PATROLLER™ UAV
SUPPORTING THE HOMELAND SECURITY FORCES
SAGEM, a Safran high-tech company, holds world or European leadership positions in optronics, avionics, electronics and critical software for both civil and military markets. Sagem 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 UAV systems. Operating across the globe through the Safran international network, Sagem and its subsidiaries employ 7,500 people in Europe, the Asia-Pacific, North America and South America.

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PATROLLER™
The Patroller is an unmanned aerial vehicle (UAV), used for both civil and military missions. It is capable of discreetly overflying sensitive zones during conflicts, or monitoring events (political meetings, sports events, etc.), coastal zones and borders, or areas affected by natural disasters (forest fires, earthquakes, floods, hurricanes, etc.). The Ground Control Station allows operators to control it in real time, and to provide high resolution sensor data, including high-precision threat location.

ENDURANCE : 20 hours
MISSION PAYLOAD : 250 kg / 550 lb
CEILING : 20,000 ft / 6,000 m
SPEED : 50 to 110 kts / 100 to 200 km/h
RANGE : 100 NM (180 km) extendable to 650 NM (1,200 km)
Sagem’s Patroller long endurance UAV provides a high-value-added intelligence, monitoring and search solution. Its design capitalizes on the feedback acquired by Sagem through ten years of its Sperwer UAV military operations. The Sperwer UAV has been deployed in Afghanistan by the armed forces of the Netherlands, Canada and France. The Patroller UAV has been developed in cooperation with the German manufacturer Stemme/Ecarys, which provides its aircraft, certified according to EASA CS 23.

- High-performance multisensor system
- Small logistics footprint
- Automatic takeoff, takeoff and landing (ATLOS system)
- Easy integration in airport traffic
- Mission system upgradable throughout the life of the program
- Access to intelligence databases
- Affordable operating costs
- Easy to operate and maintain
- Compatible with communications networks

Euroflir 410 EO/IR turret with high-performance optic: electro-optical, IR sensors, multispectral telescope with high magnification, laser designator and rangefinder, providing high resolution images and very accurate threat localisation.

Multisensor payload with EO/IR, AIS, radar and other sensors

Triplex avionics for high reliability in compliance with latest certification standards.

High precision navigation system, resistant to loss of GPS signals

Reinforced landing gear for takeoff and landing on rough terrains

Retractable landing gear to avoid any masking of sensors

Protected datalink redundant on different frequency bands, resists jamming and intrusion. High data rate ensuring the coherence with the high-precision imaging system.

Integration of «detect & avoid» avionics in nacelle or fuselage, to allow operation in non-segregated civil airspace.

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A WIDE RANGE OF SURVEILLANCE MISSIONS

DEFENSE – C4ISR

- Intelligence
- Regional theater surveillance
- Reconnaissance/Tactical support

SAFETY & SECURITY

- Border monitoring
- Homeland security: surveillance of major events, protection of high-value sites, general surveillance, Combating illegal immigration, etc.
- Maritime safety/Coastal monitoring
- Civil security (natural disasters, environmental protection, etc.).
- Mapping, urban planning

GROUND CONTROL STATION

The new Patroller Ground Control Station features an advanced ergonomic design to efficiently handle all mission phases, from planning to playback.

To facilitate operators’ tasks, Sagem has developed advanced image processing software for intelligence gathering and enrichment of situation in the field.

Designed to handle real-time control of all sensors on Patroller, the ground station also integrates military and civil protocols for intelligence exchanges in interministerial missions.

INFORMATION TRANSMISSION

As an high performance information gathering platform, Patroller is a tool allowing to master information over a wide spectrum of operations

- Real-time transmission of sensor data to command posts via secure high-speed connections
- Real-time transmission of images and associated metadata to reaction teams on the ground via Remote Video Terminal (RVT)
Sagem designed the Patroller as a modular, open system, with a scalable and unified mission package calling on the latest, most powerful solutions for both airborne sensors, data transmission and the Ground Control Station.

For terrestrial surveillance missions, Sagem combined the high-resolution Euroflir 410 optronic pod with sensors dedicated to monitoring of the electromagnetic spectrum.

Based on this configuration, the Patroller helps protect troops in the field. It provides enriched data on tactical situations, while also conducting radio communication interception operations. In addition, it contributes to enrich the sensors input of a multi-source intelligence center.

The Patroller’s high-performance electromagnetic spectrum surveillance payload, pod-mounted under the wing, provides radio-communications interception, positioning, analysis and listening capabilities, including for frequency-agility transmitters and satellite communications.

This system accurately locates radio communication sources over large zones of interest, to cue the high-resolution optronic sensors while in flight, enabling the visual identification of threats.

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) for the identification of friendly traffic. It therefore offers the possibility of identifying suspect buildings by a process of elimination, using its optronic system.

