SP'S SHOWNEWS

AN SP GUIDE PUBLICATION

2023 AERO INDIA
The Runway to a Billion Opportunities

रक्षा मंत्रालय MINISTRY OF DEFENCE
रक्षा उत्पादन विभाग DEPARTMENT OF DEFENCE PRODUCTION

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DAY 1

MONDAY
FEBRUARY 13, 2023

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Prime Minister Modi Inaugurates India's Largest Helicopter Manufacturing Facility

*detailed story on **Page 14***

CURTAIN RAISER

A Self-reliant 'New India'

The 14th edition of India's biennale air show, Aero India, is back. The five-day event, on the theme 'The runway to a billion opportunities,' has 731 exhibitors registered for the event.

AYUSHEE CHAUDHARY

The show is ready to be held at Air Force Station, Yelahanka in a total area of around 35,000 sqm. in Bengaluru from February 13-17, 2023. Defence Minister Rajnath Singh envisions Aero India 2023 to be a display of the growing prowess of the defence & aerospace sector and the rise of a strong & self-reliant 'New India.' The five-day event, on the theme 'The runway to a billion opportunities,' had 731 exhibitors registered for the event as of January 24 when the Defence Minister reviewed the show preparations during apex committee meeting in New Delhi. According to the Aero India website, 643 of the 737 exhibitors are from India, while 94 are from 30 different international nations.

Defence Ministers' Conclave, with the theme 'Shared Prosperity Through Enhanced Engagement in Defence (SPEED)', and a CEOs Roundtable are among the most significant events during the show. The Manthan start-up event and Bandhan ceremony that include signing of MoUs, along with an awaited air show and static display section on all the five days including F/A-18 Super Hornet, P-8I, CH-47 Chinook, 737, 787 Dreamliner and 777X, among others. A dedicated India Pavilion with the theme, 'Fixed Wing Platform,' shall also be a key feature at the show. Defence Minister Rajnath Singh would also be launching the ninth edition of the Defence India Startup

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(ABOVE) DEFENCE MINISTER RAJNATH SINGH WITH REPRESENTATIVES OF DIFFERENT COUNTRIES DURING THE AMBASSADORS' ROUNDTABLE CONFERENCE FOR AERO INDIA 2023; (RIGHT) DEFENCE MINISTER RAJNATH SINGH CHAIRS THE APEX COMMITTEE MEETING OF AERO INDIA 2023 WITH TOP OFFICIALS.

Challenge (DISC) at Manthan 2023 during the air show. Like the previous edition, an Aero India App with all the necessary details shall also be available for everyone.

Rajnath Singh emphasised that while Aero India is a business event, it also aims to strengthen India's relations with other countries. He also underlined the importance of these events for the business ecosystem of the states in which they are organised as well as available opportunities.

Much like DefExpo, Aero India has also been restructured with focus on increasing defence exports and forging partnerships rather than merely import of weapons/equipment. "The Indian defence industry is going through a transformational phase and the active participation of the private sector is the biggest catalyst to that change. Not just the private sector, but R&D establishments and academia are also working together with the Government. Aero India is a medium to provide a platform to all the stakeholders to jointly strengthen the defence & aerospace sector and contribute to Nation Building," said the Defence Minister.

"Our 'Make in India' efforts are not just meant for India alone, it's an open offer for joint partnerships in R&D and production. Our endeavour is to transcend buyer-seller relation to a co-development & co-production model. 'Make in India' encompasses 'Make for the World'. It translates into an open offer to all for joint efforts and partnerships in defence R&D and production," the Minister said in a reach-out event, organised by the Department of Defence Production, Ministry of Defence, attended by Ambassadors, High Commissioners, Chargé d'affaires and Defence Attachés of over 80 countries.

"Aero India is a premier global aviation trade fair, which provides an opportunity for the Indian aviation-defence industry, including the aerospace industry, to showcase its products, technologies and solutions to the national decision makers. The five-day show will witness a combination of major aerospace and defence trade exposition, along with aerial displays by the Indian Air Force (IAF). Besides the major entrepreneurs and investors in the defence and aerospace industries, the event will witness participation of prominent defence think-tanks and defence-related bodies from across the world. Aero India will, indeed, provide a unique opportunity for exchange of information, ideas and new technological developments in the aviation industry," said the Defence Minister.

Hoping for a larger presence of exhibitors and representatives of friendly countries in Aero India 2023, the Minister recalled that Aero India 2021, witnessed over 600 exhibitors physically and another 108 virtually from 63 countries and around 3,000 Business-2-Business meetings, He also added that a robust defence manufacturing ecosystem has been created which has led to the emergence of India as a leading defence exporter in recent years. The defence exports have grown by eight times in the last five years and now India is exporting to over 75 countries, he noted.

Rajnath Singh termed 'partnership' and 'joint efforts' as the two keywords that differentiate India's defence industry partnership with other nations. He described it as the Government's endeavour to transcend the relation of buyer and seller to that of co-development and co-production model, irrespective of India being a buyer or a seller. "We are a major defence buyer as well as a significant defence exporter. When we are procuring defence equipment from our valued partner nations, very often they share the technical know-how, set up manufacturing plants in India and work with our local firms for various sub-systems. And when we export our defence equipment, we offer our full support towards the capability development of the buyer through sharing of technology, training, co-production etc." In that, Aero India 2023 will provide an opportunity for exhibitors and participants to exchange ideas and forge collaborations to fulfil their quest to achieve excellence in aerospace and defence manufacturing.

The Government has been strongly pressing on making India an indigenised Defence Sector Hub on a global scale and many consistent steps have been taken in that direction. Aero India is a major opportunity to showcase the country's strength, capability and possibilities. Even the recently released Union Budget has given the defence allocation a boost. ₹5.94 lakh crore in Budget 2023-24 have been allocated to Defence, a jump of 13 per cent over previous year; ₹1.38 lakh crore allocated for Defence Pensions; Capital outlay pertaining to modernisation & infrastructure development increased to ₹1.62 lakh crore; 57 per cent rise since 2019-20. The Defence sector aims to help in achieving the Government's goal of making India a $5 trillion economy within a few years.

Aero India, thus, is anticipated to become the harbinger of many positive opportunities and exciting collaborations especially after the COVID hit last year. ●

PUBLISHER AND EDITOR-IN-CHIEF
Jayant Baranwal

SENIOR CONTRIBUTORS
Lt General (Retd) P.C. Katoch

PRINCIPAL CORRESPONDENT
Ayushee Chaudhary

CHAIRMAN & MANAGING DIRECTOR
Jayant Baranwal

PLANNING & BUSINESS DEVELOPMENT
Executive Vice President: Rohit Goel

SALES & MARKETING
Group Director: Neetu Dhulia
Deputy Director - Sales: Rajeev Chugh

LAYOUT DESIGNERS
Sr Designer: Vimlesh Kumar Yadav
Designer: Sonu S. Bisht

GROUP RESEARCH ASSOCIATE
Survi Massey

MANAGER - HR & ADMIN
Bharti Sharma

DEPUTY MANAGER – CIRCULATION
Rimpy Nischal

SP'S WEBSITES
Sr Web Developer: Shailendra Prakash Ashish
Web Developer: Ugrashen Vishwakarma

