AIRBORNE TACTICAL OBSERVATION AND SURVEILLANCE SYSTEM

The company leverages fifty years of experience and its leading technologies in sensors, electro-optics and mission management systems to create the ATOS (Airborne Tactical Observation and Surveillance) system.

Emerging unconventional scenarios have redefined the concept of patrolling missions, to encompass threats that range from terrorist attacks to illegal immigration and the protection of Exclusive Economic Zones (EEZ).

ATOS is the world leading solution to the growing demand for border control, wide area surveillance, targeted surveillance (overt or covert), environmental and disaster control, integrating a wide number of sensors and subsystems in a highly modular design.

ATOS has already been selected by five different nations and systems have been installed on a wide range of platforms (ATR 42, DASH – 8, Beechcraft, Casa, Piaggio Aero, A109, AB 412 and AS300B3 helicopters).

ATOS has been selected for the Australian fleet in order to meet the Customers board protection surveillance requirement.

In Italy, the ATOS system is in service with the Guardia di Finanza (Treasury Police) and Guardia Costiera (Coastguard) on the ATR 42 MP, and in a lightweight version for the Guardia di Finanza, on-board the P166-DP1. The ATOS has also been selected for the Italian MoD on-board the ATR72.

Applications

- Offshore patrol
- Search and Rescue
- Anti-pollution surveillance
- Fishery protection
- Anti-smuggling
- Anti-submarine warfare

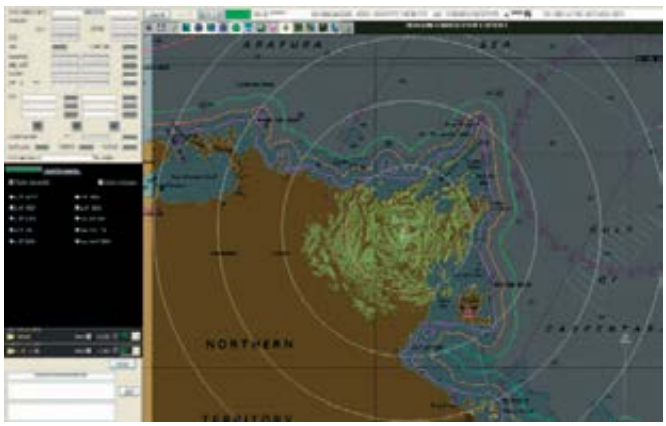
ATOS

ATOS is an advanced and flexible airborne integrated observation and surveillance system. Its modular, open architecture easily supports the inclusion of additional capability and operator consoles. Moreover, ATOS is available in multiple configurations and can be easily installed on a wide range of aircraft (fixed and rotary wing), guaranteeing maximum flexibility to meet every requirement, and can be easily installed and removed from aircraft. Different configurations are available to fit the various sizes of platforms.

The Human-Machine Interface and sensor integration has been carefully designed to minimise operator workload while increasing the operator's situational awareness during the mission.

Based on MIL STD-1553B data BUS and EthernetLAN for data communication, the most significant characteristics of ATOS are:

- Significant growth capabilities for added roles / missions (e.g. ASW)
- Redundancy for mission critical sub-systems and backup functions for other equipment
- Use of multifunction modular consoles (as per ATR42MP, lightweight or compact versions)
- Extensive use of COTS components
- Maximum flexibility to integrate a variety of sensors



TYPICAL OPERATIONAL REQUIREMENTS

Exclusive Economic Zone (EEZ) Patrol
Detection, reporting and recording the location of any foreign vessels operating within the prescribed seaboard limit zone.

Search and Rescue

- Detection, localisation and assistance to any vessel in an emergency including shipwrecked passengers
- To act as an on-scene Commander co-ordinating aid operations of co-operating vessels/ aircraft

Environmental Survey
Early detection of pollution of the sea surface due to discharge of oil from ships or installations.

Maritime Patrol
Detection, localisation, identification and reporting of any surface vessels in the prescribed coastal area and long range detection, tracking and identification of surface targets.

