



DRDO

Press Release

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DRDO Bhawan, Delhi

Indian Defence Technologies on display at Baharin International Airshow

India is showcasing during the Bahrain International Airshow, its state-of-the-art airborne platforms and associated sensors & communication systems designed and developed by DRDO (Defence Research & Development Organization, Ministry of Defence, Govt of India). DRDO, along with some of its production partners is displaying India's strength and expertise in design, development and leading to production at the 'Bahrain International Airshow' being held at Sakhir Airbase, Bahrain from 16 – 18 Jan 2014, with the aim of exploring the potential of exporting these advanced systems to friendly countries in the region.

The show will witness flying demonstration of the 'AEW&C India' the latest and state of the art Airborne Early Warning and Control system that can detect, identify and classify threats present in the surveillance area and act as a command and control centre to support variety of air operations. The system with its multiple Communication and data links can alert and direct fighters against such threats while providing "Recognizable Air Surface Picture" to the Commanders at the Ground Exploitation Stations. It also comprises of electronic and communication support measures that intercept and classify unfriendly radar transmissions and communication signals. "AEW&C India" with Mission Systems developed by DRDO with modular design and seamlessly integrated on an Embraer 145 aircraft provides a very cost effective solution for C4ISR capabilities. It is based on modern state of art technologies and can be adapted to the needs of any country.

DRDO is also displaying models of Light Combat Aircraft 'TEJAS', the 'Four plus' generation and highly cost effective fighter aircraft designed and developed by the Department of Defence R&D of the Ministry of Defence and being produced by the Hindustan Aeronautics Limited. Models of trainer and the Naval versions are also on display. The other items include models of 'Expendable high Speed Aerial Target', 'NISHANT', the multi mission UAV with Day and Night operational capability for battlefield surveillance & reconnaissance, target tracking & localization, and artillery fire correction; and OBOGS (On Board Oxygen Generation System)

A high level DRDO delegation led by Dr Avinash Chander Scientific Adviser to Defence Minister and Secretary Defence R&D is participating in the event. The delegation includes Dr S Christopher Distinguished Scientist and Director 'Centre for Air Borne Systems (CABS), Mr Radhakrishnan, Outstanding Scientist and Director Industry Interface & Technology Management and Senior level officials from Indian Industries partnering DRDO in the production of various systems.

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1. NISHANT UNMANNED AERIAL VEHICLE

'NISHANT' is a multi mission UAV with Day/Night operational capability used for battlefield surveillance and reconnaissance, target tracking & localization, and artillery fire correction. The electro-optic payloads are mounted on a stabilized steerable platform. A sophisticated image processing system is used for analyzing the images transmitted from the UAV. The aircraft has a jam resistant command link and digital down link for transmission of imagery. The air vehicle has autonomous flight capabilities and is controlled from a user friendly Ground Control Station. Launched from a hypersonic launcher, it does not require a runway for take off and landing.

2. PILOTLESS TARGET AIRCRAFT - LAKSHYA

Lakshya is a cost effective re-usable aerial target and is a high subsonic system powered by a gas turbine engine and launched either from ground or ship. It carries two tow targets with radar, IR or visual signature augmentation. These tow targets are used for training of land or ship based gun and missile crew and combat aircraft pilots in weapon engagement. The Lakshya system was inducted into the Indian Air Force, Indian Navy and Indian Army in 2000, 2001 and 2003 respectively. The series production is currently under progress at HAL, Bangalore.

4. LCA Tejas

The Light Combat Aircraft (LCA) is an indigenous fighter aircraft designed and developed in India by the Department of Defence R&D of the Ministry of Defence, Govt of India with 'Aeronautical Development Agency' as the nodal establishment and Hindustan Aeronautics Limited as principal design partner. The air force variant christened as 'Tejas' is the smallest, light weight, multi role, single engine, tactical fighter aircraft with compound delta wing. The LCA, a contemporary combat aircraft, is developed to meet the versatile and stringent requirements of the Indian Air Force (IAF), as its front line multi mission tactical aircraft. The special features of LCA fighter are compound delta Platform, Relaxed static stability, composite structure, fly-by-wire flight control system, glass cockpit, etc., Tejas fighter can carry Air-to-Air missiles, Air-to-ground missiles, Anti-ship missiles, Laser guided Bombs, Drop Tanks, Night targeting pod, EW suite and bombs of various weights. With excellent handling qualities and performance characteristics, Tejas is amalgamation of contemporary concepts and technologies which make the aircraft very agile and give it excellent maneuvering capabilities. Indian Air force has placed the production orders for LCA fighter.