SP GUIDE PUBLICATIONS PVT LTD
A-133, Arjun Nagar,
(Opposite Defence Colony)
New Delhi 110003, India

Tel: +91 (11) 24644693, 24644763, 24658322
Fax: +91 (11) 24647093

E-mail: info@spguidepublications.com

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"IAF plans to induct six squadrons of the Multi-Role Fighter Aircraft (MRFA) in a phased manner"

*In this **first part** of an exclusive interview to **Jayant Baranwal**, Editor-in-Chief, **SP's ShowNews** on the occasion of Aero India 2023, **Air Chief Marshal V.R. Chaudhari**, Chief of the Air Staff, gave some very elaborate and candid insights on the plans and preparedness of the Indian Air Force*

***SP's ShowNews* (SP's): Multi-Role Fighter Aircraft (MRFA)**
(a): When will this programme finalise?
Chief of the Air Staff (CAS): The IAF plans to induct six squadrons of the MRFA in a phased manner. IAF is evaluating the responses to the RFI and Air Staff Qualitative Requirements for the proposal are being finalised prior to seeking Government approval. Certain key areas which need more elaboration are being queried, following which, necessary details would be included in ASQRs. The necessity of 'Make in India' has been conveyed to all the OEMs.

(b): What is the ratio of off-the-shelf delivery and manufacturing within India?
CAS: Towards reducing our foreign dependencies, the IAF is planning to minimise off the shelf deliveries while maximising manufacturing within India. The programme will also ensure long term maintenance support by Indian resources. The exact details can only be worked out as a part of contract negotiations.

SP's: Fighter Squadrons
(a): We do believe Rafale has added great edge to the combat-readiness as the delivery of 36 French jets have been concluded and timely so.
CAS: Answer inclusive in the following response.

(b): In spite of the above, you have very candidly maintained that even by around 2035 the total number of squadrons will be well below the authorised and sanctioned level of 42 fighter squadrons for the Indian Air Force. Does this concern you?
CAS: There is no doubt that the Rafale is a very potent platform that has given a fillip to our combat preparedness. But we have to keep an eye on the larger picture as well. The IAF currently has 31 fighter aircraft squadrons. In the next 10 years, the squadrons operating the MiG-21 aircraft will be phased out completely along with some squadrons of MiG-29 and Jaguar aircraft. However, the shortfall would be offset by induction of the indigenously manufactured Light Combat Aircraft (LCA) Mk-1A fighter aircraft. Right now, the IAF is fully capable of undertaking its role of defence of the nation while future concerns are being looked after by current and future acquisitions.

(c): Is there any plan to arrest the depleting number of Fighter Squadrons? Can you kindly share the same?
CAS: The IAF has strived to arrest the draw-down of its fighter fleet and presently we are in the process of gradually building it up to the approved level of 42 squadrons. The shortage in the number of fighter squadrons is being addressed through multi-pronged approaches to ensure that this is realised within time, budget and under the 'Make in India' initiative.

The numbers of the indigenously manufactured fighter aircraft are only going to increase with the procurement of 83 LCA Mk1A, for which the contract has been signed with HAL on January 25, 2021. Deliveries are envisaged from January 2024 to January 2029. DRDO is working towards the indigenous development of LCA Mk 2 and a fifth generation fighter aircraft, AMCA. Induction of the AMCA is expected to commence from 2035. IAF also plans to induct the Multi Role Fighter Aircraft (MRFA) in a phased manner. The programme is being progressed under 'Make in India' provisions of DAP-2020.

(TOP) RAFALE HAS GIVEN A FILLIP TO IAF'S COMBAT PREPAREDNESS; (ABOVE) INDUCTION OF THE AMCA IS EXPECTED TO COMMENCE FROM 2035

SP's: Transport Fleet
(a): Can you kindly share your perspective of current fleet of military transport?
CAS: The IAF transport fleet is the fourth largest in the world. It comprises of a mixed bag of aerial assets ranging from VHETAC category (C-17) to LTA (Avro & DO-228). Each aircraft type in the transport fleet possesses a unique role and has proven its mettle on numerous occasions. The nation has been witness to the fleets' contribution during several International evacuations, civil heavy lifts, HADR and SAR of troops and population at border areas. The potential of the IAF's mobilisation capability was a major highlight during the Eastern Ladakh contingency. The fleet is undergoing further enhancement including the induction of the C295 aircraft which has a major Make-in-India component.

(b): Is there any wish-list you may like to share with us?
CAS: As the An-32 and IL-76 legacy fleets are approaching EOL (End of Life), IAF is in the process of identifying suitable replacements. The demand for Air to Air refueling aircraft as force multipliers towards strengthening our fighting potential remains and we are therefore progressing the case for procuring six flight refuelling aircraft (FRA). As this process is likely to take some time, a case for leasing one FRA to augment the training requirements has also been initiated. Furthermore, we are also progressing a case for the induction of additional Dornier aircraft and upgrading some of our Dorniers through HAL. As part of the indigenisation process, we are also hopeful that MRO facilities for most of our platforms are established in India itself. We also look forward to early induction of AEW&C Mk II.

*Continued in **SP's ShowNews** Day 2...*

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ALAIN GARCIA

"India is at the front and centre of Boeing's business plans"

Alain Garcia**, Vice President, India Business Development, Boeing Defense, Space & Security and Global Services talks to **SP's ShowNews

***SP's ShowNews* (SP's): Can you share an overview of the Boeing's association with the Indian Armed Forces?**

Alain Garcia (Garcia): Boeing has been a trusted partner of India's aerospace sector for more than 80 years, both as the mainstay of India's growing commercial aviation sector and, in the modernisation and mission readiness of the country's defence forces. Today, with 11 C-17s, 12 P-8Is, 22 AH-64 Apaches (with six more on order with the Indian Army), 15 CH-47 Chinooks, 3 VVIP aircraft and two Head of State aircraft, India is at the front and centre of Boeing's business plans. When we talk about Boeing and India, we are talking about several firsts. India was the first international customer of P-8I aircraft. India is the largest international operator of C-17s outside the US. The Harpoon is the first US weapon integrated into an Indian fighter. India's defence sector is poised for growth, and Boeing is committed to supporting and enabling this progress.

SP's: Can you share an update on the 6 Apaches on order by the Indian Army?

Garcia: On January 19, we completed the delivery of the first fuselage for the Indian Army's six AH-64 Apache attack helicopters from our JV facility Tata Boeing Aerospace Limited (TBAL) in Hyderabad. An example of Boeing's commitment towards Make in India and Atmanirbhar Bharat. The TBAL facility manufactures aero-structures for Boeing's AH-64 Apache helicopter, including fuselages, secondary structures, and vertical spar boxes for customers worldwide, including for the US Army. As of January 2023, more than 190 fuselages have been delivered by TBAL. Recently, we added a new production line at TBAL to manufacture complex vertical fin structures for the 737 family of airplanes, a significant milestone for the joint venture.

(CLOCKWISE FROM TOP LEFT) P-8I; C-17; CH-47 CHINOOK AND AH-64 APACHE.

SP's: The Indian Air Force operates a fleet of 15 Chinooks. What capabilities does the platform bring to the India Air Force?

