



INTRODUCTION DOCUMENT ANTI – DRONE SYSTEMS

Characteristics of Unmanned Aerial Vehicles - UAV



- High speed and high maneuver capacity
- Low cost, easy accessibility
- Maximum effect at reaching target
- Low risk for attacker side
- Threat increase by explosives
- Threat increase by herd drone action, harder to defend

Possible Targets for UAV's



- ▶ **UAV's are used for destructive or spying purposes**
- strategic state buildings
- refineries, fuel depots
- electricity power stations, transformer stations
- army and civil convoys
- transportation facilities including airports, ports
- food storage facilities
- country borders

Countermeasures for Unmanned Aerial Vehicles



COMBINATION OF 3 SYSTEMS WORKING IN COORDINATION

➤ 3-D Radars

Detects location, trajectory and speed of hostile UAV

➤ Teleoptic Cameras

Takes photo and video, passes to user interface for final identification of hostile UAV

➤ Destructive Features

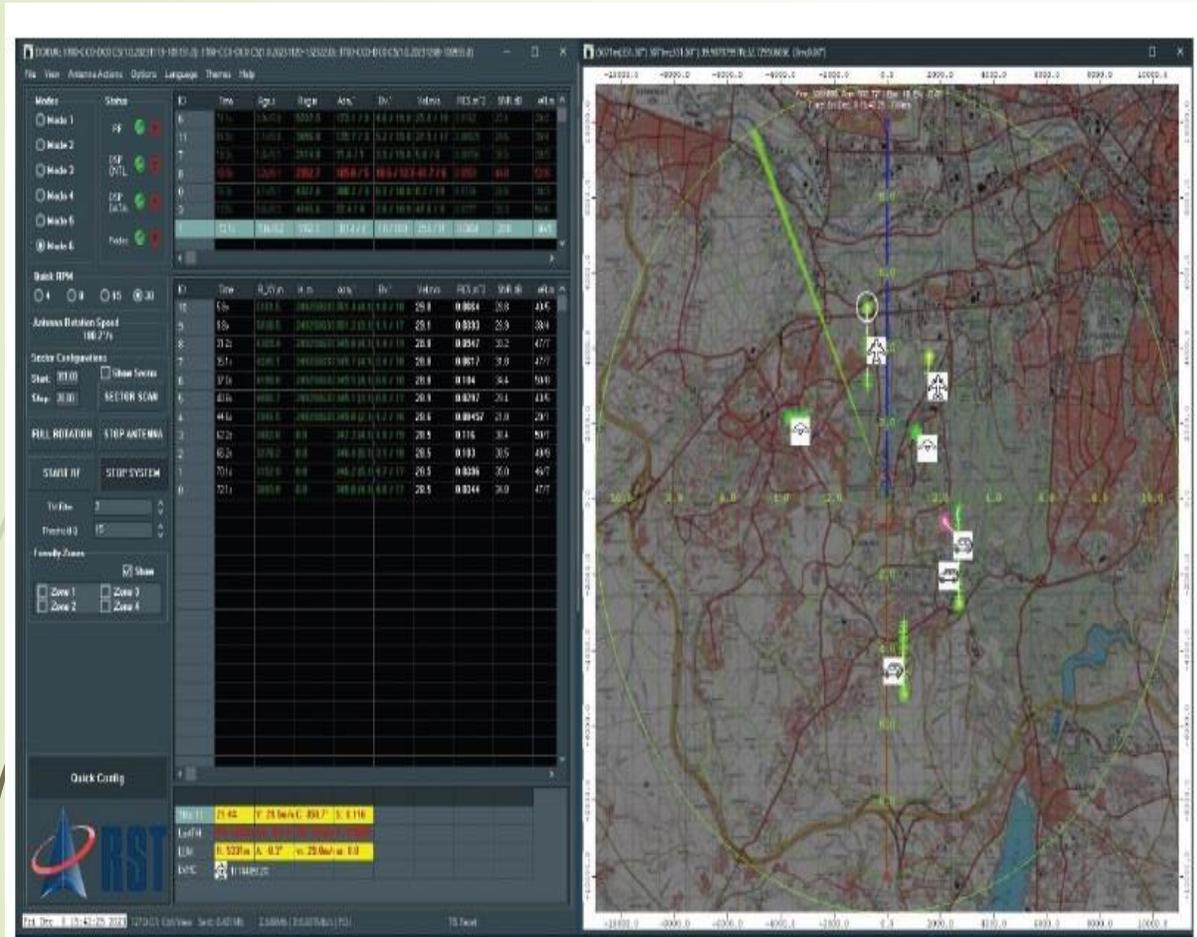
Takes the hostile UAV's down

3-D Radars



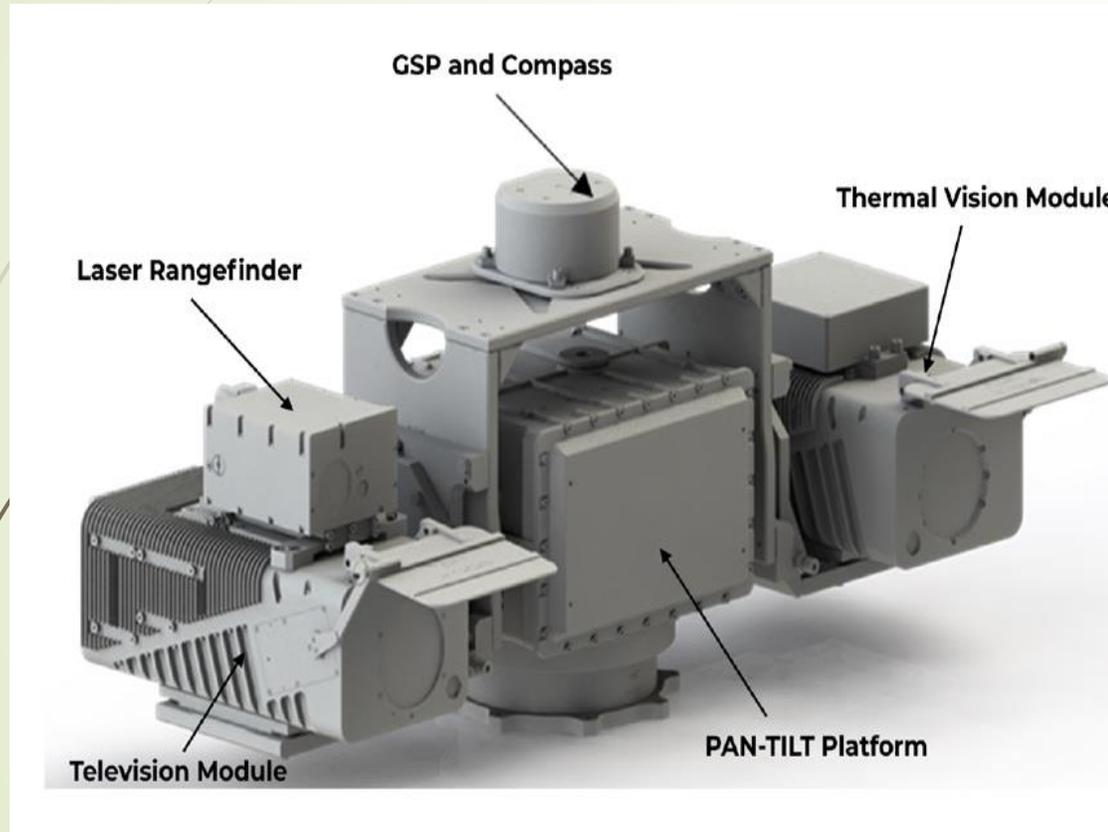
- ▶ **Detection Speed Range:**
Vehicles b.w. 0.2 m/sec to 160 m/sec (160x3,6=576 km/hour)
- ▶ **Detection Distance Range:**
Small UAV (RCS=0.01 m²) > 6km
Small Boat (RCS=0.5 m²) > 12 km
Human > 15 km
Glider > 20 km
Big vehicle, Small Ships > 28 km
Mid size aircraft > 40 km

3-D Radars



- Producer Company provides both hardware and software
- User Interface may be tailored according to purchaser's requests within the limits of operating software.
- 3-D positioning of hostile vehicles to direct to the next step which is identification with cameras.
- Please refer to related product catalogue for more detailed technical information

OES (Optoelectronic System)



