LUCH
STATE KYIV
DESIGN BUREAU

UKROBORONPROM
Ukrainian Defence Industry

VILKHA

MULTIPLE LAUNCH ROCKET SYSTEM

PURPOSE

"VILKHA" MULTIPLE LAUNCH ROCKET SYSTEM (MLRS) is designed to destroy armored, lightly armored and unarmored vehicles, enemy manpower, command posts, communication centers, military-industrial facilities, above-ground facilities for store and other purposes at long distances.

"VILKHA" is capable of firing high precision guided missiles (110 km range) and also unguided rockets type 9m55k for legacy MLRS "Smerch".

SPECIFICATIONS

Quantity of rockets in multiple launching pod, pcs.	8
Maximum firing range, km	up to 110
CEP (circular error probability)	less than 30 m in the distance 110 km
Missile length, mm	7 600
Missile caliber, mm	300
Missile weight, kg	907
Warhead weight, kg	220
Guidance system	INS + GPS
Quantity of control channels	8
Duration of full salvo, s	not more than 35
Time of missile control, min	not more than 3
Ambient temperature, °C	from minus 40 to +55

PERFORMANCE AND ACCURACY






“VILKHA” MULTIPLE LAUNCH ROCKET SYSTEM

THE MLRS CONSISTS OF:

- Guided missiles,
- Combat vehicle,
- Transporting-loading vehicle,
- Mobile command post with UAV Target Acquisition and Surveillance,
- Transport vehicle,
- Service and repair vehicle,
- Meteorological system,
- Test and control equipment KPA-624,
- Operational documentation.

Guided missile

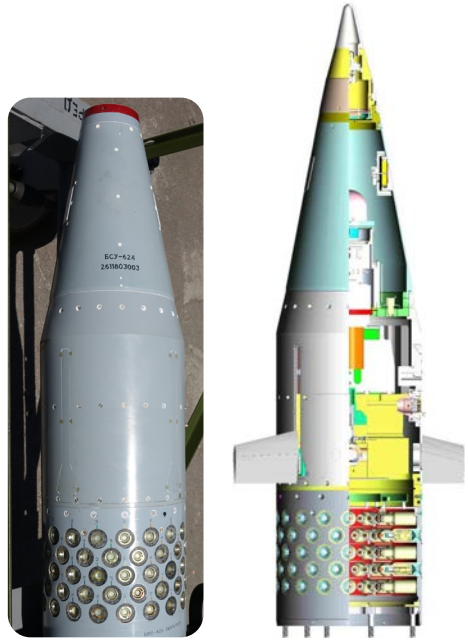
Combat vehicle

Transporting-loading vehicle

MISSILES R624M

Missile R624M was designed to replace the old missiles of MLRS "SMERCH" – legacy unguided MLRS system with very low accuracy, designed in USSR. Missile R624M is completely new high-precision missile based on the new elements and guiding gas-dynamic engines.

Old missile 9m55k



New missile R624M

GUIDED MISSILE

The guided missile is intended to destroy armored, lightly armored and unarmored vehicles, enemy manpower, command posts, communication centers, military-industrial facilities, above-ground facilities for store and other purposes at long distances.

The peculiarity is that at the initial part of the trajectory a missile flight correction is provided with the help of pulse engines that reduce to minimum missile fly deviation from the preset trajectory. At the final part the missile is aimed at the target by an inertial and satellite navigation system using aerodynamic control surfaces. MLRS "VILKHA" ensures forming of individual flight task for each missile that makes possible to defeat several targets by one salvo.

MAIN PERFORMANCE CHARACTERISTICS

Maximum firing range, km	up to 110
Missile length, mm	7600
Missile caliber, mm	300
Missile weight, kg	907
Guidance system	INS+GPS
Ambient temperature, °C	from minus 40 to +55

COMBAT VEHICLE

A combat vehicle is designed to provide automatic pre-launch preparation and launch of guided rockets from guides, as well as for storing and transportation of guided rockets.

