

CASE STUDY

NAVAL BASE PANORAMIC SURVEILLANCE

> 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, sub-marines' 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

> Challenges

The main security challenge of a naval base is the early warning of any potential threats approaching the asset.

Unique capabilities of SPYNEL include:

- Automatic detection, tracking and AI classification of a large variety of threats such as small crafts, jet skis, drone swarms, rhib and more
- Capability to analyze events in a dense maritime traffic
- Video recording and playback

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."

Whatever the configuration of the base, these ones present a congested environment with numerous ships which makes the surveillance difficult.

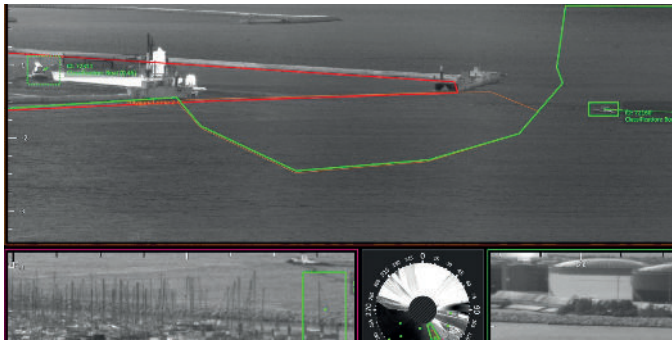
- Short and long-range detection operational near the coast and at port
- Full 360° day-night situational awareness
- Ease of installation and integration

> Solution

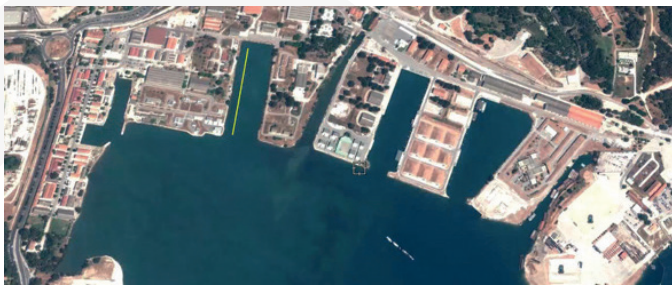
The **versatile range of SPYNEL 360 IR cameras** allows to fit any type of naval bases. Depending on the areas to secure and the criticality of the base, different SPYNEL models can be used.

- 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.

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.



Enlighten the Unseen

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