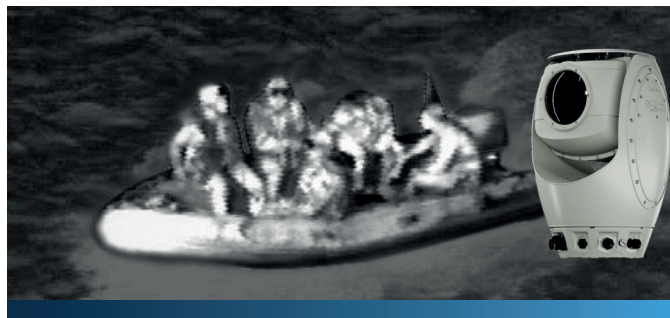


CASE STUDY

STRENGTHENING MARITIME SECURITY

> Strengthening Maritime Security of a Continental Island

Continental islands have a natural dependence on the maritime domain and are consequently vulnerable to maritime security threats. Maintaining the security of their coastlines is hence vital for their successful economic development. SPYNEL panoramic thermal imaging cameras were deployed across the island, to ensure all weather, day/night long range surveillance its maritime, coastline and aerial domain.



Spynel-X sensor and thermal image of a RHIB

> Background

Surrounded by water, continental islands are highly valuable assets which require to **be protected against a multitude of threats** including smuggling of migrants, drug trafficking, maritime terrorism, piracy, but also illegal fishing and pollution. The island states lack dedicated aerial surveillance capabilities, and their maritime patrol vessels have limited range, endurance and sea-keeping ability.

With their **automatic multiple threat detection** at long-range and **fast deployment** capabilities, Spynel thermal imaging cameras bring significant advantages to ensure the **full island coastlines security**.

HGH SPYNEL-X IR panoramic sensors were especially chosen by the coastal authorities of the island to provide:

- Coastlines surveillance of any kind of ships, vessels and small boats, jet skis and swimmers approaching the island
- Surveillance of the island straits
- Detection, tracking and classification of maritime targets and low-altitude aircrafts
- Real-time situational awareness for effective decision making

> Challenges

The **coastal authorities** manage the full surveillance of the continental island from **two control centers**.

A Video Management Software centralizes all videos coming from the multiple security sensors deployed across the island including CCTV, PTZ and panoramic thermal imaging cameras.

SPYNEL IR sensors support the protection of the sea front and are **coupled with PTZ cameras** for an accurate identification of the target.

- Secure kilometers of coastlines
- Must withstand difficult environmental conditions of the littoral: humid weather, fog, wind
- Fast and robust data processing for surveillance of dense maritime traffic
- Remote-controlled systems from two control centers with multi-users capabilities
- Controlled access of the PTZ camera associated to SPYNEL managed by a ticketing tool
- Seamless integration into third party VMS software and other security sensors
- Evidential videos

> Solution

Six SPYNEL-X IR sensors, capable to detect a RIB at up to 15km were deployed across the continental island on existing telecom masts to secure the coastlines.

24/7 Surveillance of the Maritime Domain & Coastlines

Coastal authorities are typically tasked with collecting, storing, and retrieving information about vessels moving in their coastal areas. SPYNEL cameras **detect, track and classify 24/7, all vessels approaching the coasts of the island.** Thanks to its **AIS plug-in**, SPYNEL captures ship information and triggers an alarm in case an unauthorized boat is detected. It is able to **analyze events in a dense maritime traffic**, contrary to PTZ subject to soda straw effects. This real-time picture of the maritime domain combined with smart classification allows the coastal authorities to **early assess the potential risk** and quickly take decision. Recording capabilities allow retrieving data on any past events.

Radar vs Panoramic Thermal Imaging Camera

SPYNEL sensors use the latest thermal imaging technologies providing unparalleled high resolution 360° videos, motorized tilt of spinning head and Artificial Intelligence. Unlike radar, the real-time visual information facilitates the understanding of the situation whilst the **passive technology** makes it undetectable by neighboring countries. SPYNEL sensors also enable reliable detection, tracking and classification of **small and fast moving targets as well as low air targets, which are typical limitations of radar.**



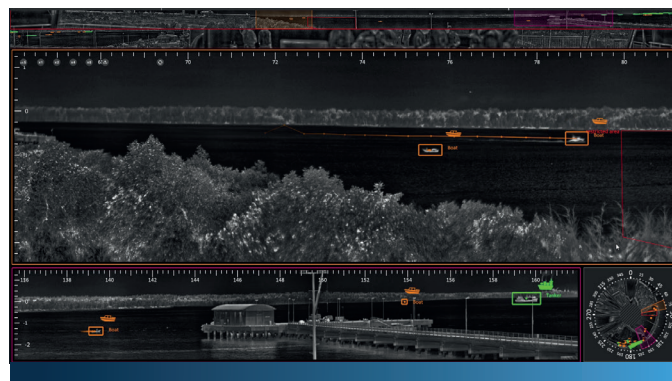
Maritime security of an island with Spynel sensors

Advanced Remote Operations

ONVIF compliant, the six SPYNEL cameras are remotely controlled from two control centers using a Cyclope Hypervisor station. Panoramic video streams are fused to have a complete surveillance picture of the island coastlines. Anytime a threat is detected, an alert stream is automatically sent to the VMS.

With the **client-server architecture**, several operators can take the control of a SPYNEL camera. Each SPYNEL sensor is associated to a backup server ensuring **recording continuity** with data redundancy. The client-server architecture used allows for a **reduced bandwidth stream**.

A ticketing tool ensures that on-site operators, from different working stations, can take control over PTZ cameras associated to SPYNEL camera. This function presents the advantage to use, if necessary, the PTZ camera in a different context than strictly identifying alarms raised by SPYNEL camera.



Cyclope GUI for maritime surveillance

"CYCLOPE software provides advanced maritime processing algorithms for automatic reliable threat detection and classification even in case of solar reflection, rough sea, or harsh weather.", said Clément Barbier, Asia Business Development Manager

> Conclusion

The main challenge in the protection of a continental island is the ability to **visually cover a very large area of coastlines** in real-time, 24/7 and in any weather conditions. Being part of a complete surveillance solution, HGH SPYNEL thermal sensors **enhance maritime situational awareness** to protect the island against a large variety of threats. SPYNEL have unique capabilities to provide a **comprehensive surveillance of both sea and sky.**



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