

## Patroller tactical drone: a modular design to address the multiple needs of maritime surveillance

**Maritime surveillance is a key to ensuring homeland security and protecting countries' economic interests. It concerns the safety and security of ships, crews and passengers, to protect merchant marine traffic, monitor fishing zones, guard borders, protect the natural marine environment and fight against terrorism and illegal trafficking.**

Given the vast surface area of our seas and waterways, this is an immense challenge. The density of vessels in shipping channels allows small speedboats to undertake piracy and terrorism without necessarily having to hide. We must therefore quickly detect and identify these threats so we can react in timely fashion using the appropriate resources.

To meet this challenge and handle such a wide variety of missions, security forces need highly versatile and interoperable systems. One of the most pertinent responses is the long-endurance, multi-sensor surveillance drone.



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The operational concept for a maritime surveillance drone is based on a long-range maritime radar, used to locate and track ships, merge these radar channels with AIS (Automatic Identification System) queries in order to classify detected ships as "friend or foe", and then if necessary check the identification of the ships via a gyro-stabilized observation pod, which can also provide a precise geolocation of the ship being observed. The drone and its payload are controlled from a station on the ground or on a ship, which receives and processes information from the different sensors then fuses this data to determine the tactical situation.

Given these trends, Safran Electronics & Defense, the legacy French supplier of tactical drones, is offering a maritime version of its new Patroller™. As early as 2013, within the scope of the Seabilla program, demonstration flights over the English Channel showed the ability of the Patroller™ to automate various surveillance functions, such as the autonomous detection of boats in a given zone, or the automated drafting of observation reports.

In early 2018, Safran was selected as part of the Ocean 2020 consortium for the European Commission's first Preparatory Action for Defense Research (PADR). The Patroller™ will be used in a maritime surveillance version during European exercises in the Baltic Sea. The mission system is based on a maritime surveillance radar, an AIS receiver and the Euroflir™410 gyro-stabilized pod. The data collected will be transmitted to operations centers and to the combat systems on several ships. Tests will demonstrate the mission system's new capabilities in terms of automated trajectory search, and autonomous target tracking and detection.

Safran Electronics & Defense is also involved in preliminary risk management studies for the navy's drone system, conducted by Airbus Helicopters and the Naval Group.

Based on the S-15 powered glider composite airframe by the German manufacturer Stemme, and certified by the European Aviation Safety Agency (EASA), the Patroller™ can fly at 20,000 feet for 20 hours. Studies to integrate a "see & avoid" system are underway to pave the way for flights in non-segregated airspace. Because of its modular design and payload capacity (250 kg), the Patroller™ can carry a number of sensors, to adapt to all types of missions. It can therefore carry out a broad range of homeland security missions: coastal and border surveillance, policing and road safety, protection of high-value sites and infrastructures, monitoring of natural disasters, etc.



#### Safran Electronics & Defense

The Euroflir™410 surveillance pod, a key to the Patroller's success, is the culmination of Safran Electronics & Defense's 35 years of experience in developing and building airborne optronic systems. Designed for aircraft of all types – airplanes, helicopters, balloons and drones – the new-generation Euroflir™ offers very-long-range observation and advanced functions. Its latest-generation high-definition cameras and multispectral telescope allow long-range detection and identification in several different bandwidths under any conditions (night, smoke, dust, fog, marine environment, etc.). The Euroflir™410 is fitted with different types of lasers, including a rangefinder and an optional pointer, illuminator and designator. It supports all types of operations: terrestrial or maritime surveillance, patrols, rescue, weapon guidance, etc.