Garcia: The CH-47 Chinook is an advanced multi-mission helicopter that provides the Indian Air Force with unmatched strategic airlift capability across the full spectrum of combat and humanitarian missions. It has proven capability to operate in the wide range of conditions that are typical in the Indian subcontinent. With more than six million flight-hours, the Chinook brings unmatched survivability and the ability to perform the world's most demanding missions.

The Chinook can be customised to fit the user's unique requirements, with capabilities such as air-to-air refueling, which has been in use on the Chinook for decades. While the exterior of the Chinook remains the same, Boeing has incorporated the latest technologies to deliver the world's most modern digital avionics, flight controls, and mission-centric capabilities. It is fully compatible with 21st Century warfighting requirements and provides pilots with unrivaled heavy-lift capabilities today and decades into the future. The entire portfolio of Chinooks brings capability, affordability, and interoperability that no other company or aircraft can match. With more than 950 aircraft in 20 countries, the Chinook enables reduced maintenance costs via commonality across US and allied fleets. 950 Chinooks in circulation with over 100 in Asia Pacific.

SP's: The Indian Air Force (IAF) has reportedly indicated a requirement for additional Chinooks, update us on how the discussions are progressing?

Garcia: Boeing stands ready to support the India Air Force for any additional Chinooks required, in addition to the 15 already delivered. The Indian Air Force is best suited to confirm their procurement plans.

SP's: How is Boeing supporting the Government's vision of Atmanirbhar Bharat in Aerospace and Defence?

Garcia: Boeing is by far the largest foreign OEM in terms of sourcing from India, with over $1 billion annually through its large and growing network of 300+ supplier partners – that are an integral part of our global supply base. These Indian companies are manufacturing and exporting systems and components for some of Boeing's most advanced products from India to the world. In 2021, we added new suppliers, including several Micro, Small and Medium Enterprises (MSMEs) in support of our commitment to Aatmanirbhar Bharat. In fact, over 25 per cent of our suppliers from India are MSMEs. Our programmes have skilled close to 4,000 frontline aerospace manufacturing workers and aircraft maintenance engineers.

- Dynamatic Technologies has been manufacturing the ramp and complex aft pylon for Chinook heavy-lift helicopters, and P8 cabinets. They have recently won the contract to supply for the F-15EX Eagle II programme. This is a first where aerostructures for the latest and most advanced F-15EX Eagle II will be made in India.
- Rossell Techsys manufactures wire harness and electrical panel for the AH-64 Apache, and the harness for several BDS platforms including V-22 Osprey, CH-47 Chinook, F-15 and F/A-18 Super Hornet.
- SASMOS HET Technologies manufactures electrical panel assemblies for the F/A-18 Super Hornet and F-15 Strike Eagle.
- Hindustan Aeronautics Ltd (HAL) manufactures F/A-18 gun bay doors.
- Bharat Electronics Limited (BEL) manufactures IFF (Identify Friend/Foe) and speech secrecy system for the P-8I.
- Jaivel Aerospace has won a contract with Boeing to manufacture and supply aircraft protection system products for the Boeing T7A-Red Hawk aircraft.
- In 2022, Rossell Techsys entered into an agreement with Boeing to manufacture and supply wire harnesses for the T-7A Red Hawk platform. Rossell will be manufacturing Electrical Wiring and Interconnect System (EWIS) parts and the deliveries will continue through FY 2032, covering a total of 84 unique parts. All parts will be manufactured at Rossell's Center of Excellence (CoE) set-up exclusively for Boeing.
- Jaivel Aerospace will manufacture and supply aircraft protection system products for the Boeing T-7A Red Hawk aircraft. Working with the Boeing teams in India and the US, Jaivel Aerospace has developed entirely new capabilities for this product range, for the first time in India.
- Tata Advanced Systems Limited (TASL) won the "Supplier of the year" award for 2022 from Boeing, from more than 11,000 suppliers worldwide.

SP's: What is Boeing showcasing at the show this year?

Garcia: We are excited to be at Aero India 2023 and will have a large presence at the show. You can look forward to some interesting announcements that further boost Boeing's Make in India and self-reliant India focus. Among foreign OEMs, Boeing leads the way in investments across the aerospace and defence value chain – be it in manufacturing, engineering and R&D, skilling and training – helping develop the aerospace and defence ecosystem in India.

Boeing India's exhibit will highlight strategic investments the company has made across the ecosystem to build local services infrastructure, capabilities, workforce development and partnerships, while harnessing the strength of Indian talent and its large and growing network of more than 300 supplier partners. Boeing is committed to supporting aerospace and defence industry in India with a vision to bring the best of Boeing to India and take the best of India to the world.

GURU BISWAL

A Dependable Partner in Aerospace Manufacturing

***SP's ShowNews** in conversation with **Guru Biswal**, CEO – Aerospace Business Division, Bharat Forge*

***SP's ShowNews* (SP's): What are the most recent developments in the Kalyani Group's aerospace operations?**

Guru Biswal (Biswal): Along with the assembly and testing facilities for jet engines, we have a cutting-edge production plant for crucial engine and structural elements. For the design of Turbomachinery products, including micro turbines, as well as product testing, a strong team of designers, both in process engineering and CAD/CAE, supports the operational team. With the addition of core design skills and the combination of component production, product design, and validation, our team is now very strong and able to meet the demands of the market. The entire chain of operations is contained under a single Digital Thread, placing a heavy emphasis on the business's requirements for "Product Integrity," "Traceability," and "Zero Defect."

CUTTING-EDGE TECHNOLOGY FOR TOTAL CUSTOMER SATISFACTION

SP's: What future development and growth in the aerospace sector does Bharat Forge have planned?

Biswal: The sector is creating both local and international possibilities. By accepting our products as alternative sources and taking into account the quick development of new products, international OEMs have come to view us as a dependable partner. This applies to the creation of aerospace-grade raw materials for the global supply chain as well as to parts and finished goods. A few OEMs have already accepted us, and we are working with a few more.

SP's: General Atomics Aeronautical Systems (GA-ASI) is joining hands with Bharat Forge aerostructure manufacturing sector creating a high-end drone manufacturing environment. Could you elaborate on this association and its objectives?

Biswal: Our goal is to give OEMs an established platform on which to capitalise on our manufacturing skills. As a completely digitally enabled production plant, we can enable crucial manufacture & assembly in the shortest time frame for product qualification. Incorporating cutting-edge technology for the landing gears and industrialising it with a strong process capability for zero defect product realisation are the crucial tasks our experienced team can handle for the organisation.

SP's: Which aspects of your participation in Aero India this year stand out to you? Can we anticipate any significant announcements or deals?

Biswal: This year, we're participating in the Aero Show to demonstrate our ability to add value along every step of the aerospace value chain, from the production of raw materials to assembly and testing. We want to convey to both domestic and international customers our capacity to manufacture mechanical aircraft parts locally, particularly crucial rotating engine parts and structural components for Under Carriage.

IAI Introduces the Latest Member of the Heron UAS Family – HERON MK II

Heron MK II UAS, the youngest member of the Heron family of Unmanned Aerial Systems (UAS), is one of IAI's highlights at Aero India 2023

Heron MK II UAS reflects the latest technology and the operational maturity gained by IAI and its customers that have been operating Heron family UAS for decades. The new model maintains its rich heritage, supporting interoperability and compatibility with legacy Heron family systems proven with over 22,00,000 operational flight hours. This is an important force multiplier for all existing and future Heron family customers. Heron MK II sets new mission capabilities, efficiencies, and autonomy standards. IAI cooperates with HAL and ELCOM Systems Pvt Ltd to manufacture and support IAI's UAS in the Indian subcontinent, including these new systems.

