

SELEX S&AS at Le Bourget

SELEX Sensors and Airborne Systems (S&AS), the second largest defence electronics company in Europe, will be present at the 47th International Paris Air Show demonstrating its leading technology and unique range of products in the areas of capability presented by Finmeccanica on its stand: Homeland Security, Aeronautics, Through Life Capability and Space. SELEX S&AS operates in Italy with Galileo Avionica and in UK with SELEX S&AS Ltd.

Finmeccanica static display features Falco and Nibbio as well as:

MIRACH 100/5: The Mirach 100/5 is the standard high-performance reusable, multi-threat target, designed and manufactured by Galileo Avionica. In use with worldwide Armed Forces to train and qualify major Weapon Systems, the Mirach 100/5 delivers reliability and manoeuvrability, making it the best state-of-the-art, multi-role, target drone system on the market. Can include an expendable air launched, jet-propelled, autonomous sub-target, named Locusta, that allows a direct hit on an independent fast flying threat, without establishing a "friend or foe" procedure, thus improving the realism of the tactical scenario in the most cost-efficient way. The Locusta Drone can be provided as a stand-alone product, and can be fired from an aircraft or helicopter.

PAR 2090C - Galileo Avionica is a world leader in Precision Approach Radar with more than 100 systems sold worldwide. The PAR Family is a state-of-the art X-Band Radar designed to provide accurate tracking of up to 32 targets, controlling up to 8 runways. The family includes fixed, naval and mobile versions, the latter can be transported in a C-130 and deployed in less than 3 hours. The mobile configuration is the ideal solution for any emergency situation: natural disaster -floods, earthquakes- or in any case of peacekeeping mission when aircrafts must land in opportunity airports where pilots may not be able to safely maneuver to land while avoiding unlighted rising terrain near the final approach course.

The Homeland Security Area features advanced sensors and complete mission systems such as:

MSU - Mobile Surveillance Units designed to operate as an autonomous solution or as part of an integrated border management system. This may include tower mounted imagers, unattended ground sensors using a variety of technologies and airborne sensors, alarmed fences, radar and fully networked command and control systems. The MSU offered by SELEX S&AS UK is based on a modular vehicle concept that is used to configure systems that meet individual customer needs for border, coastal, harbour and key asset protection. MSUs can provide an affordable, flexible solution for surveillance and can be tailored to meet specific customer needs ranging from a single MSU to an integrated network lined to fixed installations.

ATOS – Airborne Tactical Observation and Surveillance Mission System, developed by Galileo Avionica, includes operator consoles and a wide range of sensors. Developed to meet the growing demand for surveillance, EEZ protection, Search and Rescue, border and critical infrastructure protection, pollution detection, disaster control, anti submarine warfare, the ATOS system is available for all size of fixed and rotary wing platforms. The ATOS is successfully being operated by the Italian Customs and Border Patrol, on the ATR42 and P166. Recently selected by the Australian Customs Coastwatch to fly on the Dash 8. A full scale system can be viewed on the Italian Coastguard ATR 42 displayed in the static Area. Negotiations for two further international contracts are currently at a closing stage.

FALCO - Tactical UAV System, designed and developed by Galileo Avionica to perform civil and military surveillance and Homeland Security missions. The Falco deployability, endurance, survivability, its wide suite of payloads together with its 24/7 all-weather capability, allow it to perform mission ranging from border patrol, immigration prevention, law enforcement, power and pipe lines surveillance, illegal fishery prevention, up to forest fires prevention and environmental monitoring. The Ground Control Station, a basic part of the system, enables mission planning and re-tasking, mission simulation for operator training, mission rehearsal and play back.

NIBBIO - Tactical Fast Recce System developed by Galileo Avionica by the well proven Mirach 100/5 aerial target, provides deep, fast and undetected reconnaissance in critical missions for the acquisition of high value information (e.g. time-critical targets identification) in hostile scenarios.

The system is made of a fast, reliable, high performance, high subsonic drone, a Ground Control Station and a wide array of payloads. The air vehicle fuselage is modular and operator-friendly for fast maintenance or system reconfiguration, allowing to switch one or more among its wide payload suites, including a selection of sensor equipment ranging from IRLS to digital pan camera, EO/IR, SAR for IMINT missions and ESM suite, specifically designed to localize and fingerprint electromagnetic sources (e.g. radar stations), for ELINT operations.