THE COMBAT VEHICLE CONSISTS OF:

- Lifting and turning mechanism;
- Firing control system equipment;
- Launching tubes (pods).

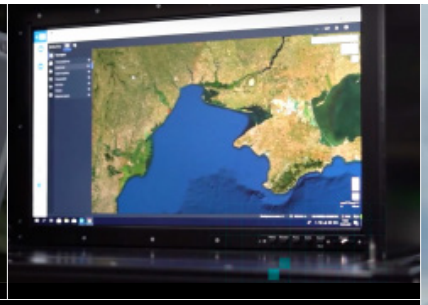
MAIN TECHNICAL SPECIFICATIONS

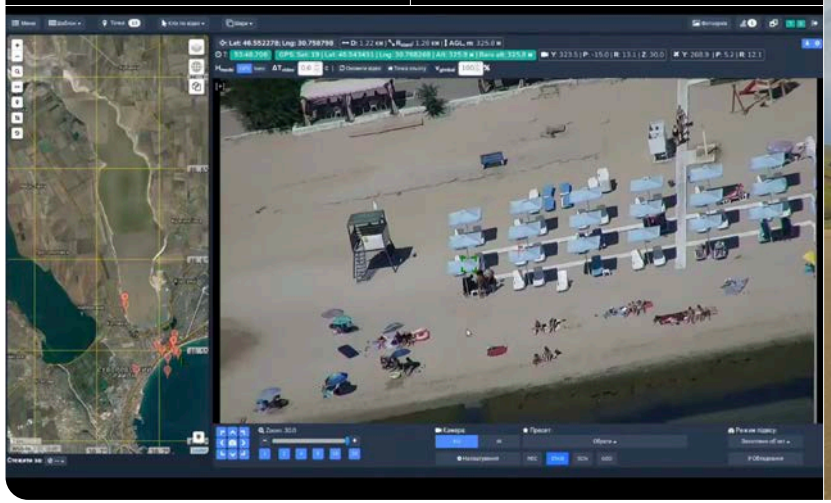
Crew, persons	4 (3)
Launching tubes (pods)	8
Engine output, HP	450
Engine torque, N*m	2110
Fuel tank, l	500
Tires	12R24
Max. speed on highway, km/h	85
Max. range with full tank, km	1000

MOBILE COMMAND POST

MOBILE COMMAND POST WITH UAV TARGET ACQUISITION AND SURVEILLANCE IS DESIGNED FOR:

- data exchange between batteries and units;
- air surveillance, target designation and acquisition by PD-2 unmanned aerial system;
- radio and telephone communications;
- planning of fire;
- collection and analysis of information;
- processing of meteorological data.

