

# Global ATM and Airport Systems



Predictable results  
for unpredictable threats



**SELEX**  
Sistemi Integrati

A Finmeccanica Company

SELEX Sistemi Integrati plays a leading role in developing innovative solutions to ensure efficient and safe management of airspace and airport traffic.







SELEX Sistemi Integrati is an integrated supplier of the “Airport Global System”: from weather radar systems to ATC radars, from airport-ground manoeuvres to smooth air traffic management, the company offers a complete product and service portfolio by proposing itself as the ideal technological partner for turnkey solutions.

SELEX Sistemi Integrati has an established customer base in over 150 countries.

SELEX Sistemi Integrati provides total Air Traffic Management (ATM) capability from En-Route/Approach to Surface Management systems, Gate-to-Gate Surveillance with their family of ATC Primary and Secondary radars, new generation CNS/ATM systems such as Satellite Navigation Augmentation Systems, Automatic Dependent Surveillance (ADS) and Controller Pilot Data Link Communications (CPDLC).

The Company also provides Navigation and Landing Aids by SELEX Sistemi Integrati Inc. and Weather Radar systems by SELEX Sistemi Integrati GmbH.

To cope with the forecast growth in air traffic, the very philosophy of control is changing with the introduction of new Communications, Navigation and Surveillance (CNS) techniques. Active control, flight by flight and sector by sector, will give way to enhanced Air Traffic Management (ATM).

CNS/ATM is “the adaptation of modern technology to enhance communication links between aircraft and air traffic controllers, improve pilot’s ability to navigate the aircraft and to increase air traffic controller’s capability and capacity to monitor and control flights”.

The introduction of CNS/ATM technology is a major change in operational requirements of Air Traffic Management and SELEX Sistemi Integrati can help manage this transition.

SELEX Sistemi Integrati is meeting these requirements through the Air Traffic Management and Airport Systems Business Unit (ATMAS) and through the subsidiaries in USA, Germany and UK:

- SELEX Sistemi Integrati Inc.
- SELEX Sistemi Integrati GmbH
- SELEX Sistemi Integrati Ltd.

SELEX Sistemi Integrati is also full participant in European Union, ECAC and Eurocontrol research programmes, helping define the systems and standards of the future.

SELEX Sistemi Integrati provides world-wide CNS/ATM expertise in every domain: SELEX Sistemi Integrati’s capability is total.

## Total Air Traffic Management

A complete Air Traffic Control facility package with any combination of radars, displays, processors and data communications can be assembled into an advanced telematic system for military or civil air traffic control application, from the en-route to the airport management environment. Ground Control Approach systems, Weather Radar, Nav aids, GNSS/ADS, A-SMGCS and Communication Systems can be integrated into different functional architectures.



SELEX Sistemi Integrati's SATCAS 2000 ATC and ATM centres use distributed processing to ensure fault tolerance and system availability. Standard off-the-shelf packages cover all system functions and can be tailored to specific customer needs. Growth potential is also built in and the architecture is open to other ATC/ATM services and to commercially available data processing and presentation packages.

SELEX Sistemi Integrati has invested heavily in Human-Machine-Interface (HMI) research. The result is the CDS-2000 controller working position, which can be integrated readily into existing ATC centres as well as new facilities. It features a flexible X-Windows-based HMI that can be customised using either the SELEX Sistemi Integrati Interface Editor Toolset or other COTS products.

### Airport turnkey solutions

The range of technical capabilities and products that SELEX Sistemi Integrati can offer in the airport environment to help dealing with increasing traffic demand, ensuring safe and expeditious flow, security of people and goods and exchange of information among airport operators, are very broad and have been described in the previous paragraphs.

SELEX Sistemi Integrati, by acting as prime contractor and system architect, can help removing the burden of multiple procurements from our customers by providing complete and integrated turnkey solution for airport covering the complete set of civil works, including airport buildings, runway and taxiway layout as demonstrated in several occasions around the world.

### Gate-to-Gate Surveillance

The SELEX Sistemi Integrati family of radars covers every requirement for primary and secondary surveillance of en-route and terminal airspace. All are fully compliant with the latest ICAO standards and recommendations and are designed for remote monitoring and reconfiguration. Primary radars can be equipped with either conventional reflector or high-performance planar array antennas. They include the S-band ATCR-33 S radar for TMA and approach control and the L-band ATCR-44 S radar for long-range en-route control.