5. LCA Trainer

LCA Trainer is two seat tandem configuration Air Force Trainer derived from the fighter version. It is mainly used for training purpose, even though it has capability to launch weapons. It has been endeavored to maintain maximum commonality amongst all the LCA variants i.e LCA fighter, LCA Trainer, Navy Trainer and Navy fighter. Front fuselage is modified to accommodate the second cockpit. Both front and rear cockpit of trainer are configured to replicate the pilot vehicle interface (PCI) as in the fighter version. The trainer version has drooped nose for better cockpit vision and larger canopy to accommodate rear cockpit with additional vision for rear cockpit. It has mechanical interconnected control stick, Rudder pedal and throttle. LCA Trainer has been designed not only as a trainer but also as precision weapon launch platform for air-to-air, air-to-ground, air-to-sea missions with effective stores management system capable of handling a wide range of weapons and stores.

6. LCA Navy

The Naval Light Combat Aircraft (LCA Navy) is being developed to meet the requirements of Indian Navy. LCA Navy will operate from an Aircraft Carrier with a concept of Ski-jump and lands in 90 meters using an arrester hook engaging an arrestor wire on the ship. Derived from the Air force version, its Flight control system is augmented with Leading Edge Vortex Controller (LEVCON) aiding reduction in approach speed for landing. Auto throttle function incorporated in LCA Navy reduces pilot load by maintaining constant angle of attack during the critical phase of flaw-less carrier landing. Fuel dump system is an additional feature in LCA Navy to enable safe landing by reducing weight in the event of an emergency immediately after launch from a carrier. Landing gear of LCA Navy has been adequately strengthened to withstand increased landing loads in carrier operations. LCA Navy is supersonic at all altitudes and has roles of Air-to-Air, Air-to-sea and Air-to-ground roles.

7. AEW&C

AEW&C system is designed to detect, identify and classify threats present in the surveillance area and act as a command and control center to support different air operations. The system with its multiple Communication and data links alert and direct fighters against threats while providing "Recognizable Air surface picture" to the commanders at the ground Exploitation stations. It comprises of Electronic and communication support measures that can interrupt and classify unfriendly radar transmissions and communication signals.

The AEW&C system is a multi sensor airborne surveillance system. It comprises of Primary Radar (PR) and Secondary Surveillance Radar (SSR / IFF) as the active sensors onboard. The Electronic Support Measure (ESM) and the Communication Support Measure (CSM) systems aids in identification / classification, based on the various emissions from the targets. The Self Protection Suite (SPS) comprises of Radar Warning Receiver (RWR), which are incorporated in the ESM system, Missile Approach Warning System (MAWS) and Counter Measures Dispensing system (CMDS). Data Link and SATCOM links are used for air to ground communication functions as dual redundant system. The Mission System Controller (MSC) of AEW&C system integrates all the sensor data and form system tracks and carry out other system control functions. The intercept control segment of the Mission System Controller (MSC) carries out the battle management function and guides the interceptors and vector strike aircraft in addition to carrying out the recovery operations. The Data Handling and Display System (DHDS) displays the Air Situation Picture (ASP) on Operator Work Station(OWS) and provides all facilities for the operators to interact with the AEW&C system.

The platform aircraft is also installed with an In-flight Refuelling system to facilitate extended surveillance operations. The AEW&C I is capable of climbing to flight altitudes from where the radar can cover from ground level to maximum required altitude to detect airborne targets at a long range.

8. Active Antenna Array Unit

The AAAU houses primary Radar (PR) and Secondary Surveillance radar (SSR) electronics. The PR is the active electronically steered array Radar with a normal detection range and an extended range against RCS of fighter class of aircraft. Two radiating planar arrays assembled back to back and mounted on top of the aircraft fuselage provide 240° Coverage on either side of AAAU. The SSR emits a message querying the target in a particular sector. Replies from the target are automatically associated with the primary radar detections.



Figure 1 :AEW&C aircraft getting ready for sortie at Sakhir Airbase, Bahrain



Figure 2: AEW&C aircraft getting ready for flight.