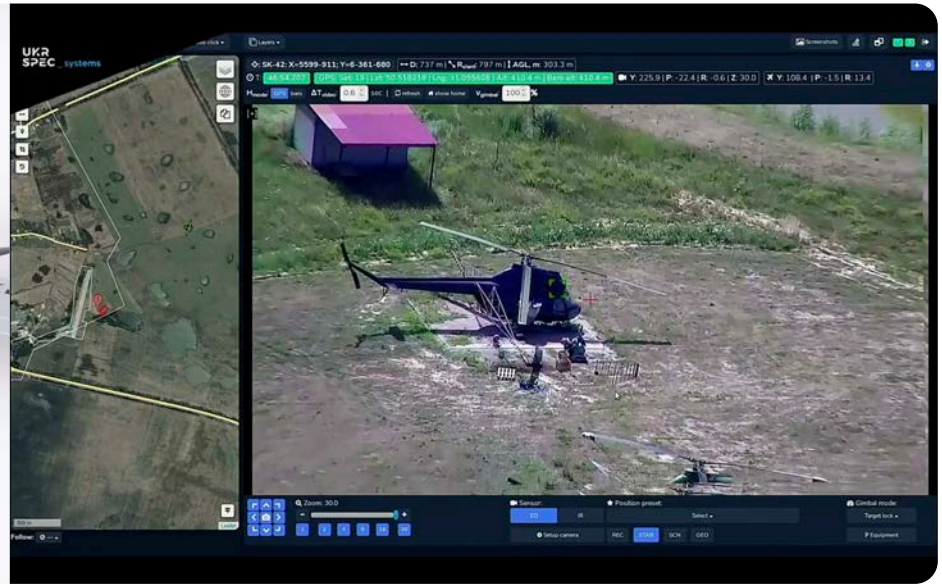




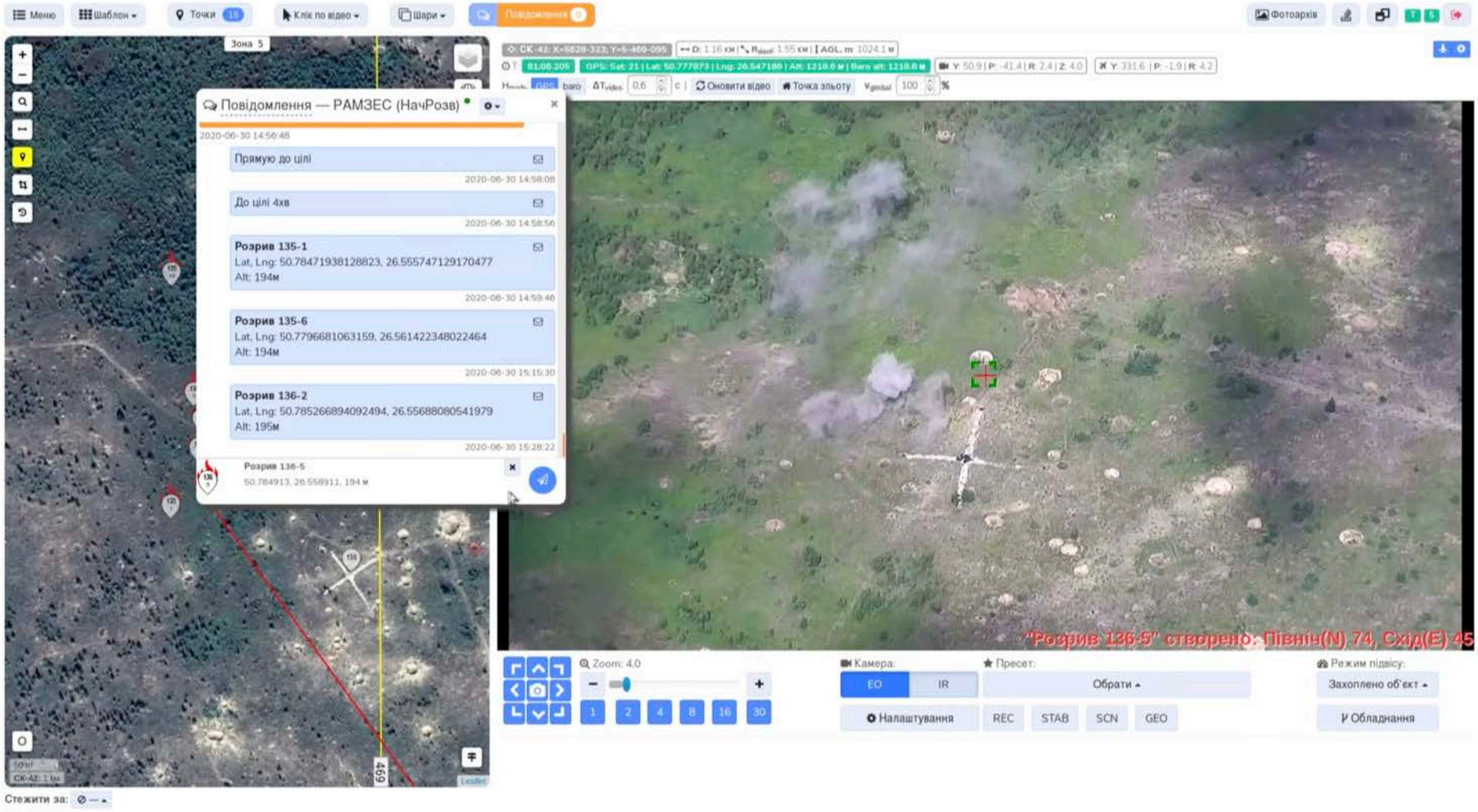
PD-2 UNMANNED AERIAL SYSTEM

FEATURES:

- Automatic takeoff and landing in all configurations,
- PD-2 VTOL fixed-wing drone can stay in the air up to 8 hours, while carying 6 kg payload and fuel reserve,
- Fully loaded PD-2 VTOL fixed-wing climbs on 2000 m AGL altitude in under 16 minutes, which allows faster mission start,
- UAS includes USG-212 EO/IR gyro-stabilized gimbal with digital video stabilization and target tracking and streaming,
- High-resolution aerial photogrammetry package to create aerial photo images of the ground surface,
- 130+ km encrypted digital data link (command and control and video transmitting),
- 150+ km encrypted backup C2 link,
- Anti-jamming features.



FIRE AIMING AND CORRECTION



TRANSPORTING-LOADING VEHICLE

The transport-loading vehicle is designed for transporting, loading, unloading and reloading a combat vehicle with guided missiles or mock-ups for training personnel of the combat and loading vehicle.

This vehicle is performed on the same vehicle chassis as combat vehicle, providing additional advantage in interchangeability in the majority of spare parts.

TRANSPORT VEHICLE

The transport vehicle is utilized for transporting unmanned aerial vehicles, spare parts, engineers, armed soldiers for providing security of the system during the deployment. The transport vehicle is armor-protected, equipped with anti-mine shock-absorbing seats, central tire inflation system, fire extinguishing system, powerful air-conditioning system.

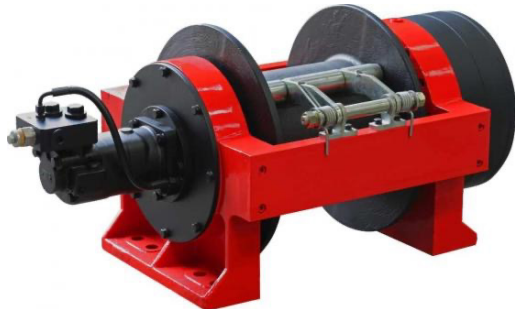
SPECIFICATIONS

Crew, members (including security unit)	8
Engine output, HP	380
Engine torque, N*m	1250
Length, mm	8000
Height, mm	3600
Ground clearance, mm	330
Payload capacity, kg	2000

SERVICE AND REPAIR VEHICLE

Service and repair vehicle is equipped with powerful winch and crane, carrying the 1:1 SPTA for the vehicles of the whole system, necessary instruments and consumables for performing field maintenance.

SPECIFICATIONS	
Crew, members	2
Engine output, HP	375
Engine torque, N*m	1600
Max speed on highway, km/h	85
GVW, kg	33150
Tires	16R20
Fuel tank, l	500
Ground clearance, mm	350



METEOROLOGICAL SYSTEM

The meteorological system is used for sounding the atmosphere up to the altitude of 40 km by using radisondes for temperature, humidity and wind analysis.

SPECIFICATIONS	
Crew, members	4
Engine output, HP	380
Engine torque, N*m	1250
Ground clearance, mm	330

The system consists of:

- basis chassis 4*4;
- antenna unit – receiving signals and defining coordinates of the radiosonde;
- processing unit – processing the radiosondes signals, transmitting, saving the results of the sounding;
- uninterruptible power supply unit;
- radiosondes;
- set of cables;
- functional software.

REPAIRABILITY AND MAINTENANCE

The MLRS "VILKHA" consists of 6 vehicles created based on the standard chassis:
8*8 chassis – combat vehicle and transport-loading vehicle,
6*6 chassis – mobile command post and service and repair vehicle,
4*4 chassis – transport vehicle and meteorological system.

This technical decision decreases the expenses for the maintenance, shortens the necessary spare part list and number of technician specialists.

