Israel Aerospace Industries (IAI)

Israel Aerospace Industries (IAI) will present at AeroIndia 2013 its advanced technological solutions and products.

BARAK-8 – Air & Missile Defense System

BARAK-8 is an advanced, all weather, 360º, point and area Air and Missile Defense System against a variety of threats including fighter aircrafts, UAVs, helicopters, missiles and other munitions.

The system is capable of intercepting multiple targets at long and short ranges, in severe saturation scenarios.

The BARAK-8 system is available in ship-borne and ground-based versions, based on the same building blocks.

The system features an advanced vertically launched missile, a dual-pulse rocket motor, advanced active radar seeker, and a two-way data link for fire-and-update intercepts.

The missile has a basic version and an extended-range version, using a rocket booster to increase the maximal interception range.

System Capabilities:

- Short to long range Air and Missile Defense System – from sea-skimmers to high altitude targets
- Multiple simultaneous engagements in severe saturation scenarios
- All weather, vertical launch active missile
- Robust target kill
- Small deck space
- Advanced stand alone two way data link for missiles update and task force coordination.
A model of Multi Mission Radar (MMR) – ELM-2084

The ELM-2084 is a mobile S-Band Multi-Mission Radar (MMR) Family implementing an advanced 3D Active Electronically Steered Array (AESA) supporting modular and scalable architecture.

ELM-2084 is operationally proven as part of the very effective Iron Dome missile shield system.

The MMR family supports Artillery Weapon Location & Air Defense operational missions and provides optimal solutions for short, medium and long range missions.

The ELM-2084 features **high** redundancy, graceful degradation, high reliability and very high availability.

**Missions:**

- **Artillery Weapon Location:**
  - Detection of Mortars, Cannons, Rockers and Missiles
  - Hostile Weapon Location
  - Calculation of Impact Points
  - Friendly Fire Ranging

- **Air Defense:**
  - Detection and Classification all types of airborne targets
  - Fast update rte for tracking of maneuvering targets
  - Generation of Real-Time Air Situation Picture

- **Fire Control:**
  - Anti-Missile Interception Systems
  - SAM systems
ELM-2052 - Active Phased Array Airborne Control Radar

ELM-2052 is an advanced Airborne Fire Control Radar (FCR) designed for air-to-air superiority and advanced strike missions. The FCR is based on fully solid-state active phase array technology.

This new technology enables the radar to achieve a longer detection range, high mission reliability and multi-target tracking capability of up to 64 targets.

The ELM-2052 radar introduces a new dimension to the Air-to-Air, Air-to-Ground and Air-to-Sea operation modes of the aircraft. In the Air-to-Air mode, the radar allows very long-range multi-target detection and several simultaneous weapon deliveries in combat engagements.

In Air-to-Ground missions, the radar provides very high resolution mapping (SAR), surface moving-target detection and tracking over RBM, DBS and SAR maps in addition to A/G ranging. In Air-to-Sea missions the radar provides long-range target detection and tracking, including target classification capabilities (RS, ISAR).

ELM-2055 SAR/GMTI Reconnaissance System

The new generation of IAI’s ELM-2055 family of SAR/GMTI radar sensors provides a state-of-the-art solution for all-weather, air-to-ground ISTAR applications on-board manned and unmanned aircraft.

The ELM-2055 perpetuates the maturity and proven capabilities of IAI’s legacy SAR/GMTI payloads. It utilizes the latest technologies to substantially reduce weight, volume and power consumption, concurrent with significant performance improvement.

The ELM-2055 features modular, open architecture and can be easily configured for a broad range of installations, spanning from small-tactical UAVs and light reconnaissance aircraft through high performance MALE UAVs and manned reconnaissance systems.

ELM-2055D (downsized) is a single line replaceable assembly with medium power transmitter and a compact antenna. It allows optimal configuration for tactical UAVs carrying either single or dual-payloads. The Radar fits existing EO/IR sensor mountings (e.g. IAI/TAMAM -MOSP) for rapid UAV reconfiguration.
ELK-7071 - Integrated UAV COMINT/DF System

- Integration in a variety of UAVs, from Tactical to MALE/HALE UAVs.
- Airborne segment: UAV with COMINT/DF Payload, DF, Monitoring Receivers, antennas
- Intercepted communication signals pre-processed and transmitted to Ground Station via data link
- Ground segment: UAV Ground Control Station, COMINT Operator Stations

- Ground Operator Stations further process, classify and geo-locate data
- Automatic preparation and dissemination of Intelligence reports real-time EOB
- Powerful off-line tools for pre-mission preparations, debrief and post-mission analysis