By operating up to six sensor payloads simultaneously, Heron MK II provides a single platform's complete, multi-modal intelligence-gathering capability. These payloads enable the collection of reconnaissance, surveillance, and intelligence in real-time, covering large areas of interest. Using dedicated sensors, the system can perform standoff reconnaissance (with the M19 payload) over a long distance (up to 100 km) or persistent surveillance over a wide area (Wasp payload). Heron MK II can also carry maritime surveillance radar, synthetic aperture radar (SAR), electronic surveillance measures (ESM), and communications intelligence (COMINT).

Sensor data can be processed on board or downloaded to the ground station over the wideband satellite communications link. Users can also switch to the digital line-of-sight datalink to employ covert, secure, and resilient communications. In addition to streaming live sensor data to the ground segment, Heron Mk II also has servers onboard, providing users access to large amounts of raw or processed sensor data collected throughout the mission and stored onboard.

The dimensions of the Heron MK II have been increased to a 9.7-meter-long fuselage and a wingspan of almost 17 meters, providing a larger space for internal and external payloads, including underwing stores such as lifeboats, without degrading performance. The new powerplant is optimised for the mission profile defined by the new platform. The aviation-certified engine, specially tuned for the mission profile, delivers 160 hp, significantly over the 115 hp provided on the legacy Heron. Longer +30 hour missions, higher climb rate, and efficient operation at altitudes up to 35,000 ft are some of the new capabilities. The maximum takeoff weight (MTOW) has increased to 1,430 kg, including a useful payload of 470 kg. Another forte is its ability to endure adverse weather, with deicing systems enabling Heron MK II to cross stormy weather it may encounter on its flight, over mountains and sea.

THE HERON MK II UAS IS INTEROPERABLE AND COMPATIBLE WITH THE HERON FAMILY SYSTEMS AND LEVERAGES IAI'S UNMANNED SYSTEMS' OPERATIONAL EXPERIENCE

Cutting-edge avionics enable operators to plan and implement flight and mission autonomy with ease. The system conforms to open architecture, with separate flight control and mission management systems, enabling the manufacturer and users to maintain optimal upgrading cycles and avionics systems flexibility throughout the UAS life cycle. The separate flight and mission computers, allow users to introduce changes in the mission system while maintaining airworthiness flight-control functions intact. Autonomous takeoff and landing and multiple redundancies for flight and mission-critical systems are fully supported. The state of the art design is certified to international standards, preparing it for the new generation.

Heron MK II also offers an advanced, ergonomic workstation design with flat displays and map-based graphical touch-based control reducing the complex procedures into a few touches and clicks. An integrated training system enables the training and rehearsal of operators, simulating the weather conditions, platform behavior, terrain, payloads, and targets avoiding unnecessary risk to airframes under rough flight conditions.

Based on the successful operational record of the Heron UAS across all Indian military branches, the new Heron MK II is positioned to introduce new operational capabilities, deepen Indian participation, and continue the proud Heron legacy.

RAFAEL India is Showcasing its Systems at Aero India 2023

RAFAEL's local Partners &subsidiaries will be showcasing a number of advanced systems

RAFAEL is proud to have local partners and subsidiaries, such as its partnered Indian based companies Kalyani-Rafael (KRAS) and Astra-Rafael (ARC) with whom RAFAEL has joint ventures, presenting a selection of innovative defence solutions at the Aero India conference taking place next week, February 13 to 17.

Through our partners, state-of-the-art systems can be produced in India independently by KRAS and ARC, allowing for the transfer of technology, know-how, and active support of the local industry, and Indian economy. After decades in India, RAFAEL continues its long-term effort to invest in the supply of advanced defence systems to the Indian market. RAFAEL's heritage in innovation through significant investment in R&D ensures that our technology and our customers are using the most effective means to defend their most valued assets and support the local industry. We are constantly seeking to improve these technologies and strengthen our Systems showcased at conference include I-Derby Missiles, RecceLite Reconnaissance Pods, Litening Advanced Targeting Pods, the SPICE Family of Air-to-Surface Missiles, the SPIKE Missile Family, and the BNET Tactical Communications system. Likewise, advanced versions of both Litening and RecceLite pods will be presented together with our local partners.

"I would like to say with great pride that Rafael has a rich legacy here - with 25 years of work in India. Throughout that time we have successfully delivered a variety of advanced systems and solutions in several different spheres and services. Systems that are combat proven on a wide variety of platforms. We are proud to see some of these systems still in active, operational use even 20 years later. This serves as a clear example of not only our history in India and alongside our Indian counterparts; It also conveys the deep and firm commitment to maintain this longstanding association and partnership," says Major General (Retd) Yoav Har-Even, President & CEO of RAFAEL.

LITENING ADVANCED TARGETING PODS

SPYDER LAUNCHER WITH PYTHON 5 SURFACE-TO-AIR MISSILES

HENSOLDT's PrecISR: A Sensor of Choice for Surveillance

PrecISR can fulfill different tasks virtually at the same time and can literally find the 'needle in a haystack'

HENSOLDT, the leading independent sensor house, has developed and launched an innovative airborne multi-mission surveillance radar which provides armed forces and border protection authorities with unprecedented situational awareness and extremely short reaction time.

The history and experience of HENSOLDT's ISR radars traces back for more than 30 years. The first SAR radars (DO-SAR, ERS-1, X-SAR) were developed and tested in the mid-1980s. These products were developed for the German Federal Ministry of Defence.

In 2006, Hensoldt started producing platform independent ISR radar called SMART Radar. With product enhancements and insertion of new technology like GaN modules, trendsetting digital receiver technology and compact Hardware packaging, a new, light weight and competitive radar design was achieved in 2017. This was the birth of the PrecISR 1000.

Some of the Unique features of this Products are:

- Software defined Radar offers Maritime Search mode(s) or MMTI, ISAR, SAR (Strip and Spot) and Air to Air and GMTI/SMTI modes.
- GaNtiles based AESA Antenna.
- Multichannel Processing.
- Highly optimised for size (75 cm x 30 cm), Weight (< 60 Kg) and Power (1.4 kW). This makes it very easy to install for Retrofits and for new platforms.
- Highly modular in nature and hence very easy to repair in field conditions.

(TOP & ABOVE) COMPACT DESIGN OF THE PRECISR SIMPLIFIES ITS AIRBORNE PLATFORM INTEGRATION

From an operational point of view, customers require high performance in terms of range and detection capabilities fitting into their main mission envelope. Users also attach value to efficient maintainability and high MTBF figures. These concerns of efficiency are optimally addressed by PrecISR.

Firstly, the product translates tremendous progress regarding reduction of size, weight, space, power consumption and cooling into direct benefits for the customer. Secondly, the modular approach of the concept allows for the selection of a target-oriented tailored solution optimised to the platform, mission scenarios and budget.

