

# Naval Base Panoramic Surveillance with SPYNEL 360 IR Passive Sensors



A naval base is a military base, where warships and/or nuclear submarines are docked when they have no mission at sea, need to restock or may undergo repairs. These bases are extremely critical and their open sea front constitutes a vulnerable path for terrorists and commandos. The 360° thermal imaging surveillance and video analytics capabilities provided by HGH SPYNEL sensors powered by CYCLOPE intrusion detection software will help the naval base to better address its security challenges.



## BACKGROUND

HGH has equipped several bases in the world with SPYNEL 360 thermal imaging surveillance solution. Typical protected assets include **naval bases, submarines' bases and shipyards**. The flexibility of the SPYNEL solution makes it easy to adapt to the base design for:

- Long-range surveillance of port entry with an open sea
- Long-range surveillance of coasts near the port
- Short-range surveillance of a dock inside a port

According to our customers “SPYNEL solution ensures a powerful 24/7, day night protection of the base against malicious acts thanks to the most comprehensive **real-time situational awareness** over 360°. The ability of Cyclope software to **identify and classify threats through Artificial Intelligence (AI)** has been a key selection criterion.”

## CHALLENGES

The main security challenge of a naval base is the **early warning** of any potential threats approaching the asset. Whatever the configuration of the base, these ones present a **congested environment** with numerous ships which makes the surveillance difficult. Unique capabilities of SPYNEL include:

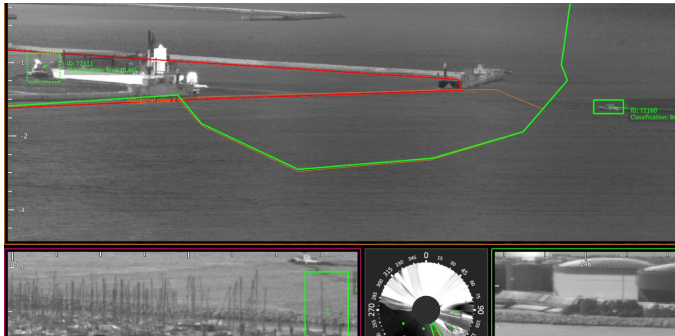
- Automatic detection, tracking and AI classification of a large variety of threats such as small crafts and zodiac, jet skis, drone swarms, rhib and more
- Short and long-range detection operational near the coast and at port
- Capability to analyze events in a dense maritime traffic
- Full 360° day-night situational awareness
- Video recording and playback
- Ease of installation and integration

## SOLUTION

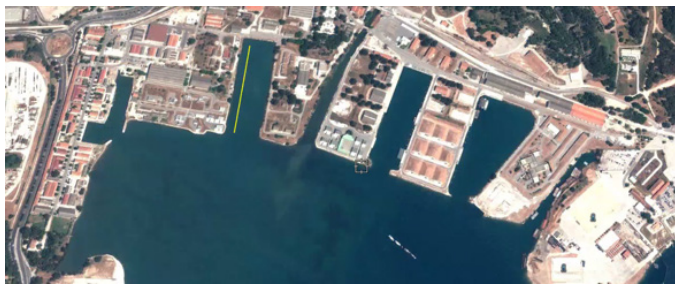
The **versatile range of SPYNEL 360 IR cameras** allows to fit any type of naval bases. Depending on the areas to secure and the criticality of the base, different SPYNEL models can be used.

- SPYNEL-U and -M cover short range distance up to 3.5km for RHIB detection
- SPYNEL-X, -S and -C cover long-range distance up to 12.5km for RHIB detection

Several bases are represented below highlighting the surveillance strategy deployed:



Multiple alarm zones set up at the entry of the port



Virtual line along a dock

### Thermal imaging vs Radar technology

Thermal imaging technology complements radar technology to overcome their limitations due to **multipath, sea clutter, interference** used by countermeasures and other phenomena. It often results in a lack of performance for detecting low air targets, fast maneuvering threats or other small floating objects. The powerful combination of 360 thermal imaging technology with advanced image processing provides **ultimate threats detection** in the **most challenging maritime conditions** such as rough sea and solar reflection.

Finally, critical military assets require **passive surveillance solution** to remain **insensitive to jamming and to avoid any explosion or fire risks** which could be generated by a radar technology.

**About HGH:** HGH has been an expert in infrared technology for over 35 years. Since 1982, HGH develops and sells leading-edge optoelectronic and infrared systems for surveillance applications, test & measurement and industrial thermography. In particular, HGH offers a range of panoramic detection systems, the SPYNEL series, for wide area surveillance applications in the security, defense, oil & gas and energy industries.

### Unique capabilities for threats detection, tracking and AI classification

For long-range surveillance applications, such as coastal surveillance near the base or surveillance of the open-sea, the CYCLOPE's alarm management module allows the user to set **multiple detection zones to be alerted upstream** if a potential threat is approaching. Three zones are typically configured: **early warning, warning and forbidden zone.**

**Virtual lines** can also be added at the entry of the port or a dock to **detect any anomalous crossing.** The **AIS plug-in** provides ship information and triggers an alarm in case an unauthorized boat is detected.

CYCLOPE software hence provides modular and easy ways to implement **successive analysis layers for optimal situational awareness.**

### Counter-drone for protecting sensitive sites

Facing a growing drone threats, naval bases need to equip themselves with anti-drone systems. With their **automatic multiple threat detection at long-range and panorama recording capabilities,** SPYNEL thermal imaging cameras bring significant advantages to anticipate any asymmetrical assault such as drone swarms and low altitude flying objects.

**"Real-time visualization coupled with Artificial Intelligence classification facilitate the understanding of the situation to early assess the potential risk approaching the naval base and hence quickly take decision."**, said Edouard Campana, Wide Area Surveillance BU Director.

## CONCLUSION

SPYNEL 360 thermal surveillance solution can be used as a stand-alone technology to protect the naval-base but also provides an **easy integration** into the current surveillance system.

For naval bases, sub-marines' bases and shipyards, SPYNEL **exceeds their expectations** in terms of advanced detection capabilities in **congested environments** and **versatility of the solution** to be adapted to any type of naval base configuration.



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