PATROLLER™ RPAS

The tactical long-endurance Remotely Piloted Aircraft System

SAFRAN
Safran Electronics & Defense, a Safran high-tech company, holds world or European leadership positions in optronics, avionics, electronics and critical software for both civil and military markets. Safran Electronics & Defense is the No. 1 company in Europe and No. 3 worldwide for inertial navigation systems (INS) used in air, land and naval applications. It is also the world leader in helicopter flight controls and the European leader in optronics and tactical RPA systems. Operating across the globe through the Safran international network, Safran Electronics & Defense and its subsidiaries employ 7,600 people in Europe, Asia-Pacific, North America and South America.
PATROLLER, THE TACTICAL LONG ENDURANCE RPAS
MULTISENSOR, MULTIMISSION
FRONT-LINE TROOPS SUPPORT
HOMELAND SECURITY
MULTISENSOR INTELLIGENCE
BOARDER COASTAL SURVEILLANCE
HOMELAND SECURITY
**PATROLLER™**

The Patroller is a long-endurance drone system, or Remotely Piloted Aircraft System (RPAS), used for ISR missions in the context of military operations or homeland security. It allows discreet surveillance of sensitive zones, coasts and borders, natural disasters (forest fires, earthquakes, floods, hurricanes, etc.) or to monitor illegal trafficking.

The ground station gives operators real-time control, allowing them to accurately track mission progress, while providing high-resolution situational awareness and high-precision target location.

**ENDURANCE:** 20 hours  
**MISSION PAYLOAD:** 250 kg (670 lb)  
**CEILING:** 6,000 m (20,000 ft)  
**SPEED:** 100 to 200 km/h (55 to 110 kts)  
**RANGE:** 200 km in Line Of Sight > 1,000 km with SATCOM
Patroller is Safran Electronics & Defense’s latest RPA system, offering a high-value-added intelligence, monitoring and targeting solution. Its design is based on the feedback from nine years of operations of Safran Electronics & Defense’s Sperwer tactical RPA in Afghanistan, deployed by the armed forces of three NATO countries: the Netherlands, Canada and France. The Patroller RPAS was selected by the French MoD in 2016 after a competition involving international solutions. Following Crecerelle and Sperwer, the French Army renewed its trust in Safran RPAS for the third time.

The new-generation Patroller RPA was developed by Safran Electronics & Defense in cooperation with the German manufacturer Ecarys (Stemme), which provides for the Patroller RPA its ES15 airframe, EASA CS 23 certified. The Patroller RPAS is undergoing a formal NATO STANAG 4671 certification process which will lead to an RPAS type certificate recognized by NATO countries.

- High-performance multisensor system
- Small logistics footprint
- Automated taxiing, takeoff and landing operations: ATOLS system
- Mission system upgradeable throughout the life of the program
- Integrated in the intelligence and command network
- Reduced operating costs
- Easy insertion in the airport traffic
- Streamlined operating and support teams
Multisensor payload
EG/IR, COMINT, SIGINT, radar and other sensors.

Triplex avionics
for guaranteed in-flight reliability, in compliance with latest certification standards.

Precision navigation system
Operational in GPS denied environment.

Automatic takeoff & landing
without ground infrastructure.

Reinforced landing gear
for takeoffs and landings on rough terrains.

Retractable landing gear
to avoid any masking of sensors.

High data rate
Redundant datalinks
using several frequency bands, protected against jamming and intrusion, and ensuring the integrity of the high-resolution imaging system.

Optional SATCOM link.

Integration of Detect & Avoid avionics
in a pod or the fuselage, to allow operation in non-segregated civil airspace.

Euroflir™ 410
Safran Electronics & Defense
in-house technology.
Intelligence units deploying tactical drones count on Patroller’s modular design to configure its sensor suite for each mission. Its ground control station is fully interoperable with national and NATO C2 systems, which means that the Patroller can be integrated in joint service forces to support:

- Sensor networks deployed by intelligence brigades, or joint services multi-sensor intelligence battalions
- Joint services tactical groups or sub-groups
- Front-line land forces
- Combat and support units: mechanized, artillery and engineering units, combat helicopters, etc.
- Special operations
- Topographic missions
- Preparations for force deployments on national territory

At the heart of the sensor-to-shooter system

The deployment of systems based on new technologies from Safran Electronics & Defense is part of a real-time operating loop that links sensors to shooters, all under the control of digital command and control systems.
Safran Electronics & Defense designed the Patroller as a modular, open system, with a scalable and unified mission package calling on the latest, most innovative solutions for both airborne sensors and the ground control station.

