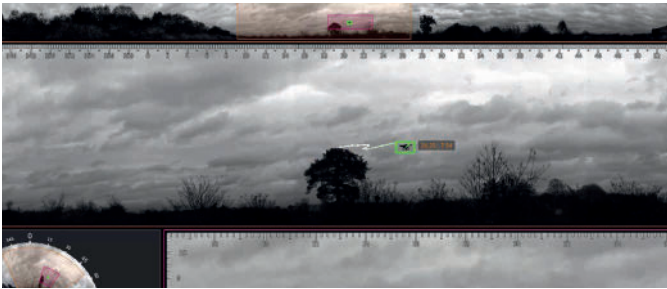# SPYNEL IR Camera: A Proven Solution for Drone Swarms /Small UAVs Detection & Tracking

OVERVIEW

Customer: Requires a drone detection solution

Challenge: Ensure accurate detection and tracking of any UAV threats with effective coverage – Easy integration with other security and facility systems

Solution: Fully passive, HGH's SPYNEL IR camera combined with its V-LRF option provides long-range, continuous surveillance. Recommended SPYNEL configuration: 2 Hz frequency; vertical field of view: 20°

Results: Detect & Track in real-time multiple drone threats, even swarm of drones with full 360-degree coverage to prevent any unintended intrusions from micro-UAV

Conclusion: HGH SPYNEL V-LRF cameras are a proven drone detection solution with significant technological advantages for drone swarm real-time tracking, day and night.

CUSTOMER

HGH SPYNEL cameras are effectively used in multiple applications **to detect drones and secure large areas against drone flyovers.** Typical use cases include critical infrastructures protection such as nuclear and electrical power plants, refineries, data centers, solar farms, but also ports, airports, prisons, military and government facilities, protection of borders, VIP events, superyachts, and more.

Our customers all aim at one single goal: the detection of any Unmanned Aerial Vehicles (UAV) threats as early as possible to prevent from a myriad of malicious acts including espionage, reconnaissance, invasion of privacy, smuggling and even terrorist attacks.

CHALLENGE

Detecting drones is a real challenge for many reasons. Constantly evolving, bringing on the market many different types of drones, and drone technology is becoming accessible to anyone. Drones are small and nonmetallic objects, which makes their detection and distinction from other flying objects such as common birds very challenging. The two major difficulties consist of keeping a low level of false negative alarms while detecting the drone at the earliest possible stage, many kilometers far away from the asset.

At this stage, common surveillance sensors such as radars, PTZ, Radio Frequency, and more have all disappointed, when used as a single technology to counter drones. An **integrated multiple sensor system is today the optimum solution**. It provides a greater likelihood of success as the weaknesses of one system is compensated by the strengths of others.

HGH with its family of renowned SPYNEL thermal sensors offers a unique set of solutions to address this evolving threat and **ensure true hostile drone detection and classification.**

SOLUTION

Designed to detect any kind of threats, SPYNEL camera is based on real-time panoramic thermal imaging measurements. The thermal imaging technology makes it impossible for a UAV to go unnoticed: any object, hot or cold will be detected by the 360° thermal sensor, day and night, 24/7.

Driven by the CYCLOPE intrusion detection software, Spynel tracks an **unlimited number of targets, even coming from multiple directions,** to ensure that no event is missed over a long-range. **SPYNEL is thus a proven solution to detect multi-target airborne threats like UAV swarming.** Moreover, SPYNEL is a versatile sensor with a large field of view enabling real-time surveillance of both airborne and terrestrial threats at the same time.

Awarded as the best anti-drone solution, the V-LRF option facilitates the recognition and identification of the threats.

The V-LRF option consists of a **visible channel and a Laser Range Finder**, which provides the user with the exact distance of all detected threats regardless of their size. Images captured provide the user with a **comprehensive understanding of the situation** regarding the detected UAV threats.
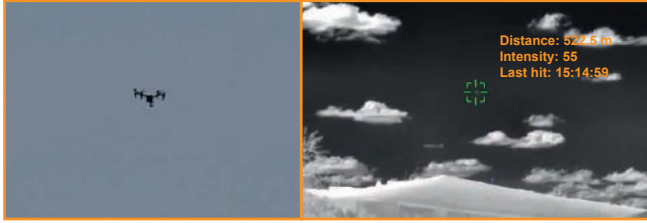
Visible and IR views with threat distance provided by the Laser Range Finder

Ultimately scalable, CYCLOPE software makes possible to extend surveillance capability by interfacing with other sensors, such as PTZ, radar, etc. **Fully ONVIF compliant,** it can be easily integrated into Video Management Systems, whilst HGH's proprietary CYCLOPE Hypervisor provides a **global monitoring of all threats** detected by multiple Spynels, installed over one or several critical infrastructures.

RESULTS

The CYCLOPE automatic detection and tracking software provides advanced features to monitor and analyze the 360° high resolution images captured by SPYNEL sensors.

The ADS-B plugin enables aerial target identification and the aircraft ADS-B data can be fused with thermal tracks to **differentiate an airplane from a drone**. A key advantage of the SPYNEL detection system for airport applications is that it is a fully passive technology, meaning it will not be a source of disturbance in the electromagnetic environment of the airport, unlike radars.

The advanced classification and alarm module enables the user to **customize the area settings to be secured** and to trigger specific actions in case of alarms. With the **forensics analysis** offering a timeline, sequence storage and playback possibilities, it is also possible to go back in time to analyze the behavior of the threat since its first appearance on the CYCLOPE interface.

The latest CYCLOPE version includes **3D passive detection by triangulation** when using several SPYNEL sensors at the same time. This new feature merges the data between several SPYNEL sensors providing **geolocation, altitude, distance and estimated speed of the drone target,** thus enhancing the detection confidence.
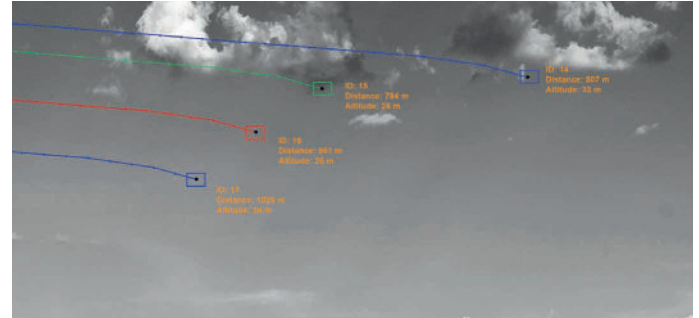
Real-time detection and tracking of 4 drones with altitude and distance information by dual SPYNEL triangulation

Designed to meet military standards, SPYNEL can also be **rapidly deployed** as a standalone solution for **temporary surveillance**, to face urgent cases. It can be set up at any place needed to be secured, in any environment, and be used in a stationery or mobile position.

CONCLUSION

SPYNEL is a proven-solution for UAV detection and tracking, making it the **sensor of choice to build an integrated counter drone solution.**

SPYNEL IR camera combines 360-degree coverage, multi-target long-range detection and tracking, real-time video recording, drone classification and multi-layer use. Easily deployable and fully passive, HGH's SPYNEL can be used both as a stand-alone drone detection system or be part of a complete counter-drone solution to address the growing UAV threat.

The SPYNEL solution is scalable allowing for **much larger sites with additional sensors** and/or **multiple sites** controlled either locally or in a single command and control center.

"Our latest SPYNEL developments have been dedicated to the fight against drones. SPYNEL sensors triangulation paves the way for detecting and tracking multiple drones coming from any directions, in real-time, along with consistent drone flight information.", said Edouard Campana, sales director at HGH.

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