ELI-3150 - MARS2- Multi-Mission Airborne Reconnaissance & Surveillance System

MARS2 is a Multi-Role Airborne System designed to operate as a fast-deployment, all-in-one task force. It enables Complete Situational Awareness and Ground Superiority of the theater under surveillance.
MARS2 comprises a high performance aircraft (executive jet or similar) equipped with a powerful sensor-suit and with the means to integrate the sensors’ data effectively. An internal Command & Control and Communication (C3) Station translates intelligence and situational awareness into battle management and situation handling

- Multi-Mission Support
- Autonomous Operation
- All-Weather Capability
- Quick Response
- Long Operation Range
- Long Endurance
- Real Time Operation
- Wide Area Coverage
- Stand-Off
- Agility

Technical Features

- High Modularity
- On-board Data Processing and Integration
- Advanced C4I capabilities
- Network-Centric Compatibility
ELL-8251 - Escort Jammer System (EJ)

ELL-8251 Escort Jammer (EJ) is an advanced EW system that suppresses all types of enemy Air Defense Surveillance and Fire Control radars on the mission flight path. The system is designed for installation on fighter aircraft for Airborne Electronic Attachment (AEA) missions. It significantly increases the survivability of the entire attacking force. The ELL-8251 operates automatically with minimal pilot intervention.

Whether configured internally or as a pod, the EJ system is easily installed and integrated on various types of aircraft. The system is flight line re-programmable. Threats and jamming techniques may be easily updated or added using PC-based equipment and user-friendly Human-Machine interface.

The system incorporates IAI’s field proven experience of more than 35 years in the design and production of EW systems.

ELL-8385 - Integrated UAV ESM/ELINT System

- Compact, light weight, ESM/ELINT System for UAV and other small and medium size platforms
- long-range, high endurance ESM/ELINT missions
- Complex and dense electro-magnetic environment handling
- Real-time data transmission and EOB generation in the ground station
- Tactical and strategic ELINT data collection and analysis
A model of ELI-3120 Compact Multi-Mission ISR Aircraft

The **ELI-3120** Aircraft is designed to cope with the challenges of present and future operational theatres. Utilizing an airborne multi-sensor system installed onboard, this intelligence, Surveillance and Reconnaissance Aircraft provides tactical and strategic intelligence to a variety of users.

The **ELI-3120** Aircraft performs a variety of missions, such as:

Creation of a Ground Situation Awareness Picture showing Forces Location and Movements
- Maritime Patrol, Search & Rescue and Border Surveillance
- Support to Homeland Security law enforcement units for deterring illegal activities such as Terror, Piracy, Weapon Contraband and Narcotics Traffic
- Creation of Electronic Order of Battle (EOB) by Signal Intelligence (SIGINT)
- Environment Protection by detecting Pollution, Illegal Fishing and spotting Forest Fire

The ELI-3120 system may be installed either on a customer-provided aircraft or supplied already installed on a suitable aircraft preferred by the customer.

A model of Conformal Airborne Early Warning & Control (on IL76)

**ELW-2090 - Airborne Early Warning and Control (AEW&C)**

IAI’s integrated mission suite, with a powerful command, control & communication system, supports a variety of operational missions such as:

- Long-Range Air Surveillance
- Airborne C4I for Air & Naval Operations
- Airborne Command & Control Post
- Network Centric Warfare Operations
- Communication Node

The IL-76 Aircraft – This long-range, large cabin, 4-engine turbojet military transport aircraft, supports a complete and high performance AEW&C suite.
The IL-76 provides exceptional cabin space for the operator’s crew including a large rest area for additional operators.

The ELW-2090 IL-76 AEW & C aircraft can be air-refueled for extending mission time.

Sensor Data Integration – The AEW&C integrates the data of the onboard sensors (Radar, IFF, ESM/ELINT, CSM/COMINT, SPS/RWR) with the theater situation picture via high capacity multiple Data Links.

IAI’s Systems has vast experience in integrating tailor-made AEW&C and Multi-Mission systems on various platforms, adapted to customer requirements.

**ELI-3001 - AISIS – Airborne Integrated SIGINT System**

A model of the Multi-Role SIGINT Aircraft will present on Gulfstream G-550 aircraft.

The ELI-3001 is a multi-platform, multi-mission Airborne Integrated Signal Intelligence System (AISIS) designed to cope with the challenges of electronic signals in the modern theater.