THE MISSION MANAGEMENT SYSTEM

The core of ATOS is the Mission Management System (MMS) which provides:

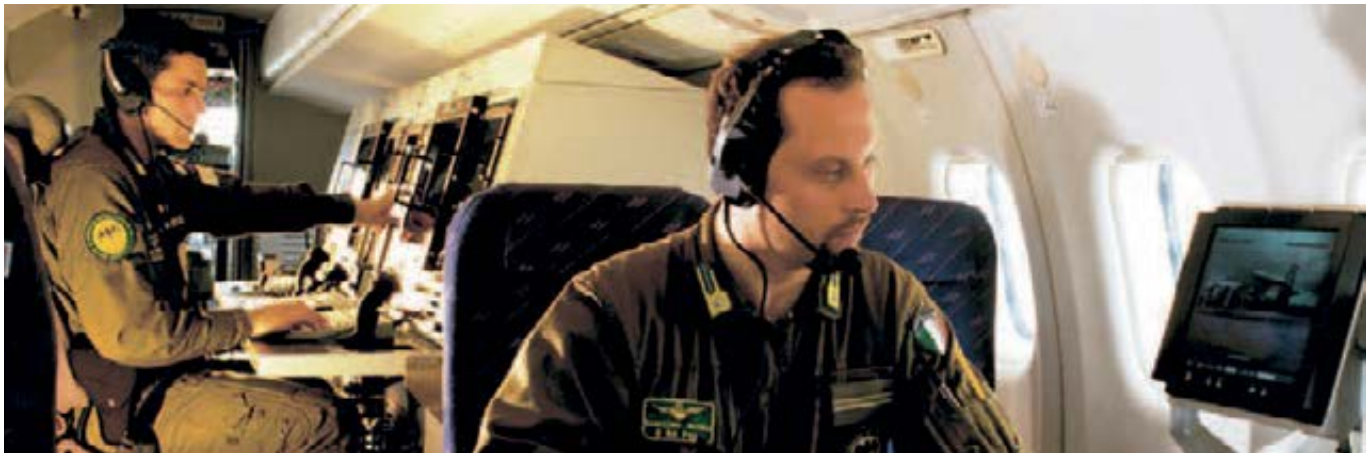
- Full management of all mission phases
- Enhanced Human-Machine Interface for one or more operators
- Command / control of the on-board sensors
- Real-time data collection, correlation and storage in a relational database
- Flight plan definition in accordance with evolving tactical situations
- Digital maps and targets correlation

The MMS performs:

- Tactical situation management
- Mission sensor control
- Communications control
- Navigation management
- Flight plan management
- Mission database management
- Mission documentation
- Automatic aiming of electro-optical sensors

Further to its standard configuration, ATOS can be tailored to meet any operational Customer requirement. The system is offered with a Total Logistic Support (TLS) package covering ground and flight training, user manuals and maintenance.

Fixed and mobile Ground Control Stations (GCS) with datalink and video processing capabilities are also available.



DATA LINK

To disseminate information for/to ground and mobile stations, ATOS works with different data links systems and protocols. ATOS automatically selects the most suitable solution among those available on the platform:

- HF/ VHF/ UHF transceivers
- Wideband data link
- Satcom data link (Iridium, Immersat, Sicral, Global Star etc)

Gabbiano is a state-of-the-art, X-band, pulse Doppler radar developed to match a variety of allweather surveillance missions over ground, along coasts and at sea.

Gabbiano is a versatile radar suitable for Unmanned Aerial Systems as well as for both fixed and rotary wing manned platforms.

It is available in two variants:

- With 360° antenna, for bellymounted installation
- With ± 90° antenna, for nosemounted installation

Seaspray E multi-mode surveillance radar combines a state-of-the-art Active Electronically Scanned Array (AESA) radar with a Commercial Off The Shelf (COTS) processor to deliver superior detecting capability for air-tosurface and air-to-air environments.

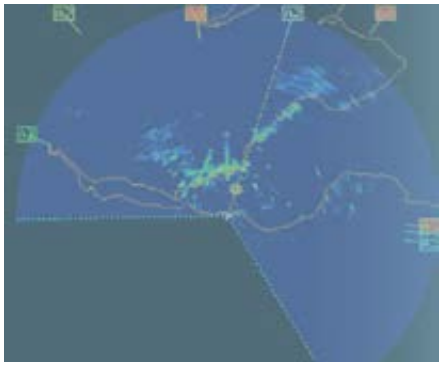
Seaspray is a Low Probability of Intercept (LPI) radar with high gain and low sidelobes, using Composite Electronic and Mechanical Scanning (CEMS) to detect small targets. Seaspray has been selected by Customers in the UK, US, Italy and Ecuador.