The Nibbio drone can perform "Launch and Forget" missions in fully automatic mode.

HYDRA – is SELEX S&AS intelligent, wireless, ground sensor system that can be integrated with Mobile Surveillance Units or any other command and control system. It provides continuous surveillance coverage of border areas where access is limited and there is no available fixed infrastructure. The HYDRA system consists of a number of packages each containing a range of sensor nodes, for example seismic, acoustic, infrared, RF and imaging and is particularly suited to the protection of borders, key assets and mobile forces.

Advanced sensors include:

EOST 45 - a high performance Electro-Optic Surveillance & Tracking System for all-weather, day/night surveillance for medium/short range aircraft and light helicopters. Based on a three sensors E/O payload, it uses a Thermal Imager operating in medium wavelength spectrum. Galileo Avionica EOST 45 can be seen on the Alenia Aeronautica Skylynx MALE UAV as well as on the Coast Guard ATR 42.

SIM.GA - Modular airborne hyperspectral system composed by cameras operating from the VNIR to the SWIR bands (0.4 to 2,5 micron), and a Digital Data Acquisition System developed by Galileo Avionica, leveraging its experience on space observation payloads. The SIM.GA creates the spectral fingerprint for every observed object resulting from the identification of the chemical and physical composition of the objects which is possible due to their different reflectivity levels. With this information it is possible to differentiate objects of the same shape but made from different materials which would appear identical with conventional imagers. The SIM.GA can be used in missions ranging from intelligence to environmental protection. The SIM.GA is performing flight campaigns and can be seen installed onboard the TELAER aircraft in the static area.

ERICA PLUS - 3rd generation Staring Focal Plane Array (SFFA) Step Zoom Thermal Imager providing high performance, high resolution passive infrared imaging in day, night and poor visibility for land, sea and air operation. ERICA PLUS leverages Galileo Avionica technology experience of hundreds of airborne and land thermal imagers sold world-wide.

SLX Thermal Cameras – Unsurpassed megapixel performance is offered in the lightest miniaturised, rugged package introduced by SELEX S&AS UK. Advanced electronics processing produces very high contrast pictures with the capability to detect and identify targets at extremely long ranges. Cameras are available in both mid wave and long wavebands incorporating the latest Mercury Cadmium Telluride (MCT) technology producing clear defined images even in poor weather conditions.

GABBIANO - is a family of recently improved surveillance radar to meet the most demanding needs of protection, patrolling and surveillance missions. Gabbiano is a state-of-the-art X- band radar for surveillance over ground, along coasts and on sea in any weather condition. Developed by Galileo Avionica with particular attention to low power consumption, standard and flexible interfaces and LPI characteristics, the Gabbiano is perfect for installation onboard UAV and/or small/medium fixed and rotary wing platforms both in nose-mounted and belly-mounted configurations. That radar is optimized to perform ground and sea surveillance missions with different TWT power and antenna sizes.

PicoSAR - SELEX S&AS UK' world class ground mapping radar, PicoSAR provides high resolution synthetic aperture radar as well as ground moving target indication (GMTI). The PicoSAR radar provides an all weather,

day and night high capability and was specifically designed for the UAV marketplace, PicoSAR is currently undergoing flight trials.

SEASPRAY 7000E - a key component of any aircraft surveillance system the successful AESA radar has already been selected by the US Coast Guard and UK MoD for the Future Lynx helicopter. The latest in SELEX S&AS UK successful family of surveillance radar, more than 600 systems have been delivered to nations around the world on a variety of platforms ranging from helicopters and fixed wing aircraft, to fast patrol boats.

Ambriel Wireless Communications System - a new innovation in wireless data link technology which should mean that the days of ground staff having to be physically connected into the communications systems of aircraft as they move them around the runways of airports will come to an end, improving the safety of the ground crews and of the aircraft themselves. SELEX S&AS UK's Ambriel wireless communications system consists of two wirelessly connected units suitable for land sea and air operations. In addition the Ambriel Emergency Crew Communications (ECC) offers an emergency back-up system used to sustain crew control in times of communications failure.