For ground surveillance missions, Safran Electronics & Defense combines the high-resolution Euroflir 410 EO/IR pod with a COMINT (communications intelligence sensor) dedicated to monitoring of the RF spectrum or a Synthetic Aperture Radar (SAR).

Based on this configuration, the Patroller helps to protect troops in the field. It provides enriched data on tactical situations, while also conducting electronic warfare (EW) operations.

The Patroller’s high-performance COMINT payload, pod-mounted under the wing, provides RF interception, positioning, analysis and listening capabilities, even for frequency-agility transmitters and satellite communications.

The GMTI mode of the SAR enables the Patroller to detect moving targets and offers high-resolution images, giving further details of the scene even through the clouds.

For maritime surveillance missions, the Patroller is fitted with a multimode surveillance radar, enabling the detection of maritime activity over a large zone. This version also includes an Automatic Identification System (AIS) to identify friendlies.

The drone’s reduced infrared and acoustic signatures mean that it can carry out surveillance missions in enemy zones, with low observability.

The main sensors are operated simultaneously and combined to deliver enhanced information. Three video streams are displayed simultaneously, along with data from the aircraft’s other sensors.
The multimode radar payload may be used as the wide-field-of-view sensor to detect and locate ships in the whole area of interest. Thanks to the maritime AIS, the operator can check the status of the detected ship and can automatically cue Euroflir payload on the target for identification in a very narrow field-of-view.
A MULTISENSOR SYSTEM THAT ADAPTS TO EACH MISSION

Long-endurance

EO / IR
2 underslung tanks

Land surveillance

EO/IR
COMINT or radar
1 underslung tank

Maritime surveillance

EO / IR
AIS
Maritime radar
1 underslung tank

Complete configuration

EO / IR
COMINT / ELINT
AIS
Maritime radar

EO / IR: electro-optical/infrared
COMINT: Communications intelligence
ELINT: Electronic intelligence
AIS: Automatic Identification System
The Patroller RPA features a latest-generation Euroflir 410

Euroflir 410 incorporates 10 high-performance sensors, allowing all-weather observation and laser designation.

The Euroflir 410 combines outstanding stabilization with video tracking, geo-features, optimized scanned modes and enhanced real-time image processing. It offers unmatched range and targeting performance, and reduces operator workload.

The Euroflir family capitalizes on Safran's expertise in high-performance multi-sensor stabilized platforms.

More than 3,000 airborne systems have been delivered since the 1960s.

Euroflir 410 already equips the NATO Helicopter Management Agency program’s NH90 helicopters and the French Navy’s AS565 Panther.
Safran Electronics & Defense designed the Patroller system based on extensive feedback from armed forces. The system’s design reflects a holistic analysis of how a drone system fits into operations, whether on national territory or in foreign deployments, as part of national or allied forces.

The Patroller’s architecture, deployment modes and service capabilities for front-line units address the evolving requirements of operational forces, including:

- Quick, easy deployment to support the initial engagement of forces in a crisis situation
- Low acoustic, infrared and radar signatures, enabling it to identify without being detected
- High-performance sensors for long-range, low observability observation
- Integration in digital networks for real-time actions to support armed forces
- Simplified maintenance originating from civil aviation practices

- Joint services and allied interoperability to facilitate intelligence sharing
- Integration into standard containers to be easily transported by air, land or sea
- Can be operated from rough strips without the need for infrastructure, ground sensors, arrest cables, etc.
- A very robust EASA CS 23 certified airframe, designed for private airfield operations incorporating the strong design margins required for safe manned applications.

In compliance with NATO’s Stanag 4609 standard
The Patroller ground control station features a user-friendly design to efficiently handle all mission phases, from planning to playback. To facilitate operators’ tasks, Safran Electronics & Defense has developed advanced image processing software for intelligence gathering and enriched tactical data displays. The station includes a modem to ensure NATO Stanag 4609 interoperability, for intelligence sharing with allies. Designed to provide real-time control of all sensors on Patroller, the ground station also integrates civil protocols for homeland security missions.