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

Drawing on feedback from recent operations, the Patroller UAV system deploys a multisensor/multimission payload which includes wide-field-of-view and high-resolution optical sensors mounted in the fuselage or under the wing.
**INNOVATIVE SOLUTIONS TAILORED TO OPERATIONAL REQUIREMENTS**

**Easy deployment and maintenance**
- Deployment in three hours
- Pre-flight preparation time: 30 minutes

**Integrates in airport traffic**

**Datalink range extension capability**
- Handover between two ground stations to extend range or avoid relief masking
- Ground relays can be installed to extend system range
- Simultaneous operation of two UAV for threat observation continuity

**Day/night taxiing under ground station operator control**
Automatic takeoff and landing system, without need for infrastructure

**DETECT & AVOID**

Step 1: Long range automatic multisensor detection

Step 2: Automatic avoiding system

Sagem is developing «Detect & Avoid» systems so that Patroller can be operated in non-segregated air traffic

Features include:
- Detection of traffic through a combination of cooperative sensors (TCAS interrogator, transponder, ADS-B) and non-cooperative sensors (wide-field IR optronics)
- Estimated collision risk
- Generation of avoidance trajectories.
The Sperwer UAV 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, Sagem consolidated all technologies needed for the development, production and integration of this UAV system: airframe, launcher, day/night gyrostabilized optronic systems, mission planning, inertial navigation, flight control, data and image transmission.

Sagem has developed expertise in the technologies and services needed to develop and produce high-performance UAHs:

- 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 geo-referenced image receiving terminals
- Integration in digital battlefield systems
- Airworthiness and flight testing
- Development of modernization solutions, including production engineering

Sperwer drones produced: 150
Complete systems: 25
Years of operational support: 9
EUROFLIR optronic pods: 500+ for leading aircraft (Sperwer, NH90, Panther, EC725, Cougar)

From Sperwer to Patroller™
Proven experience in drones

25 years of engagement and innovation for our customers

9 years of operational support in Afghanistan

500+ EUROFLIR optronic pods for leading aircraft (Sperwer, NH90, Panther, EC725, Cougar)
COMPREHENSIVE SERVICE FOR LOCAL CUSTOMER SUPPORT

- Training
- On-site technical assistance
- Fly-by-the-hour maintenance services and operations
- Helpdesk

COMPREHENSIVE SUPPORT FOR UAV SYSTEM USERS

To operate in far-flung theaters, UAVs must offer operation autonomy. Our aim is to deliver turnkey systems to customers, including operation and maintenance. Our top priority is to offer the high level of availability of systems we deliver. Sagem has therefore set up a comprehensive support organization, including training courses and operational simulation and training tools. Based on our expertise in all enabling technologies for UAV systems, we ensure fast support services, while providing our proven expertise in operations and modernization of deployed systems. Our capabilities were fully proven during nine years of support services in Afghanistan.

A GLOBAL SUPPORT NETWORK VIA SAFRAN

HELPDESK: uav.helpdesk@sagem.com

America
- Safran Electronics Canada (Canada)
- Sagem Avionics (United States)
- Vectronix Inc. (United States)
- Optics 1 (United States)
- Optovac (Brazil)
  ▲ Fadec International (United States)
  ▲ Bureau (Morocco)

- Subsidiary
- Sagem representative in
  Safran office
- Joint ventures

Europe / Africa
- Colibrys (Switzerland)
- Vectronix AG (Switzerland)
- Roborix (Finland)
- Sagem Navigation GmbH (Germany)
- Sagem Maroc (Morocco)
  ▲ Optofluid (France)
  ▲ Sofradir (France)
  ▲ Aerospace Embedded Solutions GmbH (AES) (Germany)
  ▲ Office (Algeria)

Asia / Oceania
- Safran Australasia (Australia)
- Sagem Services India (India)
- Safran Electronics Asia (Singapore)
- RS Alliance (Russia)
- Saqembat Defense (U.A.E)
  ▲ Office (Russia)
  ▲ Office
  ▲ Office
  ▲ Office
  ▲ Office (U.A.E)
  ▲ Office (Malaysia)
SAGEM OFFICES AND FACILITIES IN FRANCE

HEADQUARTERS

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Arcs de Seine - 18/20, quai du Point du Jour
92659 BOULOGNE-BILLANCOURT Cedex – France

FACILITIES

Argenteuil (Research & Development)
Dijon (Production)
Eragny (Research & Development)
Fougères (Production and logistics)
Mantes-la-Ville (Production)
Massy (R&D and production)
Montluçon (Production)
Poitiers (Production)
Saint-Pierre-du-Perray (Production)
Valence (Production)
KEY MISSIONS, KEY TECHNOLOGIES, KEY TALENTS