**Main objectives:**
- Perform long-range, high-endurance SIGINT missions
- Provide vital tactical and strategic intelligence

**Primary tasks:**
- Search, intercept, measure, locate, analyze, classify and monitor communication and radar transmissions
- Create real-time Electronic Order of Battle (EOB) picture
- Real-time report and alert to field commanders and intelligence organizations

**A model of ELI-3360 – Maritime Patrol Aircraft (MPA)**

The MPA is a multi-role airborne system designed to operate as a fast-deployment independent asset, providing a comprehensive situational awareness and maritime domain superiority.

MPA comprises a high performance aircraft equipped with a powerful Sensor-Suite and a Mission System to effectively integrate the sensors’ data.
An on board Command & Control and Communication (C³) System derives intelligence and situational awareness for maritime arena management and disseminates the information to operational users and to the NCW infrastructure.

ELM-2026B VSHORAD – Very Short Range Air Defense Radar

ELM-2026B is the fifth generation of 3D Tactical Air Defense Radars.

The ELM-2026B “VSHORAD” radar is a lightweight transportable, X-band, solid state phased-array, Pulse-Doppler radar. This cost-effective radar is designed to provide early warning and data for supporting surface-to-air missile weapon systems and surface-to-air artillery.

The radar employs a multi beam elevation phased-array, applying Digital Beam Forming (DBF). The 360 degrees azimuth coverage is achieved by rotating the radar’s antenna.

The radar detects a wide variety of low RCS targets such as: low flying fighter aircraft, low velocity ultra-lights and UAVs.

The radar provides for each target accurate measurements of velocity, range, azimuth and elevation angles.

The ELM-2026B “VSHORAD” can be deployed as a local Air Defense system providing early warning, target location, its track and its velocity to surface-to-air weapon systems. The system can be installed and operated either on a vehicle or on a tripod.

The radar reflects IAI’s 40 years of experience in tactical military radars.

Unmanned Aerial Systems (UAS)

IAI is a world leader of fully integrated UAS solutions that are verified by more than 1 million operational hours of intelligence gathering and dissemination and also targeting missions.

IAI will demonstrate at the show some of its MALE and Tactical UAS.
ISRAEL at AeroIndia 2013

HERON I – Medium Altitude Long Endurance MALE UAS System for strategic and tactical missions

HERON I main features and capabilities are:

- Multiple operational configurations
- Adverse weather capability
- Safe, reliable and easy operation
- Multi sensor capability. Simultaneously: EO/IR/FLR, SAR/MPR, ELINT, COMINT Available Satellite communication for extended range (SATCOM)
- Two proven simultaneous Automatic Takeoff and Landing (ATOL) systems for maximal safety
- Fully redundant, state-of-the-art avionics
- Retractable landing gear

Bird Eye Family

Bird Eye 400 and 650 form an advanced, affordable family of mini UAS providing real-time day/night imagery, data for urban operation and "over-the-hill" intelligence with a high level of operational flexibility with latest (third) generation autonomous flight and mission capability.

BIRD EYE 650 MINI UAS

The Bird Eye 650 system is an advanced solution for low echelon forces to obtain real time intelligence, independent of higher echelon sources. It is based on the operational experience and knowledge accumulated with the Bird Eye 400.

The system is equipped in 2 backpacks and consists of:

- 3 UAV platforms
- EO&IR payloads
- Portable Ground Control System (PGCS)
- Data link
- Power source and repair kit
  It is man-portable with fast field deployment by a team of two
PANTHER FAMILY – The PANTHER is a family of tilt rotor propeller and fixed wing VTOL systems

A model of PANTHER

The PANTHER is a uniquely designed Fixed Wing VTOL UAS with a tilt rotor capability that provides a remarkable solution to a wide variety of tasks when pin-point automatic take off and landing is a requirement.

The system can be utilized in military, civilian and homeland security (HLS) operations providing high level of operational flexibility and a small logistical footprint.

The PANTHER main features and capabilities are:

- Automatic Vertical Take Off & Landing
- Ship Deck Operation
- Mission Versatility
- Quick & Easy Assembly
- Simple to Operate & Deploy
- Small Logistical Footprint
- Silent Electrical Propulsion
- High Quality EO/IR/LP Imagery
- Fuel Cell Technology
- Low Acoustic Signature
- Unique Tilt Rotor Technology

A model of MINI PANTHER

The MINI PANTHER is a uniquely designed Fixed Wing AVTOL UAS with a tilt rotor capability that provides a remarkable solution to a wide variety of tasks when pin-point automatic take off and landing is a requirement.