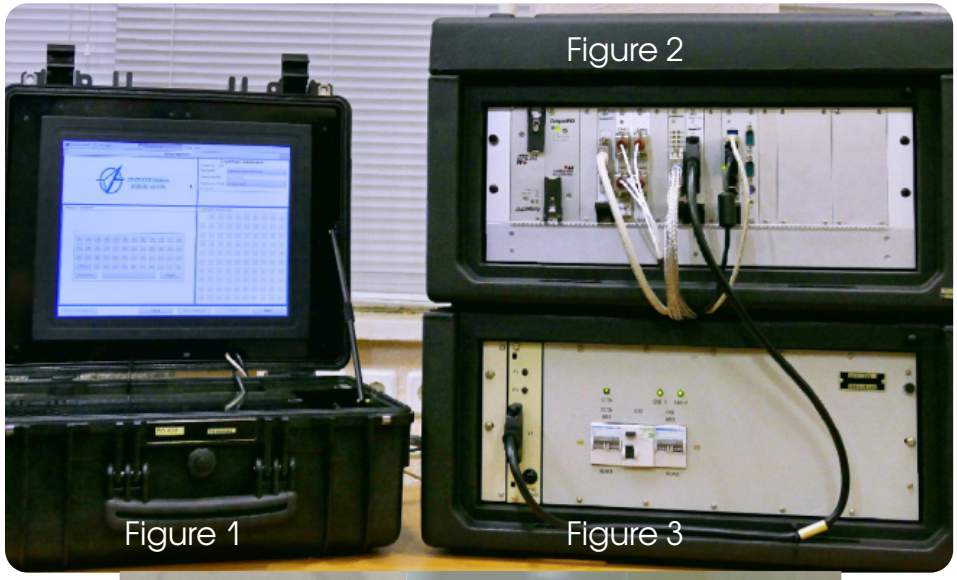
The system is divided to the following blocks depending on the service maintenance and training qualification:

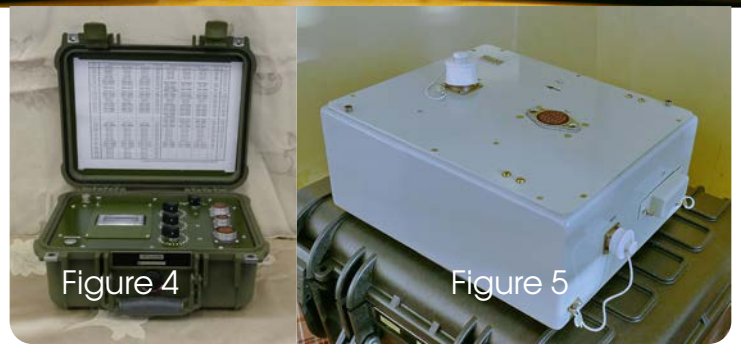
- command and control of the MLRS
- missile aiming and firing
- launching and transport-loading mechanisms
- basic chassis
- unmanned aerial systems
- meteorological systems

We provide the full training for commanders, crew members, technical personnel under the scope of the supply contract.

TEST AND CONTROL EQUIPMENT

Test and control equipment is designed to monitor and evaluate the parameters of the rocket during its maintenance during operation, as well as during acceptance tests at the manufacturer.