**INFORMATION TRANSMISSION**

The Patroller is a high-performance information gathering platform, which transfers information using a wide variety of systems.

- Real-time transmission of sensor data to command posts via secure high-speed connections
- Real-time transmission of images and associated metadata to rapid response teams on the ground via Remote Video Terminal (RVT)
The Sperwer RPA has been deployed in Afghanistan by the armed forces of Canada, the Netherlands and France, logging a total of 2,500 sorties and 7,500 hours in flight.

As prime contractor for the Sperwer, Safran Electronics & Defense consolidated all technologies needed for the development, production and integration of this RPA system: airframe, launch systems, day/night gyrostabilized optronic systems, mission planning, inertial navigation, flight control, data and real-time image transmission.
Safran Electronics & Defense developed and produces the Sperwer tactical RPA system, deployed by the 61st artillery regiment, and also provides through-life support.

The Sperwer system was first delivered to the French army’s intelligence brigade in 2004, and has been continuously modernized and upgraded over the years. It was deployed by the French army in Afghanistan from November 2008 to June 2012, and is still operational in other countries.
COMPREHENSIVE SERVICE FOR
LOCAL CUSTOMER SUPPORT

Safran Electronics & Defense has complete facilities in France covering the entire RPA production cycle: R&D, integration, support and modernization. Our development and production facilities meet the most stringent standards, calling on our world-class expertise in mission planning and execution, flight control, optronic sensors, integration in C4ISR networks and navigation systems.

COMPREHENSIVE SUPPORT FOR ALL RPA SYSTEM USERS

To operate in far-flung theaters, armed forces must have fully autonomous RPA deployment capabilities. We therefore aim to deliver turnkey systems, including operational assistance and maintenance. Our top priority is to maintain the dispatch reliability of all systems we deliver to these forces. Safran Electronics & Defense has therefore set up a comprehensive support organization, including training courses and operational simulation and training tools in cooperation with local partners. Based on our proven expertise in all enabling technologies for RPA systems, we deliver fast support, while providing our proven operational expertise for the deployment of these systems. Our support capabilities were fully proven during more than nine years of operations in Afghanistan.
A French-German partnership
Ecarys (Stemme)
S15 airframe, certified to EASA CS 23

ERAGNY
R&D for RPA systems and infrared sensors, qualification and flight tests

MASSY
Optronics R&D, safety-critical software, tactical information systems

DUJON
Production of gyrostabilized optronic pods

MONTLUÇON
RPA system integration, production of flight control, navigation, and rangefinding equipment, through-life support, acceptance tests.

FOUGÈRES
PC boards

POITIERS
Production of imagers and optics

ISTRES air force base
Safran branch, flight test support

COMPLETE INDUSTRIAL FACILITIES FROM A FRENCH PRIME

SAFRAN ELECTRONICS & DEFENSE FACILITIES INVOLVED IN RPA PROGRAMS
Safran Electronics & Defense has integrated innovative solutions throughout Patroller to ensure top-flight performance, including the ground segment, platform, sensor system, intelligence analysis and transmission, deployment, maintenance and tactical tools to support front-line forces.

Safran Electronics & Defense understands and applies all key technologies for the system, based on proven expertise:

- Day/night gyrostabilized optronic observation systems
- Real-time data and image transmission
- Inertial navigation and flight control
- Ground segment (control stations, etc.)
- Mission planning and playback
- Systems integration
- Portable receiving terminals for geo-referenced images
- Integration in the digital battlefield
- Airworthiness and flight tests
- Development and production of modernization solutions
A WIDE RANGE OF SURVEILLANCE MISSIONS

DEFENSE - C4ISR
- Intelligence
- Regional theater surveillance
- Reconnaissance/Tactical support

HOMELAND SECURITY
- Border monitoring
- Surveillance of major events
- Protection of high-value sites
- General surveillance
- Combating illegal immigration
- Maritime safety/Coastal monitoring
- Civil security (natural disasters, environmental protection, etc.)
- Mapping, urban planning