Secondary radars include the conventional SIR-M and the Mode-S enhanced SIR-S radars. All are configured with large vertical aperture antennas to provide maximum target information in high-density areas. The SIR-S is fully compliant with Eurocontrol POEMS standards and uses custom VLSI chips for improved performance.

SELEX Sistemi Integrati has also pioneered the development of Automatic Dependent Surveillance (ADS), the technique intended to supplement radar surveillance in both broadcast (ADS-B) and contract (ADS-C) applications.

SELEX Sistemi Integrati delivered the world's first ADS system to be fully integrated with ATC functions in the Bangkok ATC Centre and, extending on the FARAWAY programmes, the Company is using ADS-B to investigate the feasibility of "Free Flight" within the Mediterranean area through the MFF (Mediterranean Free Flight) and MEDUP (MEDiterranean UPgrade) programmes. On ground too, SELEX Sistemi Integrati is automating the surveillance function. The advanced surface movement guidance and control system (A-SMGCS) will enhance safety, reduce delays and improve the overall efficiency of airports operation.



## Navigation and landing aids

SELEX Sistemi Integrati is providing the solutions to allow customers to make a smooth transition from traditional nav aids and landing systems to new satellite navigation products through close co-operation between ATMAS Business Unit and the subsidiary SELEX Sistemi Integrati Inc.

SELEX Sistemi Integrati Inc., located in Kansas, USA, is a premier supplier of systems, equipment and services to aid the in-flight navigation, landing and ground movement of aircrafts under all visibility conditions.

Offering a complete line of ground-based equipment for all phases of aircraft movement, SELEX Sistemi Integrati Inc. also provides the management, engineering and technical expertise to support this equipment during all phases of project implementation.

SELEX Sistemi Integrati Inc. designs, manufactures, installs, implements and supports ground-based radio navigation and landing aids, for use in both U.S. and international applications.

The Company's comprehensive line of equipment and services uniquely qualifies SELEX Sistemi Integrati to provide total, turn-key solutions for en-route, precision landing and airport guidance requirements.

With field-proven performance in hundreds of sites worldwide, the Company's equipment is designed and built to maximise safe and reliable operations, while minimising life cycle costs over the service life of the equipment. Produced for applications in both the United States and internationally, the equipment is available in multiple configurations and

with a wide range of features to satisfy the most challenging and diverse operating requirements.

The SELEX Sistemi Integrati Inc. product range includes:

- VHF Omni-Directional Range (VOR)
- Instrument Landing Systems (ILS)
- Distance Measuring Equipment (DME)
- Data Link Receiver/Transmitter

SELEX Sistemi Integrati Inc. provides management, engineering and technical services to support project success throughout all phases of implementation.

The Company's commitment to customer satisfaction, from project inception through completion, is evidenced by its extensive record for repeat customer business.

## Aeronautical Communications

SELEX Sistemi Integrati is a major contributor in changing the way Aeronautical Communication is performed in the aviation industry, developing enhancements for existing communication products and investing in new CNS/ATM technologies to meet ever demanding user requirements.

Continuous growth in air traffic and costs incurred by air traffic users and service providers when upgrading ATC centres with new communication systems have contrasting effects on the pace of migration from voice communication to data communication.

The use of data communication instead of voice will help to relieve some ground lines and frequency congestion, whilst also decreasing operator workload and increasing safety.



The first significant step in this direction has been the migration from voice messages towards data link using ACARS protocol, now used by a sizeable proportion of airlines world-wide for Airlines Operational Communication (AOC) applications.

The use of ACARS for Air Traffic Services (ATS) applications is also gaining momentum. The ground fixed networks (AFTN) are being upgraded to implement CIDIN (Common ICAO Data Interchange Network) ground-ground applications.

