasive and drug-containing plants



## Artificial Intelligence-Based Kamikaze UAV Detection and Guidance System

A neural network has been created that solves the following problems on board of kamikaze UAV:

automatic detection of targets based on images received from a reconnaissance UAV or a specific class of targets from a database;

automatic tracking and guidance of a kamikaze UAV to detected targets along a planned trajectory



# Optical-electronic systems of our production



## Purpose:

EOS are designed to perform tasks of monitoring the earth's surface, detecting and tracking ground-based fixed and moving objects



### Automatic ground object tracking

*Click on an object and the OES will start tracking it: be it a person, a vehicle or any other object*



### High resolution shooting and optical zoom up to 70x

*Observe your target down to the smallest detail, no matter the distance*



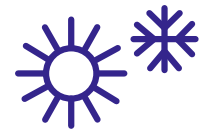
### Laser rangefinder

*High-precision laser rangefinder provides accurate target location, slant range up to 15 km*



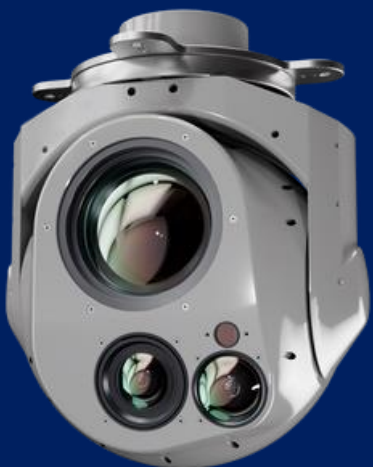
### Online video transmission and on-board recording

*The mission can be recorded for later analytics*



### Able to work in difficult weather conditions

*-20°C to +40°*



### GOES MFMGV-15

Gyrostabilized optical-electronic system with high resolution television module , thermal imaging (IR) module, laser rangefinder

Optical zoom x60. Measured distances 100 – 15,000 m.

Weight: 12 kg

#### Detection and recognition ranges

	IR MODULE	TV MODULE
Human	2 200 m / 1 000 m	7 500 m / 3 500 m
Vehicle	4 500 m / 2 300 m	11 000 m / 6 500 m
Tank	5 500 m / 2 800 m	15 000 m / 10 000 m



### GOES MFMGV-5

Gyrostabilized optical-electronic system with high resolution television module, thermal imaging (IR) module, laser rangefinder

Optical zoom x30. Measured distances 100 – 45 00 m.

Weight: 7 kg

#### Detection and recognition ranges

	IR MODULE	TV MODULE
Human	450 m / 150 m	1700 m / 600 m
Vehicle	800 m / 300 m	6000 m / 2000 m
Tank	1200 m / 500 m	10 000 m / 4000 m





### GOES-TV

Gyrostabilized optical-electronic system with high resolution television module  
Optical zoom x30. Weight: 1,1 kg

#### Detection / recognition ranges

	TV MODULE
Human	1700 m / 600 m
Vehicle	6000 m / 2000 m
Tank	10,000 m / 4,000 m



### GOES TV-IR

Gyrostabilized optical-electronic system with high resolution television module, thermal imaging (IR) module  
Optical zoom x10. Weight: 1.4 kg

#### Detection/recognition ranges

	IR MODULE	TV MODULE
Human	450 m / 150 m	1000 m / 400 m
Vehicle	800 m / 300 m	2400 m / 800 m
Tank	1200 m / 500 m	4500 m / 1500 m



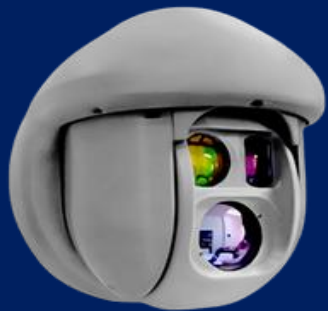
### GOES TV-LR

Gyrostabilized optical-electronic system with high resolution television module, laser rangefinder  
Optical zoom x30. Weight: 1.4 kg

#### Detection / recognition ranges

	TV MODULE
Human	1700 m / 600 m
Vehicle	6000 m / 2000 m
Tank	10,000 m / 4,000 m





### GOES-IR-LR

Two-axis gyro-stabilized OES with IR camera and laser rangefinder  
640\*512 pixels. Frame rate 50 Hz. Spectral range: 8 – 14 μm. Weight 0.95 kg

#### Detection ranges

	IR MODULE
Human	800 m
Vehicle	3000 m



### OES-TV

High resolution TV camera without stabilization system  
Weight: 0,9 kg

#### TV MODULE

Sensor type	CMOS
Spectral range	VIS 0.4 - 0.75 μm
Matrix resolution	1920×1080 px
Focal length	4 mm
Horizontal field of view	80°



### GOES spectrum

Single-axis gyro-stabilized hyperspectral camera  
Spectral range: 0.4-1.0 μm  
Number of spectral channels: 40-120  
Camera viewing angle: 18 degrees.  
Linear sensor size: 1280 pixels  
Recording time: 25 h (microSD 128 GB)  
Construction of a hypercube during post-processing  
Weight 0.73 kg



### OES-IR

High resolution IR camera without stabilization system  
Weight: 0,9 kg

#### IR MODULE

Sensor type	Uncooled microbolometer
Spectral range	LWIR 8 – 14 μm
Matrix resolution	640 × 512 px
Focal length	19 mm
Digital zoom	x4
Horizontal field of view	10°



### GOES-photo for creating orthophotoplans, combined with a mini-TV camera

Purpose: overview of the area with a mini-TV camera with a wide field of view; aerial photography in natural light conditions during the day with the ability to map aerial photography data with geodetic accuracy; use of orthophotos of the terrain to solve the problem of detecting ground objects.  
Weight 1.7 kg

- Reconnaissance day and night
- AI technologies
- Fire adjustment
- Acting as target simulators for air targets
- Cargo delivery
- Relay of radio and VHF communications signals



## Connect With Us !



**Website:**  
[www.uavbusel.by](http://www.uavbusel.by)



**Office Address:**  
str. Kuprevich, 10, building 7,  
Minsk, Belarus



**Office Number:**  
Tel. +375 17 397 00 90



**Mail Address:**  
[info@uavbusel.by](mailto:info@uavbusel.by)