



THE CYPRUS  
INSTITUTE

RESEARCH • TECHNOLOGY • INNOVATION



UNMANNED SYSTEMS  
RESEARCH LABORATORY



# Unmanned Systems Research Laboratory (USRL)

Tailor-made Unmanned Solutions



# Research & Development

USRL is currently the largest drone facility in Cyprus. It was established in 2010, as a national-grade infrastructure. It is comprised of an **experienced multi-disciplinary team** which includes pilots, mechanical/electronic engineers, composite aircraft developers, and software developers. USRL operates a number of facilities which are unique in the Mediterranean:

- A **private UAS test facility with a dedicated runway** (12x200m) with overhead **airspace** (16Km<sup>2</sup>, 6Km ceiling), granted by the Department of Civil Aviation dedicated for UAV flights.
- Two **state-of-the-art laboratories** (electro-mechanical & composite materials) dedicated to the development of novel, tailor-made UASs.
- A **mobile ground control station** (GCS) for remote flight control of the UASs and for real-time monitoring of collected atmospheric data and other flight parameters.



## Unmanned Aerial Systems (UAS)

The USRL operates a **large fleet of multi-rotor and fixed wing UAS** offering different capacities in terms of payload, flight endurance, range, maximum ceiling and operation in diverse conditions. USRL develops and operates its own tailor-made UAS in order to accomplish:

- Longer distance flights, >100km
- Higher altitude ceiling up to 7km
- Higher payload capacity up to 10kg
- Extended lifetime over other UAS types
- Higher performance under extreme conditions.



USRL is the first organization in Cyprus **accredited by EASA** to operate its UAS in Europe under the “Specific Category”



# Unique UAS Hardware & Software

The USRL designs, develops and operates bespoke UAS for demanding applications in diverse environments. The latest high TRL developments include end-to-end unmanned solutions which consist of high performance airframes, and an intelligent flight control and payload interface. The special software and firmware are internally developed in their entirety, providing enhanced compatibility with sensors and payload, and bearing zero dependence on third parties.



## Capabilities

### Rapid Acquisition and 3D reconstruction

- Efficient 3D Cartography of Large Areas
- Terrain assessment
- Detailed 3D models of complex infrastructures
- Training / Simulations / Virtual Reality



Nicosia Airport high-resolution 3D model.

### Day & Night Surveillance

- Increase situational awareness
- Coordination of tactical level operations
- Early warning and target acquisition on BVLOS areas
- Battle damage assessment
- Border patrol
- Convoy escort
- Communication monitoring, relaying and jamming
- Enhancement of the operational safety of critical infrastructure and man power



Night flying capabilities.

### Forest Monitoring

- Preventive Aerial Patrolling of the Cyprus Forests
- Provision of Training to the Cyprus Department of Forests UAV team



Forest monitoring.

# Capabilities

## Operation from marine vessels

(multi-rotor and fixed-wing UAS)

- Participation to R&D projects with UAV flights from marine vessels while sailing (in the Mediterranean, Red Sea, Indian Ocean, Gulf)



Operations from marine vessels.



Search & rescue activities.

## Search and Rescue (indoors and outdoors)

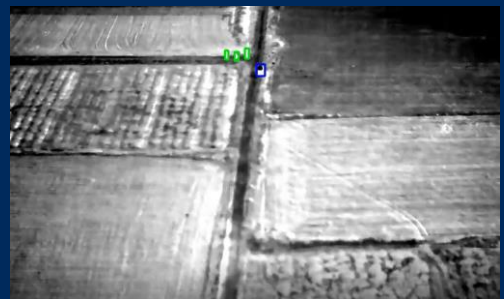
- Participation in Search & Rescue Exercises with Civil Defense & National Guard to inspect buildings with collapse-risk, searching for victims

## Incognito surveillance

- motors-off on fixed-wing, throttle kill mode
- multi-rotor quiet overfly or land, listen and see
- UAV-balloon systems for high altitude (>10km) surveillance

## Other applications

- Surveillance against illegal activities in land and sea
- Controlled Automated Release
- Delivery of supplies in friendly forward or isolated units
- BVLOS Target Acquisition
- Remote exchange of critical data & actions with Crisis Management Systems or Battle Management Systems
- Drone against drone (anti-aircraft defense)
- Smart Loitering Munition (SLM)
- Protection of Cultural Heritage against illegal activities



Identification of illegal looting activities.

## More information



<https://usrl.cyi.ac.cy>

## Contact

The Cyprus Institute  
20 Konstantinou Kavafi Street  
2121, Aglantzia, Nicosia, Cyprus  
Tel. +357 22208710 · +357 22208601  
email: [usrl@cyi.ac.cy](mailto:usrl@cyi.ac.cy), [info@cyi.ac.cy](mailto:info@cyi.ac.cy)