The Air-Ground data Communication scenario is much more diversified. Different networks will connect the aircraft avionics to the ground systems. Various technologies and types of links have been identified by ICAO and will coexist using the VHF frequency (ACARS, VDL 2, VDL 3, VDL 4), radar L-band (Mode S) and Satellite L/C/Ka Bands (AMSS). Links using broad band technologies will be available in the near future. SELEX Sistemi Integrati is active in:

- AFTN/CIDIN systems
- ATM Communication Gateway (ACG)
- VDL Mode 4 networks
- VDL Mode 2 network
- Mode S Data Link Sub-Networks
- Aeronautical Mobile Satellite Service (AMSS)
- Satellite Based ADS and CPDLC

## Meteorological Systems and Weather Radars

SELEX Sistemi Integrati produces weather radars and meteorological data systems through SELEX Sistemi Integrati GmbH, located in Germany.

SELEX Sistemi Integrati is one of the leading suppliers of meteorological systems and equipment for transport, civil protection and agricultural applications. Our experience in meteorological systems is demonstrated in numerous airports around the world and has been consolidated within the meteorological field in web based MeteoWeb® meteorological data system and ASTERIX-Front End Processor.

SELEX Sistemi Integrati GmbH has become the leading manufacturer of meteorological radar systems worldwide. Today, SELEX Sistemi Integrati GmbH focuses on providing customised system and turn-key solutions that reflect a deep concern for the individual customer.

More than 40 years of experience, reliability and a professional approach to challenges have contributed to the company's excellent reputation among experts of the meteorological environment.





The METEOR series weather radar systems constitute the backbone of SELEX Sistemi Integrati GmbH's range of high-quality products. Featuring state-of-the-art technology in perfect coordination with field-proven concepts, these highly sensitive detectors of meteorological phenomena are designed for unattended operation and renowned for their extreme reliability and long life.

SELEX Sistemi Integrati GmbH is fully committed to maintaining the leading position in product quality, customer service and radar design innovation. SELEX Sistemi Integrati's policy is to understand the real-life needs of customers and satisfy those needs with reliable, cost-efficient solutions based on industrial standards.

The megatron and klystron based radars, METEOR 500 and METEOR 1500, are leaders in the meteorological market. The complete METEOR product line is available for dual polarisation operation offering enhanced capabilities as hydrometeor classification.

SELEX Sistemi Integrati GmbH software products support the complete integration of radars in heterogeneous networks. The cornerstones of SELEX

Sistemi Integrati GmbH software are Ravis® - the radar control and maintenance software - and Rainbow® 5.0 - the radar application software.

## Simulation and Training

SELEX Sistemi Integrati has a remarkably wide-ranging simulation and training capability. Encompassing everything from generic computer-based trainers to dedicated Training of Air Traffic Controllers, it ensures that customers reap maximum benefit from their investment in SELEX Sistemi Integrati's equipment and systems.

SATCAS 2000 can be equipped with a sophisticated "Integrated Training System" that provides both operational back-up and test and verification toolset for pre-release evaluation of new procedures or software. Also available is an extension for training tower controllers in surface movement guidance and control procedures.

SELEX Sistemi Integrati also takes full advantage of the invaluable operational expertise available through the



Consortium with ENAV, (the Italian Air Traffic Service Provider).

SICTA (Sistemi Innovativi per il Controllo del Traffico Aereo - Advanced Systems for Air Traffic Control) is a Research Centre established, together with ENAV, at the end of 1993 with the purpose of R&D, validation and simulation in the CNS/ATM domain.

## Complete support, world-wide

Customer support is an integral part of the systems we supplied by SELEX Sistemi Integrati. Modular design ensures parts can be replaced readily.

The unrivalled expertise of SELEX Sistemi Integrati in integrated logistic support means that availability, reliability and maintainability can be predicted.

A dedicated team of professionals ensure that every customer has ready access to the full range of support services.

Reliability data is analysed at the design stage and

maintainability studies are conducted to optimise the mean time between failures. Built-in test equipment is configured to maximise fault retrieval and to facilitate the integration of remote control and monitoring systems (RCMS).

The RCMS can then be used to provide indication and logging of failures, activation of back-up systems and remote diagnosis of line replaceable units. The result is the highest possible standard of availability and reliability with the minimum logistic resources.

SELEX Sistemi Integrati's engineers are always on call to help diagnose system faults and undertake emergency repairs. SELEX Sistemi Integrati can also provide resident maintenance engineers for on-site support.

To help customers reap the benefits of focus on their core business, SELEX Sistemi Integrati can assume responsibility for total management of technical facilities.

Whatever the choice from this menu of services, customers will benefit from reduced life cycle costs, extended service life and improved performance.





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