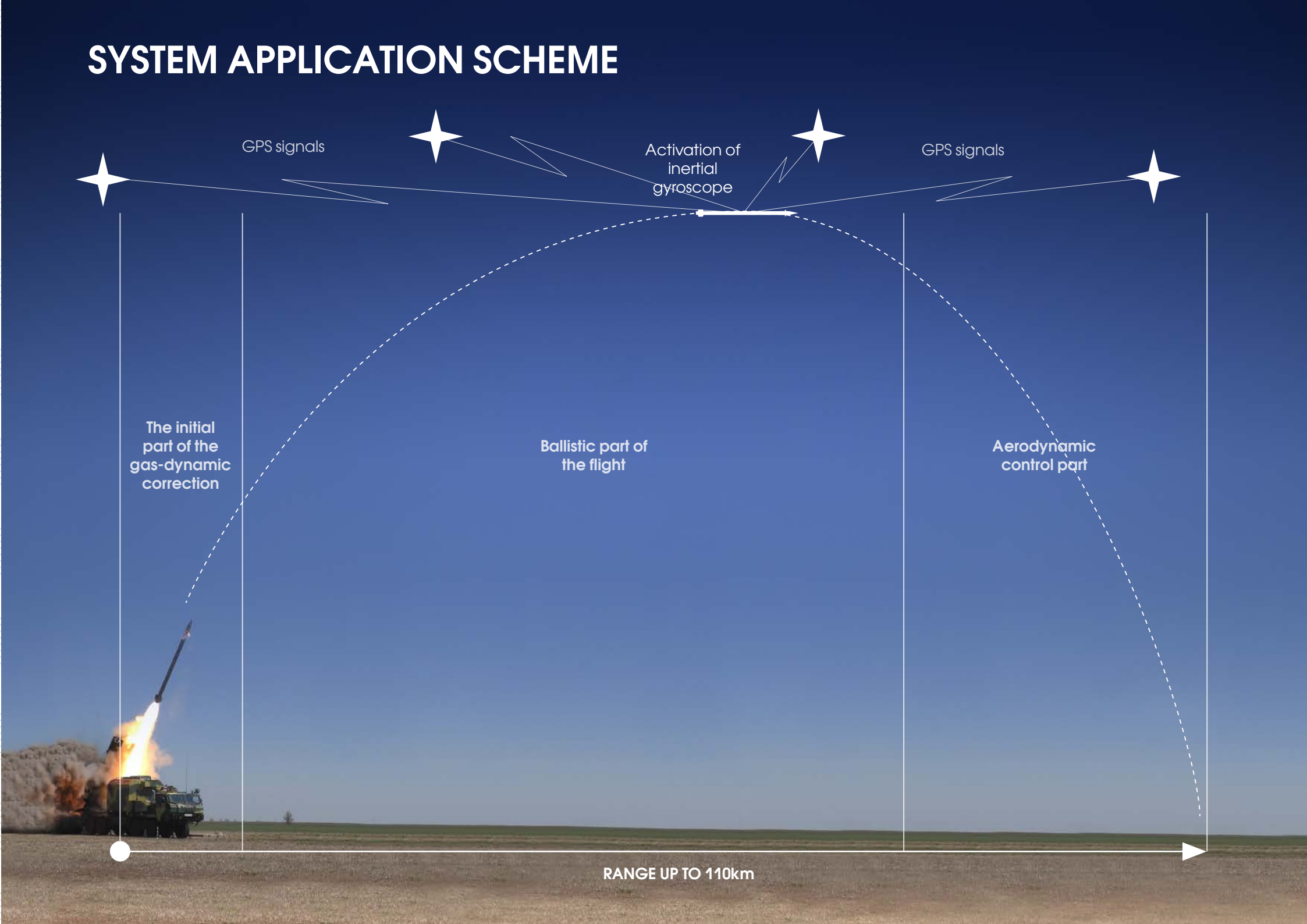
TEST AND CONTROL EQUIPMENT CONSISTS OF:

- Operator-panel *(Figure 1)*;
- System unit *(Figure 2)*;
- Switch of electric power circuits *(Figure 3)*;
- Control panel of pyrotechnic circuits *(Figure 4)*;
- Self-control unit *(Figure 5)*.

MAIN TECHNICAL SPECIFICATIONS

Power supply	single-phased electric network ~ (50 ± 1) Hz, (220 ± 22)
Power consumption, kV·A	not more than 2
Item control time, min	not more than 3
Self-monitoring time, min	not more than 2

SYSTEM APPLICATION SCHEME



SE “STATE KYIV DESIGN BUREAU “LUCH”

2, Melnikova Str., Kyiv, 04050, Ukraine
Phone: +38 (044) 483 0745
Fax: +38 (044) 483 1394
E-mail: kb@luch.kiev.ua
www.luch.kiev.ua

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