- ▶ **Cooled Thermal Vision Camera**

640x512 px

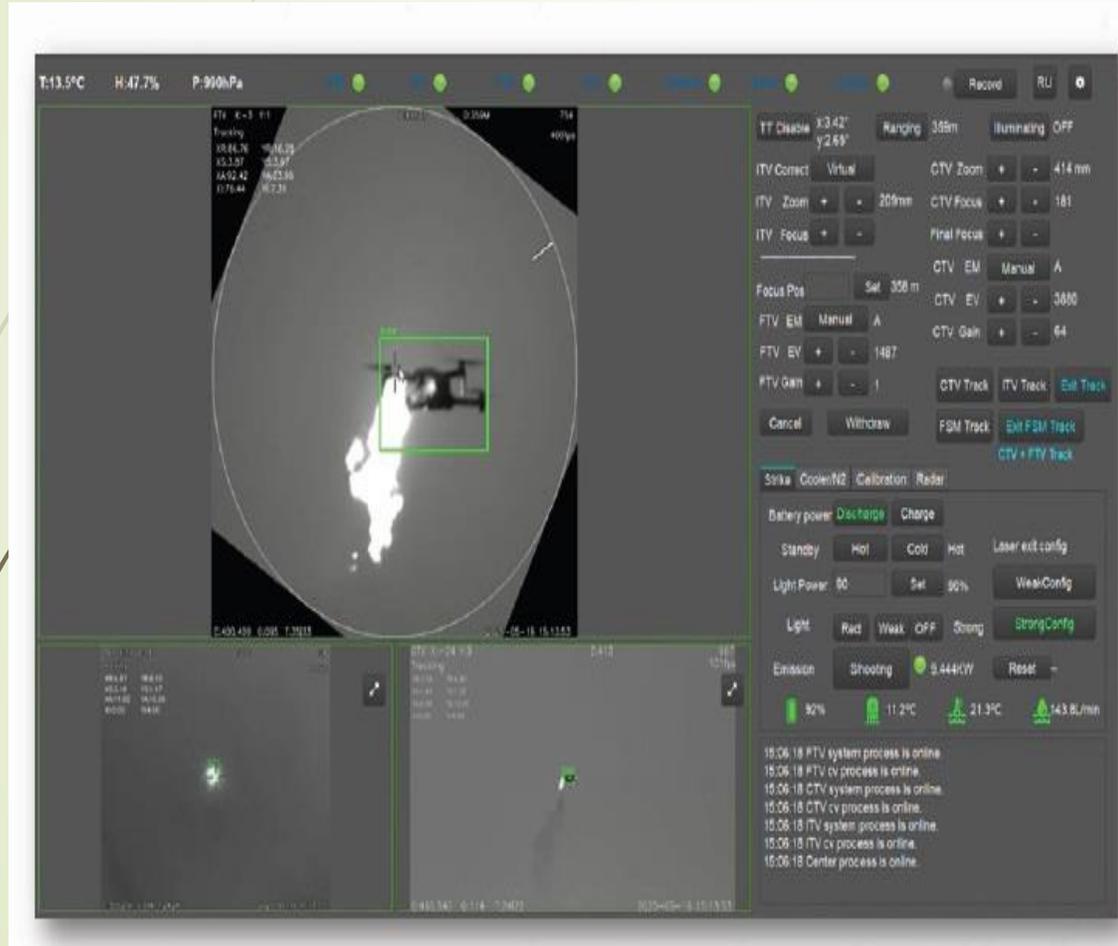
- ▶ **TV-Camera**

Full HD (1920x1080)