Compact design of the PrecISR and the fact that all radar parts are located outside of the airframe, simplifies its airborne platform integration significantly compared to other radars. Due to its software-defined radar modes and electronic beam steering, PrecISR can fulfill different tasks virtually at the same time. It is able to detect, track and classify thousands of objects and thus can literally find the 'needle in a haystack'.

Customer feedback world over on the design and performance of PrecISR has been very good. The technology behind the radar as well as its sleek and power-optimised design are widely appreciated. Software defined modes and ease of integration are also other plus points. They need only eight screws and two connectors. That's it!

Giraffe 1X: Monitoring the Skies for New Generation of Aerial Threats

From surveillance to attacks from the air, UAVs have become a security headache

GIRAFFE 1X DEMO ON SUPACAT JACKAL

The current ongoing conflicts has firmly brought home the age of drone warfare. The ubiquity of drone deployment points to a future where drones would be used extensively in the frontline by armed forces – from plain reconnaissance to suicide drones, tank busters, targeting drones, emergency supplies and more.

Unmanned Aerial Vehicles have gradually become a more efficient alternative to manned aircraft, and at present, they are being deployed in a broad spectrum of both military as well as civilian missions. Using drones and other Unmanned Aerial Vehicles have become commonplace with several sensitive targets being attacked in the recent past, including in India. From surveillance to attacks from the air, UAVs have become a security headache. With faster developments in drone technology along with ongoing efforts in miniaturising components, drones are likely to be the biggest military threat worldwide.

Drones generally have low Radar Cross Section (RCS), slow speed and a small size—these characteristics make the task of detection difficult, and thereafter, identification and localisation even more so. In response, governments and military forces across the world, including in India have developed various approaches to detect these aerial systems.

The Indian Defence forces have since long demanded low level light weight radars to improve threat detection and response along its borders, providing an easy ingress route to aerial platforms. Such radar systems are the need of the hour for countries around the world and for India, Giraffe 1X is an ideal system whose exemplary performance can be an asset for the Indian Armed Forces. As an ideal air surveillance component in the Ground Based Air Defence (GBAD) domain, Saab's Giraffe 1X delivers engagement-quality target data, drone detection, and Counter-Artillery-Rocket and Mortar (C-RAM) sense and warn in a single solution to ground-based air defence commanders in the GBAD domain. As the primary sensor for a Very Short Range Radar (VSHORAD) system, it can also serve as a gap filler to supplement larger Ground-Based Air Defence (GBAD) systems, or as a Counter-UAS (C-UAS) solution in some cases.

With its small size and compact design, the Giraffe 1X is an excellent choice when continuous air surveillance is required as part of short-range surveillance and ground-based air defence missions. Because of its light weight (less than 150 kg total system weight) and extremely low power consumption, it can be easily integrated into a mobile platform or fixed structure and operated in inhospitable terrain.

Giraffe 1X is one of the few radar systems on the market today that can simultaneously provide C-RAM and air surveillance without compromising performance. The system can land a fixed-wing aircraft while also doing complete C-RAM surveillance.

Because of Giraffe 1X's high update rate and Drone Tracker functionality, it is possible to respond quickly and effectively to changing threats, new tactics, and shifting operational conditions. It will detect any air threat, including Low, Slow, and Small (LSS) targets, thanks to the compact, high-performance 3D radar that covers the entire search volume in one second.

The Giraffe 1X can be used as a mobile asset, a deployable asset, or a fixed asset for short-range surveillance and ground-based defence. Giraffe 1X has a very small integration footprint, which is exceptional. In fact, the entire radar system can be transported in a vehicle the size of a pickup truck, by helicopter, or on a trailer. Alternatively, it can be permanently mounted on a building or a mast, or it can be integrated into a suitable vehicle. The system can be controlled from a distance or from a local point.

Giraffe 1X is capable of performing simultaneous air surveillance, GBAD target acquisition, and RAM sense and warn functions without affecting overall performance. It can also be delivered with a capability for sea surface surveillance and configured to be fully self-sufficient with C3 capabilities, among other options. The system permits the integration of standard or customised data links for the sharing and distribution of target information.

The naval version of Giraffe 1X i.e. the Sea Giraffe 1X naval radar, offers simultaneous surface and air surveillance capabilities. Like its land variant, it enhances situational awareness for maritime patrol, surface combat and counter-UAV operations.

The radar requires reduced power and maintenance with no forced cooling requirements and a minimal number of line-replaceable units (LRUs). A team of low-level trained engineers can conduct the maintenance and replace LRUs within a very short time.

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IAI to Showcase Latest Defence Solutions at Aero India

IAI to sign MoUs as it furthers its commitments to the Indian Defence Sector

(LEFT) IAI'S MRSAM MISSILE DURING THE TEST; (RIGHT) IAI HERON TP TAKES OFF.

Israel Aerospace Industries (IAI), Israel's leading aerospace and defense company, will showcase its advanced technologies, industry-leading air-defence systems and ground-combat solutions (in Booths # 5.1&5.2, Hall F) at Aero India 2023, India's largest defence exhibition, which will take place February 13-17. IAI is leading a strategic transformation to provide fast direct access to IAI's superior solutions in full support of India's Atmanirbhar Bharat vision of a self-reliant country. IAI will sign several Memorandums of Understanding (MoU) and joint venture agreements during the exhibition as it deepens its ties with the local defence sector.

For the past 30 years, IAI has built close partnerships in India developing and providing various strategic platforms to India, among them air and missile defence systems, unmanned aerial systems (UAS), satellites, radars, training platforms, and others. IAI's state-of-the-art systems and technologies have been in operational use in India's three military arms and other government agencies. Additionally, IAI works closely with the Indian Armed Forces to develop and produce advanced technologies in the air, land, and naval arenas.

"We are very excited to be back in India for Aero India, which brings together some of our leading partners in the defence sector. We have been working closely with the Indian defence industry for more than 30 years and we look forward to further collaboration following the exhibition. We look forward to meeting our friends and partners while exhibiting our cutting-edge technologies to the Indian, Asian and global markets during this distinguished exhibition", said Boaz Levy, IAI President and CEO.

During the show, IAI will be showcasing a wide array of aerial systems, including its Medium Altitude Long Endurance (MALE) strategic Unmanned Aerial Systems (UAS) Heron TP. IAI's advanced tactical loitering-munitions are designed for both ground and naval units, the Mini Harpy and the Rotem. In addition, IAI will exhibit an advanced GEO Mini Communication Satellite, whose development is based on IAI's long heritage and the Dror 1, Israel's National Communication Satellite- MCS. IAI's Rampage- supersonic, long-range accurate air-ground assault rocket for the annihilation of high-quality targets. The Scorpius G (ground) is a ground-based EW system designed to detect and disrupt ground- and airborne threats. Aerial Refueling Tanker for the supply of Aerial Refueling and strategic transport aircraft. IAI's HAROP will be on display in the Adani booth and the LORA and MRSAM will be in display in the BEL booth.

Modern and Quality Ammunition for the Battlefield

Munitions India Limited (MIL) is a Defence Public Sector Enterprise (CPSE) under the Ministry of Defence, Government of India.

MIL, the India's biggest manufacturer and market leader is engaged in Production, Testing Research & Development and Marketing of comprehensive range of ammunition & explosives for Army, Navy, Air force & Para-Military Forces.