FULLY INTEGRATED SENSORS

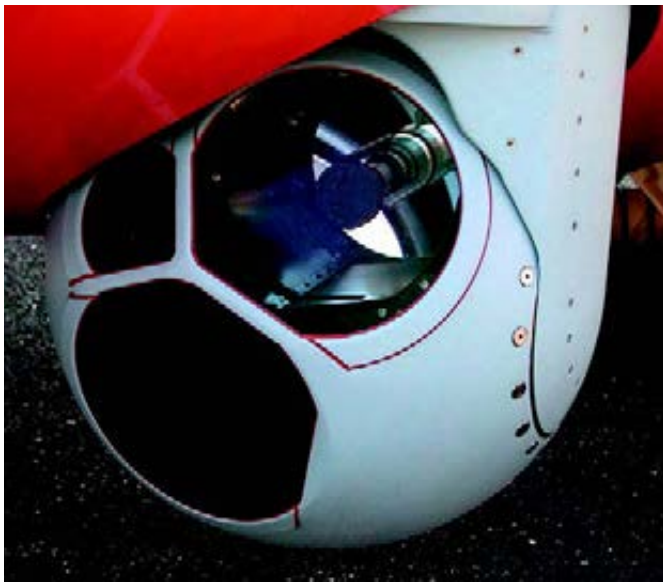
Radar
Several models of the most up-todate surveillance radar available today have been integrated within ATOS.

Main operative modes:

- Small targets detection
- Long range target detection
- ISAR (Inverse Synthetic Aperture Radar) imaging mode
- SAR (Synthetic Aperture Radar) surface mapping
- MTI/ GMTI (Moving Target/ Ground Moving Target Indicator)
- Air-to-air detection
- Weather



ATOS



Electro-Optics
Various FLIR and TV cameras on stabilised turrets can be integrated to fulfil specific customer requirements. Our own EOST23 turret installed on ATR42 meets the highest performance requirements:

- High level of platform stabilisation, allowing the use of a very narrow Field-Of-View for long range identification
- Infrared in the 8-12 micron band
- Colour video camera with large zoom capabilities

EOST-46 is a stabilised multi-sensor turret for surveillance and tracking. It can fit a range of EO payloads, including eye-safe laser range finder, laser illuminator, TV camera, and the ERICA SLX thermal imager operating in the medium wavelength spectrum (3-5µm).

Hyperspectral

- Environmental surveillance and pollution control
- Dangerous materials identification and tracking

SIM.GA is a modular avionic hyperspectral system, composed of two Electro-Optical Heads (EOH) in Visible and Near InfraRed (VNIR), Short Wave InfraRed (SWIR) spectral range (0.4µm-2.5 µm) and a digital acquisition system.

SLAR

- The Side Looking Radar allows a rapid scan of very large areas (up to 20 miles per side)
- Environmental surveillance and pollution identification
- Can operate in conjunction with other sensors

ESM

- Full band coverage
- Designed to identify all modern radar

AIS

- Automatic Identification System

SAR DF (Search and Rescue Direction Finder)
Five (plus one) Guard Channel to receive beacon and radio signals.

GAMAS
GAMAS is a family of Acoustic Systems developed to meet the requirements of a wide range of ASW missions for helicopters and Maritime Patrol fixed wing aircrafts. Other role-specific sensors such as MAD (Magnetic Anomalies Detector) and sonic systems for ASW roles can also be integrated with ATOS.

The company's Product Support Policy, aims to supply Customers with cost-effective support and is provided by a dedicated Service Solutions business unit.
The high quality standard of the after sales service, guarantees the products quality and performance, for the entire scheduled service life.

Our Service Solutions catalogue covers maintenance, spares, Ground Support Equipment, technical publications, training, and field service engineering together with the most advanced service solutions.

LEONARDO
AIRBORNE & SPACE SYSTEMS

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