In the aeronautic area SELEX S&AS showcases integrated airborne systems as well as leading technology sensors and its distinctive expertise in defensive aids :

AMS - Aircraft Management System is dedicated to Aircraft Plants Management, Flight Management, and Cockpit Management functionalities. For these purposes it interfaces most of the Helicopter systems and sensors in order to acquire, process and manage aircraft plant, EFIS/EICAS, relevant CNI equipments and AFCS, in a reliable, high performance environment. Galileo Avionica AMS is already installed on board of the EH101 (all versions) and NH90 (all versions) helicopters.

PIRATE (Passive Infra-Red Airborne Track Equipment) is the FLIR / IRST for the Typhoon aircraft. It is developed by Eurofirst, an international consortium led by Galileo Avionica of Italy, with Thales Optronics of the UK and TecnoBit of Spain as partners. PIRATE is a complex system that operates radar-like modes in a wide field of regard, such as automatic detection and engagement of multiple BVR (beyond visual range) targets primarily in air-to-air, both look up and look down, but also on ground - thermal cueing.

VIXEN 500E – SELEX S&AS UK's compact, lightweight, fire control active electronically scanned array radar for trainer aircraft and light and medium fighter aircraft. A two-box system, it is designed to be versatile for optimum installation in a range of customer aircraft. Its economical up-front cost and low life-cycle costs make it a winner with customers who demand performance allied to value for money.

Enhanced Vision Systems (EVS) - offers the latest and most advanced enhanced situational awareness available for aircrew today and is offered for both Rotary or Airborne Platforms. From Standalone EVS through to integrated EVS systems, with single or multiple user systems, SELEX S&AS UK's system can utilise Image and Sensor Data Fusion to provide a Synthetic Vision System. EVS is extremely adaptable and greatly improves mission effectiveness. This system can include Hostile Fire Indication and threat detection and be installed on a number of different platform types.

HIDAS – Helicopter Integrated Defensive Aids System, already the system of choice for the British Army's Apache Helicopter fleet and is also being fitted to Apaches bought by Kuwait and Greece. SELEX S&AS UK's system detects, identifies, prioritises and counters threats to the Apache helicopter, without the need for crew intervention. It is unique for its degree of integration, its use of 'best of class' sensors and its intelligent software controller.

The Through Life Cycle Support area, features a demonstrator of the **MCS** - Mission Core system (MCS) and cockpit with embedded training, developed by Galileo Avionica to meet future requirements for aircraft display and control, navigation, system and mission management. The MCS is on board the Alenia Aermacchi M346, which has been recently shortlisted by the Italian MoD. The MCS innovative open architecture is based on a proprietary

core avionic suite composed by Mission Computer Symbols Generator (MCSG) hosting the Operational Flight Program (OFP), Multifunction Displays and Head Up Displays. An added feature of the Mission Computer Symbol Generator is the Embedded Training Simulation (ETS) card that provides a complete tactical simulation for onboard training, including Radar A/A, A/G, EW, Weapons.

Technology for earth observation, navigation and science at its best, in the space area, where Galileo Avionica displays:

GOME-Global Ozone Monitoring Experiment, an optical spectrometer in the UV band designed to daily measure the total ozone column content and the vertical ozone profile in the atmosphere; furthermore it detects other minor atmospheric components. GOME is operating on board the first METOP satellite of the Eumetsat Polar System (EPS) and will fly on board the next 2 METOP satellites.

AA-STR – Autonomous Star Tracker currently under development for the AlphaBus Large Telecommunication Platform. The completion of on-ground qualification is due within 2007. With over 40 systems sold to international space agencies, Galileo Avionica is among the leaders for space payloads and sensors.

VIMS - remote sensing instrument developed for the Italian Space Agency in the frame of the CASSINI programme. VIMS has been flying since October 1997 on board the CASSINI Orbiter providing two dimensional, multi-spectral high resolution images for detailed study of the composition and structure of Saturn's ring system, dark materials and atmospheric composition. This will aid the understanding of the origin and the evolution of the rings and atmosphere of Saturn and its satellite Titan.

PHM – is the atomic clock with outstanding stability for averaging times from 1 to 100,000 seconds, to be used in precise positioning, time keeping and other on-board applications. It is designed to perform in space environment for not less than 12 years. The PHM is the most stable spaceborne atomic clock ever developed for an operational programme and will fly on board the satellites of the Galileo Constellation (two PHM on each satellite)