With Corporate Office at Pune (India), MIL in its 12 state-of-the-art manufacturing units located across the country employs skilled workforce of around 25,000. These factories have proven integrated base for production of Small, Medium & High calibre ammunition, Mortars, Rockets, Hand Grenades etc. with in-house manufacturing of Initiatory Compositions, Propellants and High Explosives for over 150 years. Our primary objective is to provide competitive edge to the Armed Forces by equipping them with modern and quality battlefield ammunition.

(FROM LEFT) 7.62 X 51 NATO TRACER; 125 MM SCCC; 125 MM FSAPDS; 84 MM HEAT 751; PINAKA ROCKET.

Our foreign customers include countries located in North America, South America, Europe, Africa and Asia. The patronage we receive from our customers both in India and abroad reflects their faith in quality of our products and services. We are the force behind the Armed Forces.

MIL with its 12 manufacturing units provide:

- A broad and versatile production base with multi-technology capabilities
- State-of-the-art manufacturing facilities
- Large pool of skilled and professionally qualified manpower and managerial personnel
- Strict adherence to quality standards (all units are ISO-9000 certified)
- Original as well as adaptive Research & Development to make need-base refinement and modifications
- A strong base for industrial training & testing

India's Largest Helicopter Manufacturing Facility Inaugurated

Spread across 615 acres of land, the Greenfield Helicopter Factory will initially produce Light Utility Helicopters. The factory is augmented to produce other helicopters such as Light Combat Helicopter and Indian Multirole Helicopters.

(LEFT-RIGHT) PRIME MINISTER NARENDRA MODI DEDICATES TO THE NATION HAL HELICOPTER FACTORY AT TUMAKURU, KARNATAKA ON FEBRUARY 6, 2023

The Indian Government has been constantly taking steps to strengthen the Indian defence industry's indigenous capabilities through opening of new manufacturing and production units, collaborations as well as policy initiatives. In another such move, Prime Minister Narendra Modi inaugurated Hindustan Aeronautics Limited (HAL) Helicopter Factory at Tumakuru in Karnataka on February 6, 2023. The PM took a walkthrough of the Helicopter Facility & Structure Hangar and unveiled the Light Utility Helicopter (LUH). The factory that will initially produce LUHs, is said to be India's largest helicopter manufacturing facility. The LUH is an indigenously designed and developed three-tonne class, single engine multipurpose utility helicopter with features including high maneuverability. Initially, this factory will produce around 30 helicopters per year and can further be enhanced to 60 and then 90 per year in a phased manner.

Addressing the gathering, the PM lauded the talent and innovation of Karnataka's youth and said the manufacturing sector's strength is manifested in products from drones to Tejas fighter planes. "Double-engine government has made Karnataka the first choice of investors," the Prime Minister asserted and illustrated the point by the HAL project dedicated today, for which he had laid the foundation stone in 2016 with a pledge for reducing foreign dependence for defence needs.

HELICOPTER FACTORY OF HAL IN TUMAKURU

"From advanced assault rifles to tanks, aircraft carriers, helicopters, fighter jets, transport aircraft, India is manufacturing it all", the Prime Minister remarked. "The investment made in the aerospace sector in the last 8-9 years is five times the investment made before 2014 plus 15 years prior. Made in India arms are not just supplied to the armed forces but the defence exports have also grown manifold when compared to the years before 2014. Hundreds of helicopters are going to be manufactured in this facility itself in the near future which will give rise to businesses worth ₹ four lakh crore. When such manufacturing units are set up, it does not just strengthen the Armed Forces but also creates employment and self-employment opportunities," he added. He also lauded HAL stating that today HAL is making modern Tejas for the Armed forces and is a centre of global attraction and bolstering India's 'Atmanirbharta' in the defence sector.

The Greenfield Helicopter Factory, spread across 615 acres of land, is planned with a vision to become a one-stop solution for all helicopter requirements of the country. After initially producing LUHs, the factory is augmented to produce other helicopters such as Light Combat Helicopters (LCHs) and Indian Multirole Helicopters (IMRHs). It will also be used for Maintenance, Repair and Overhaul of LCH, LUH, Civil Advanced Light Helicopter (ALH) and IMRH in the future. Potential exports of civil LUH will also be catered to from this factory, stated the official press release by the Ministry of Defence (MoD).

The HAL plans to produce more than 1,000 helicopters in the range of 3-15 tonnes, with a total business of over Rs four lakh crores over a period of 20 years. With the establishment of facilities like Heli-Runway, Flight Hangar, Final Assembly Hangar, Structure Assembly Hangar, Air Traffic Control and various supporting service facilities, the factory is fully operational. This factory is being equipped with state-of-the-art Industry 4.0 standard tools and techniques for its operations. This factory is expected to enable India to meet its entire requirement of helicopters without import and further add to 'Atmanirbhar Bharat' in helicopter design, development, and manufacture.

The proximity of the factory, with the existing HAL facilities in Bengaluru, aims to boost the aerospace manufacturing ecosystem in the region and support skill & infrastructure development such as schools, colleges and residential areas. Medical and health care would also reach the community residing in the various nearby Panchayats.

In his address, Defence Minister, Rajnath Singh stated that India has been a major centre for production and export of silk, cotton & steel and it has now embarked on a journey to become a global hub in manufacturing, especially in the field of defence. He described the HAL Helicopter Factory as a testament to the country's growing indigenous capabilities and the Government's unwavering resolve to achieve 'Atmanirbharta' in defence manufacturing. "The facility is a reflection of the Swadeshi movement inspired by leaders like Father of the Nation Mahatma Gandhi. The Swadeshi movement, which started a century ago, was the first phase of our independence. That was National Movement 1.0. Our vision of 'Atmanirbhar Bharat' is the second phase. It is National Movement 2.0, through which we are moving fast towards freedom from foreign equipment," he said. Not just the soldiers, but scientists, engineers, machinists, technicians, MSMEs, individual innovators, startups, industrial workers and all other sections are contributing to national security and socio-economic empowerment of the country, he added.

An official statement by MoD also highlighted the several policy initiatives that the Government has taken in the past few years, bringing in reforms to encourage indigenous design, development and manufacture of defence equipment, thereby promoting self-reliance in defence manufacturing & technology in the country.

