

UAS in Ukraine

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UAS in Ukraine – Sources of information

- ARES – Armament Research Services: “Raising Red Flags: An Examination of Arms & Munitions in the Ongoing Conflict in Ukraine”, Jonathan Ferguson & N.R. Jenzen-Jones (2014)
- The Potomac Foundation: “‘Lessons Learned’ from the Russo-Ukrainian War – Personal Observations”, by Dr. Phillip A. Karber (2015)
- ARES: “Emerging Unmanned Threats: The use of commercially-available UAVs by armed non-state actors”, by Larry Friese (2016)
- Collected open information from the Internet, by the Technical Intelligence Department, FMV

UAV systems add new capability

Observations have found

- an **extensive** use of UAV systems, including COTS, on both sides;
- a **variety** of operational use; and
- that sensor information in **real-time** reaches all types of units;

Conclusions, there is

- an ubiquitous presence of UAVs;
- an increased lethality of indirect fires; and
- a declining survivability of Light Infantry Vehicles.

The Ukrainian military has formed an aerial UAV reconnaissance unit, Aerorozvidka, which initially relied entirely on commercially available models.

Extensive use of UAV systems in eastern Ukraine

Reports:

- finds extensive use of UAVs by both Ukrainian armed forces and pro-government non-state groups and by separatist forces
- suggests that the Ukrainian government and pro-government forces have employed a wider range of COTS small UAVs in larger numbers than their opposition.
- several postings on the Internet indicates that both sides have employed COTS small UAVs in the ISTAR role and, in particular, to act as aerial observers for adjusting artillery fire



Pro-Russian separatists launch a COTS small UAV near Donetsk Airport



DJI Phantom 2 series drones sent by US support groups received by Ukrainian National Guard fighters

Russian UAVs used in Ukraine

Orlan-10

- A common in the Russian armed forces
- Widespread use in Ukraine
- Gyro stabilized multi-sensor, IR and EO



Max. take-off weight	18 kg
Payload weight	6 kg
Engine	Gasoline
Effective air time	10 h
Max. altitude	5000 m

Granat 4

- Used for photo reconnaissance and artillery spotting/targeting.
- Allows SIGINT roles and act as a radio relay for friendly forces.



Payload weight	3 kg
Engine	Gasoline
Effective air time	6 h
Max. altitude	4000 m
Payload	EO/IR video, EW

Zastava (IAI Bird Eye 400)

- Developed by the Israeli IAI Malat
- Start by rubber band
- Contract with Russia in 2009



Max. take-off weight	5,6 kg
Payload weight	?
Engine	electric
Max flight duration	1 h
Max. altitude	450 m

Forpost (IAI Searcher III)

- Developed by Israeli IAI Malat
- Russian Searcher III contract in 2009
- Considerable use in Ukraine
- Advanced reconnaissance system with good night vision capability



Payload weight	68 kg
Engine	gasoline
Max flight duration	18 h
Max. altitude	6100 m

Variety of Operational Use

Operational use includes Reconnaissance, Fire Control, Electronic Warfare and Mapping.

- Very long-range strategic surveillance high-altitude UAV flying along the border and Ukrainian southern coast;
- Long range higher-altitude fixed wing drone flying over Ukrainian positions beyond Brigade rear area;
- Medium-range fixed with drone used in target acquisition and real-time engagement with less than 15 minute response time, associated with *Urgan* and *Smersh* Multiple Launch Rocket Systems (MLRS);
- Short-range fixed wing drone particularly associated working with BM-21 MLRS targeting;
- Very short-range tactical quad-copter used for scouting defence positions and post-strike Battle Damage Assessment (BDA).



The OSCE UAVs was jammed and could not perform its mission as planned.

Sensor information in real-time to all types of units

The systems having sent sensor information in real-time to all types of units. The result is

- an increased lethality of indirect fires; and
- a declining survivability of Light Infantry Vehicles.

The tactical impact of a UAV-infested world has profoundly changed the nature of battlefield tactics.

- Awareness that one is being targeted inhibits movement, particularly in daylight.
- The importance of camouflage, dispersing assets into civilian areas, and the use of deceptive signatures has shifted movement into a nocturnal mode, with both offense and defence impact.
- For US and NATO forces, used having unilateral access to UAV technology, the omnipresence of drones and the experience of real-time targeting by mass fires is a new experience.
- From now on friendly forces ought to be exercising with opposing forces extensively utilizing drone technology and assuming that they are under constant UAV real-time surveillance.