The system can be utilized in military, civilian and homeland security (HLS) operations providing high level of operational flexibility and a small logistical footprint.
The **MINI PANTHER** main features and capabilities:

- Automatic Vertical Take Off & Landing Capability
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- Silent Electrical Propulsion
- High Quality EO/IR/LP Imagery
- Fuel Cell Technology
- Low Acoustic Signature
- Unique Tilt Rotor Technology

**Ghost Rotary Mini UAS**

Ghost is a versatile and highly maneuverable rotary mini UAV System. It is aimed to support ISR Missions in urban warfare.

The system is carried in two backpacks. It can be quickly deployed and is easy to operate.

Main features and capabilities:

- Simple man-machine interface, based on computer games
- Automatic vertical takeoff and landing in any terrain.
- Silent electrical propulsion
- Low acoustic signature
- Day and night missions
- Mission versatility
- Quick and easy assembly
- Easy to deploy and operate

Typical missions:

- Intelligence, surveillance and reconnaissance (ISR) missions
- Silent observation and stakeout missions
- Covert special operation missions
A model of HAROP – Loitering Munition System

The HAROP is a loitering munitions missile with a high quality day / night electro-optic seeker. It searches, detects and attacks accurately high value static or mobile targets at long ranges.

HAROP missiles are launched from transportable launchers and navigate towards the targets area.

SPACE – IAI is the leading Israeli operations in space. IAI develops and produces satellites for various purposes such as Low Earth Orbit (LEO) observation satellites: Ofeq, Eros, TECSAR, OPSAT and communication satellites Geostationary (GEO) AMOS series.

A model of TECSAR – SAR Technology Demonstration Satellite

The TECSAR is a Synthetic Aperture Radar (SAR) Technology Demonstrator for Low Earth Orbiting (LEO) Image Intelligence (IMINT) Satellite.

A low weight X-Band radar payload with multi-beam electronic steering is capable to cover large areas and to provide high-resolution SAR image of any zone of interest on the globe, in any weather conditions, day and night.

A powerful Ground Station is used for tasking new missions via the uplink, and for downloading for further processing.
A model of OPTSAT - 3000 Observation Satellite

Top-end performance Observation Satellite

- Very high resolution
- Panchromatic and multispectral imagery
- High pointing accuracy
- High agility enables covering widely dispersed scenes
- Small size enables multiple launching by same launcher

Network Centric Laser Guided Weapons:

IAI has evolved the Network Centric Laser Guided Weapons approach which enables fighting units carrying light weight equipment to effectively "command" weapons from various launchers to targets in the battlefield via an advanced Data Link.

LAHAT – Laser Homing Attack Missile

LAHAT is an advanced Laser Homing Attack laser-guided Missile for precision attack.

The LAHAT is a multi-mission missile fired from wide variety of Land Vehicles, Helicopters, and Tanks.

LAHAT, with a length of just one meter and weight of less than 13 kg, is very well suited for use on light-weight helicopters. A LAHAT launcher fully loaded with four missiles weight less than 80 kg.

Despite its small size and light weight, LAHAT is highly effective against a variety of target types, including tanks, at ranges well over 8 km. LAHAT can accurately hit moving targets, including enemy helicopters LAHAT’s long range enable helicopters to engage and destroy enemy forces while avoiding the enemy’s air defenses.

In its tank version LAHAT is handled by the 105mm or 120mm gunner, as a standard gun round. The missile performs precision homing on a laser-designated target, ensuring first shot, tank-kill at ranges over 6Km.

LAHAT can accurately hit moving targets, including helicopters
The Rangeless Helicopter Training and Safety (HTS) System

In the past decade, an enhancement of the role of helicopters in the modern integrated battlefield has been developing with an ever-evolving sophistication of helicopter avionics, EW, and IRCM suites, as well as intensified risk levels while helicopters undertake high-complexity missions.

Overall, a greater priority must be placed on the issue of helicopter pilot training. In response to this challenge, IAI's MLM division has integrated its proven AACMI capabilities in a Rangeless Helicopter Training & Safety HTS System for military helicopters.

Whether for logistics & support missions, SAR (Search and Rescue) or combat, the HTS system offers a low-cost high-value pilot training system with maximized safety features. The enhanced debriefing capabilities facilitate optimum utilization of flight hours and other valuable resources.

The system is designed to achieve advanced Joint Forces training capability by utilizing network interoperability with EHUD\RAIDS\FPR\SEMAC AACMI systems, Laser-based Tactical Engagement Systems (TES) and Combat Training Centers (CTC).

The airborne component of the HTS system is available in two configurations - a compact LRU, and an airborne pod named THRUST which is designed for attack helicopters. The Thrust system was jointly developed with Inter-Coastal Electronics Inc. and replicates actual anti-tank missile in form and fit (e.g. Hellfire). The HTS system is designed to enable hardware modularity at several levels of cost and performance.