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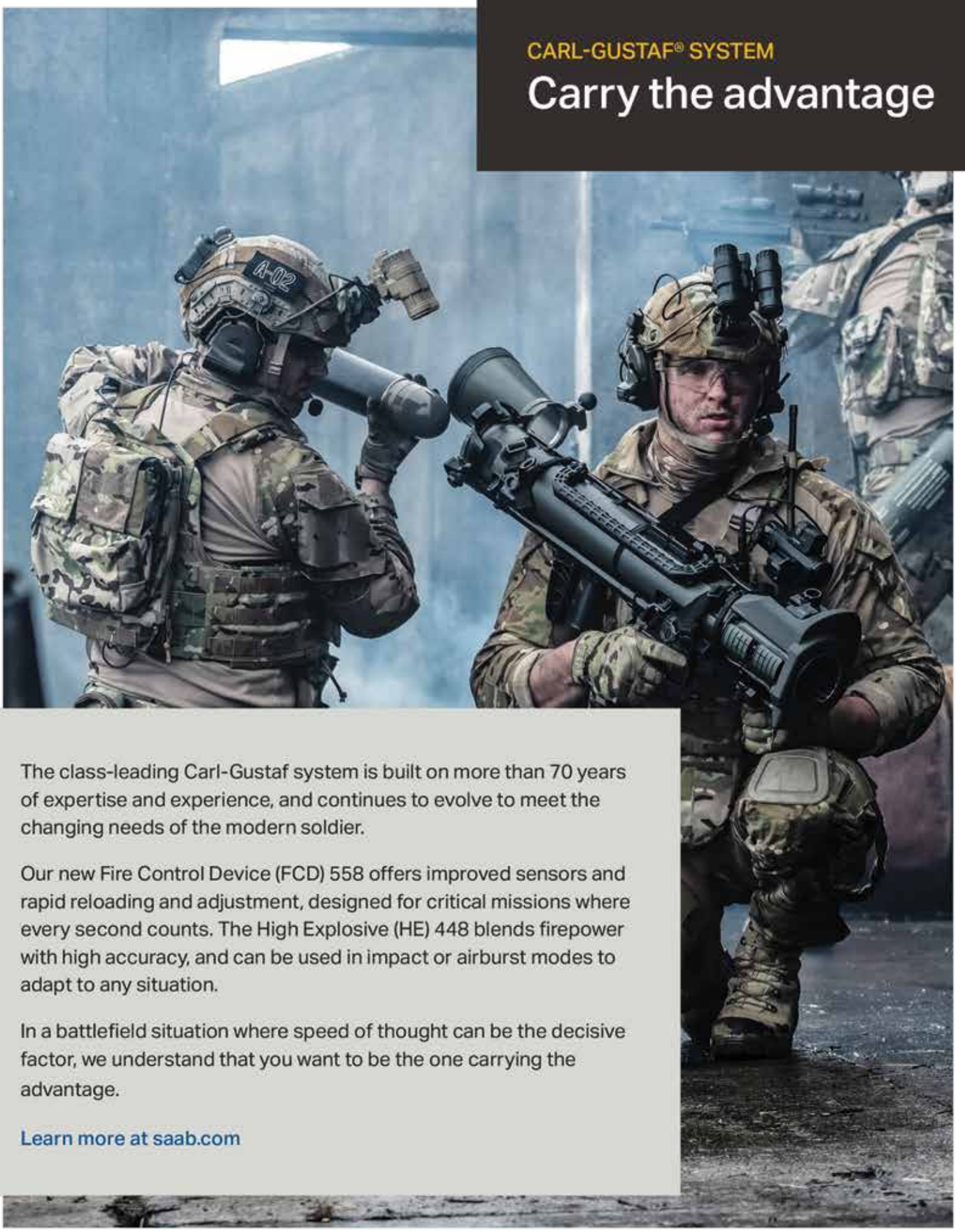

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UAC Presents its Key Programmes

A key priority for UAC is the development of a unified after-sales service system for Russian aviation equipment

The United Aircraft Corporation is taking part in the Aero India 2023 International Air Show, being held from February 13 to 17 at the Yelahanka Military Air Base.

"India is our long-standing partner, a large number of Russian equipment is operated here, issues of its maintenance and delivery of new machines are relevant. Aero India exhibition is one of the key regional platforms for discussing these issues, and an excellent opportunity to maintain contacts with our partners," said Yuri Slyusar, General Director of UAC.

For the first time abroad, UAC acts as a single company – last year, UAC merged with two leading design bureaus – Sukhoi and MiG, as well as plants in Lukhovitsy, Novosibirsk, Komsomolsk-on-Amur and Nizhny Novgorod. The format of the corporation's interaction with partners is becoming simpler, clearer, and the UAC now operates in a "one-stop shop" mode.

RUSSIAN MIG-35

One of the key priorities for the growth of UAC's presence in the Indian aviation market is the development of a unified after-sales service system for Russian aviation equipment, which constitutes a serious potential of the Indian Air Force. This is an urgent need of our Indian colleagues and a necessary element of the development of strategic cooperation between the two countries.

UAC will demonstrate its well-known products at united Russian exposition, organised by Rosoboronexport, including the MiG-35 multifunctional frontline fighter. The MiG-35 aircraft is a cutting edge aircraft and a top element in MiG aircraft family. This is a 4th++ generation fighter designed with a widespread use of 5th generation technologies. The MiG-35 is designed to engage various air targets, moving and fixed ground (surface) targets with the use of guided and unguided armament complex in favorable and adverse weather conditions, day and night. In a two-seat configuration it can be operated both in combat and training modes. The aircraft is a further development of the MiG-29M/M2.

The MiG-35 features versatility, wide range of weaponry, operation in any climatic conditions, capability of conducting close air combat in heavy countermeasures environment, decreased cost of operation, operation "on-condition" basis.

Merlinhawk – A Leading Defence and Aerospace Manufacturer

Merlinhawk is backed by all required statutory certifications as a Military and Civil Design Organisation and a licensed manufacturer of products for aviation and defence applications

Merlinhawk Aerospace has been on the path of indigenisation for over 35 years. A 100% Indian owned company headquartered in Bangalore with offices in Delhi, Hyderabad and Malaysia. Merlinhawk is AS9100D accredited and has the requite certifications from CEMILAC, DGAQA, DSIR and DPIIT for defence research and manufacturing. Recognising our efforts in indigenisation, during DefExpo 22, we were presented with the Raksha Mantri Excellence award.

Some of our products are as below:

AIRBORNE PRODUCTS

- **Tail Rotor Vibration Warning System:** Installed as mandatory equipment on ALH, LCH and LUH.
- **FDTU:** Currently installed on the Mi17 IV helicopters and IL76/78 fleet of IAF.
- **SSFDR System:** Currently installed on MiG 21 and MiG 23 aircraft.
- **Data Acquisition Unit:** for SSFDR for MiG 21/23.
- **SSDVRS:** A plug and play system that can be adapted for various platforms.

HIGH TECH TESTERS

- Automatic Work Station (RUSSIAN ARM DK30) for Su30-MKI

- Air Intake Panel for Su30-MKI
- Fly By Wire Panel for Su30-MKI
- Integrated Test Unit for LCA

GSE

- **Elektrone power Pack:** A portable power pack that can be used for starting or providing ground power for aircraft and helicopters.
- **FDS-72:** A portable fuel refueling unit that is airworthy and can be used in conjunction with Elektrone.

ELECTRO OPTICS

Merlinhawk has tied up with L3Harris Wescam to offer their range of EO/IR systems for Indian platforms. These systems would be manufactured under license in India at our Bangalore facility.

EO-FCS

Merlinhawk has developed a EO Fire Control system for a 30 MM Gun including the ballistic computing, gearboxes and associated systems.

CONTRACT MANUFACTURING

Merlinhawk also has a fully certified cable assembly shop and an ISO 8 certified PCBA facility. We provide contract manufacturing services for complete box build, PCB assemblies or cable harnesses through either build to print or build to spec.