- ▶ **Laser Rangefinder (distance measurement)**

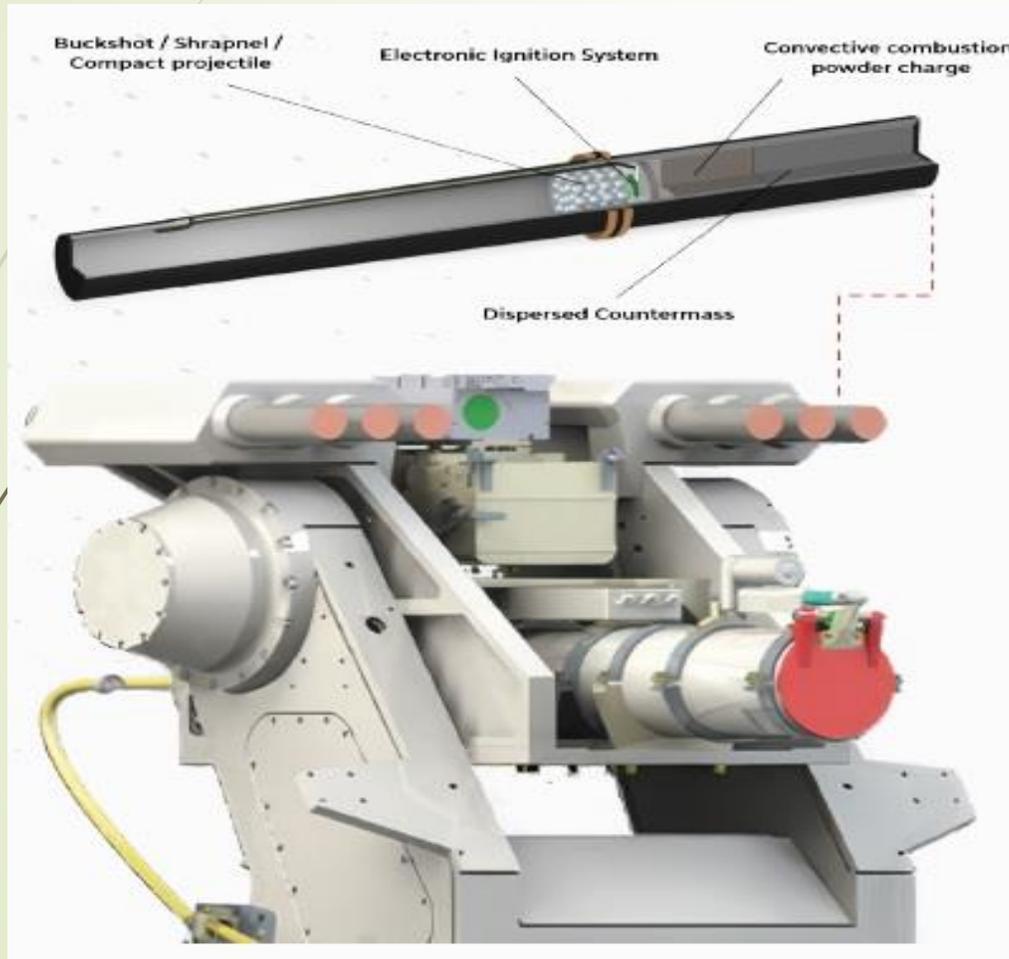
Laser wavelength 1064 nm,
range from 150 m to 20 km

OES (Optoelectronic System)



- Takes photo and video and shares on control module for final identification of vehicle
- Capable for Night Operations with Thermal Vision Camera
- Laser Rangefinder, measures the range of UAV 150 m to 20 km

Close Range Module for UAV elimination



- Close range module is a firearm,

which creates a cloud of pellets in the trajectory of UAV's.

In short; the system does not target a single sharp shoot for each UAV,

as UAV's move they hit to this cloud of pellets, and they are eliminated.

- Number of pellets in a charge, 450 pcs.
- Diameter of pellets, 4 mm
- Diameter of the scatter of damaging elements at a distance of 100 meters
- Trigger mechanism, electronic
- Please refer to related product catalogue for more detailed technical information**

Laser system for UAV tracking and elimination



► Main Tactical And Technical Parameters

- Radiation power; 10 kW higher power lasers are currently being developed by optimizing size and power consumption parameters

- Self-contained Electric Power Generator

Please refer to related product catalogue for more detailed technical information

Laser system for UAV tracking and elimination



➤ LASER SOURCE

Output power	10 000 W
Operating mode	cw/modulated
Power adjustment	10-100 %
Center wavelength	1080 nm
Output fiber core diameter	20 μm
Output fiber length	5 m
Fiber output connector type	QBH
Operating voltage	380 V

Laser system for UAV tracking and elimination



Optional Composition of the Mobile Complex

Alternative scheme of Laser Weapon System Configuration in a complete set for vehicle installation.