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BrahMos – A Credible Deterrence Against Adversaries

The powerful BrahMos supersonic cruise missile in the Indian military arsenal, has established its supremacy as one of the world's fastest and deadliest precision strike weapon

A TRIAD OF CRUISE MISSILES: (COUNTER CLOCKWISE FROM TOP LEFT) AIR, LAND AND SEA LAUNCH VERSIONS OF BRAHMOS MISSILE

This highly versatile missile has been integrated and successfully test fired on various platforms giving a major boost to India's 'Make in India' initiative. The Indian Armed Forces is already equipped with the supersonic BrahMos missile – a force multiplier in modern-day complex battlefields with its impeccable land-attack, anti-ship capabilities and multi-role and multi-platform abilities. The indigenously developed BrahMos showcased at the recently held Republic Day Parade is produced by BrahMos Aerospace, a joint venture between India's Defence Research and Development Organisation (DRDO) and Russia's rocket design bureau NPO Mashinostroyeniya.

Some interesting special features about the BrahMos missile include – stealth technology and guidance system with advanced embedded software; the missile maintains supersonic speed all through the flight, leading to shorter flight time, consequently ensuring lower dispersion of targets; quicker engagement time and non-interception by any known weapon system in the world. Different variants of the cruise missile have been developed and it is now capable of being launched from land, sea, sub-sea and air against surface and sea-based targets and has constantly been improved and upgraded.

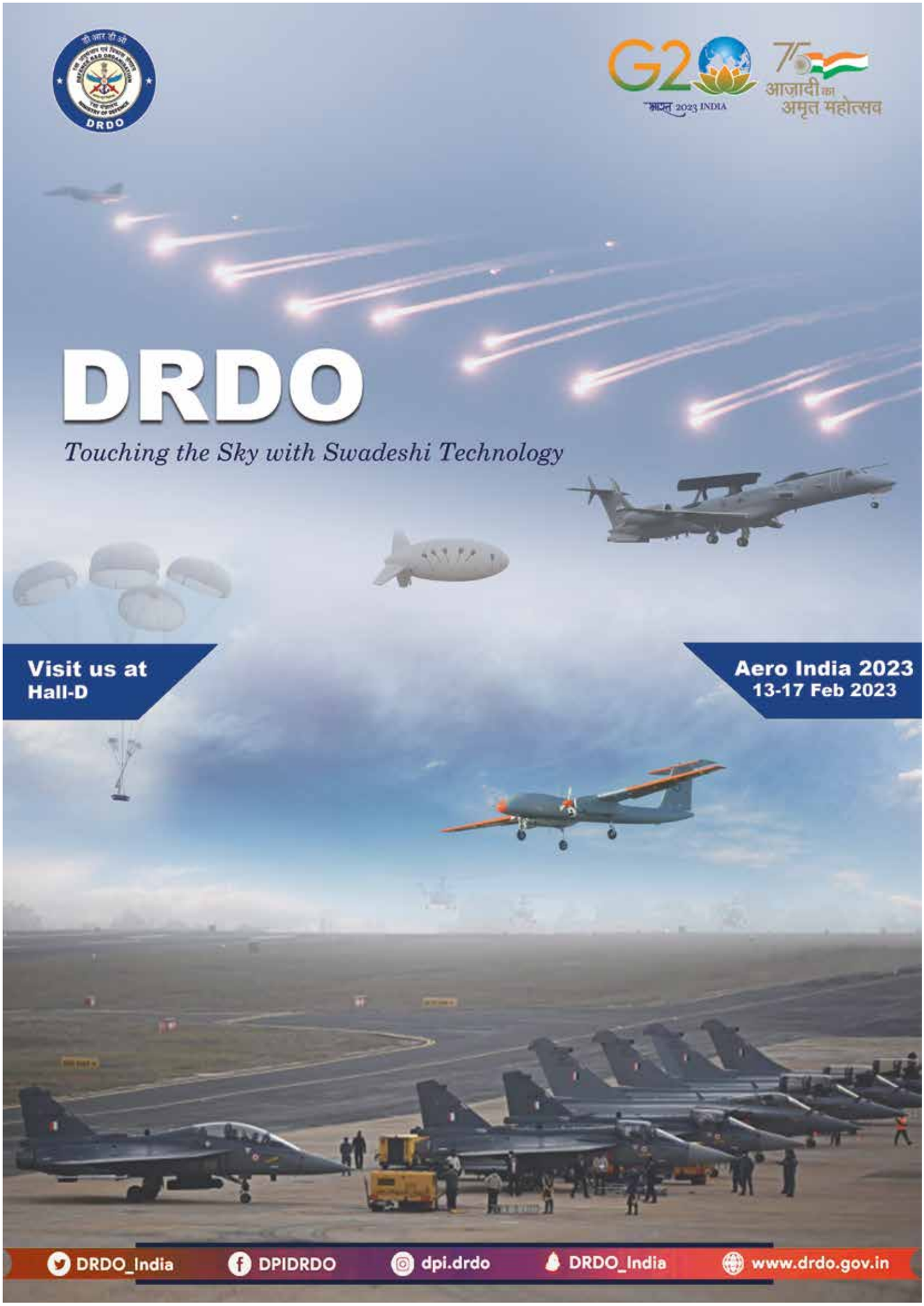
The mobile land-based configuration of BrahMos has achieved several advancements over the years. It has advanced guidance and upgraded software incorporating high manoeuvres at multiple points and steep dive from high altitude. The steep-dive attack cruise missile can hit enemy targets hidden in the mountains. The BrahMos missile provides the capability to strike any target – from large stand-off ranges – at sea or on land with pinpoint accuracy by day or night and in all weather conditions. The missile's modular unique design enables it to be integrated with a wide spectrum of platforms like warships, submarines, different types of aircraft, mobile autonomous launchers and silos. The system can be configured depending upon the user requirements.

BrahMos Aerospace Private Limited (BAPL) is today developing smart and futuristic weapons systems including a smaller version - the highly advanced BrahMos Next-Generation (NG) - which could arm a wide range of modern platforms of the future. BrahMos has also offered the missile to friendly nations. On January 28, 2022, BAPL signed a historic contract with the Department of National Defence of the Republic of Philippines for the supply of Shore Based Anti-Ship Missile System to Philippines. The export deal has paved the way for India's aspiration to emerge as a top-notch military manufacturer and exporter in the world.

Providing further impetus to Atmanirbharta in defence production, the Indian Ministry of Defence (MoD) has signed a contract with BAPL for acquisition of additional dual-role capable Surface-to-Surface BrahMos missiles under "Buy-Indian" Category. Induction of these dual-role capable will significantly enhance the operational capability of Indian armed forces. A dedicated BrahMos facility is being set up under the Lucknow Defence Industrial Corridor.

A consortium of about 205 industries including those in the private sector is engaged in various capacities with the company. BrahMos has scored advancements vis-à-vis indigenisation of the missile and ground systems. Since its development, the missile has undergone numerous upgrades, integrated with new hardware and software and indigenous components. The delivery of the state-of-the-art weapon system has given a competitive edge over others!

BrahMos is participating at Aero India 2023, the largest aerospace exhibition in Asia, from 13 to 17 February at the Yelahanka Air Force station in Bengaluru. The Defence and Aerospace company which has regularly participated is expected to be another major attraction at the event themed "The Runway to a Billion Opportunities". India has become an emerging hub for global aerospace industry and draws attention to the investment opportunities under 'Make in India'.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