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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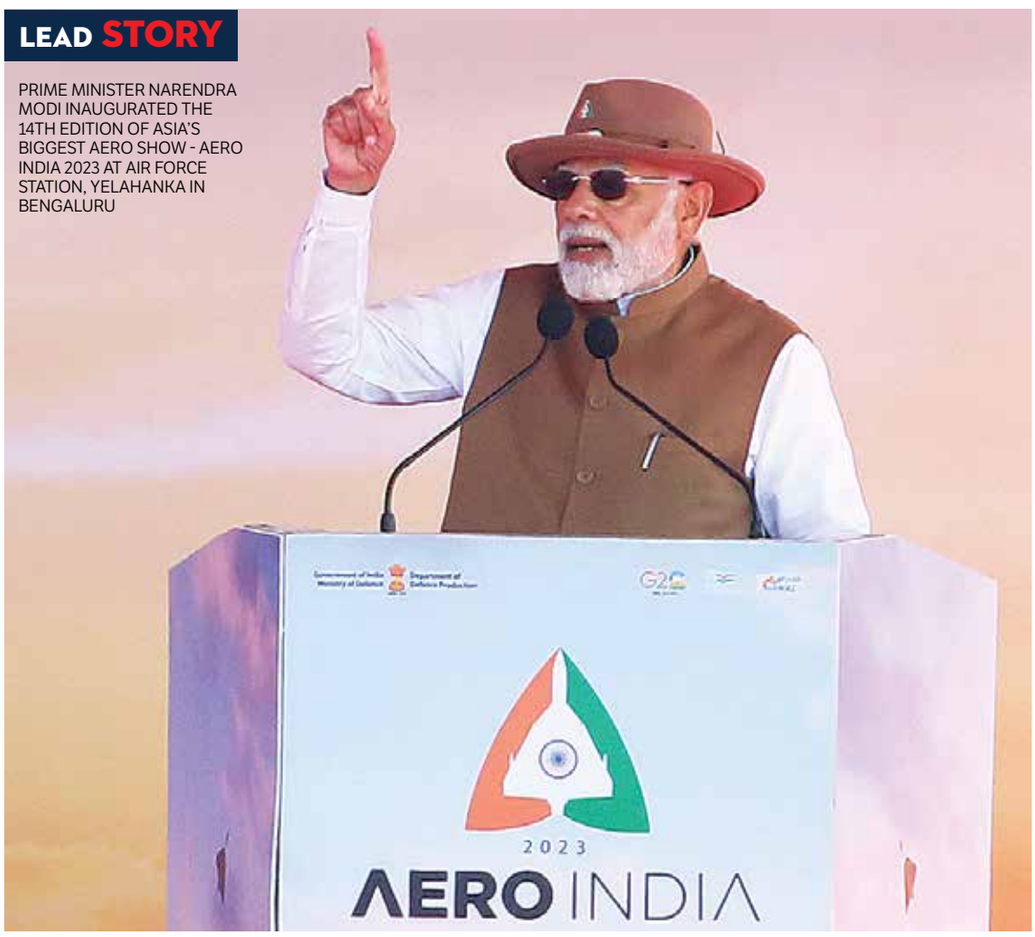
DAY 2

TUESDAY
FEBRUARY 14, 2023

FLYING DISPLAY

LEAD STORY

PRIME MINISTER NARENDRA MODI INAUGURATED THE 14TH EDITION OF ASIA'S BIGGEST AERO SHOW - AERO INDIA 2023 AT AIR FORCE STATION, YELAHANKA IN BENGALURU



Prime Minister Modi Inaugurates Aero India 2023

The emphasis on Atmanirbharta in the Indian Defence sector will be displayed throughout as the event showcases the country's progress in Defence Manufacturing

AYUSHEE CHAUDHARY

"When the country moves forward with new thinking, new approach, then its systems also start changing according to the new thinking", said the Prime Minister while inaugurating the 14th edition of the biennial airshow, Aero India 2023. He highlighted the event to be a reflection of the changing approach of New India. He stated that Aero India is no longer 'just a show' and a window to 'sell to India', rather today, Aero India is India's strength that showcases the scope of the defence industry and the self-confidence of India.

"The new India of the 21st century will neither miss any opportunity nor will it lack any effort", the Prime Minister said as he noted the revolution brought in various sectors with the help of reforms.

Underlining the ambitions of India's self reliant defence hub, he underlined that the nation which used to be the largest defence exporter for decades has now started exporting defence equipment to 75 countries in the world.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Referring to the transformation of the defence sector in the last 8-9 years, the Prime Minister said that the aim is to take defence exports from 1.5 billion to 5 billion by 2024-25. "From here India will take rapid strides to be included among the largest defence manufacturing countries and our private sector and investors will play a big role in that", the Prime Minister said.

Defence Minister, Rajnath Singh asserted that India has become a promising manufacturing destination due to its business-friendly environment and cost-competitiveness. "India has become the fifth largest economy in the world due to the vision and is well on course to become the third largest economy in the next 4-5 years. India's G-20 presidency this year is also a reflection of India's growing stature on the international platforms," he said.

The Defence Minister also shed light on the growth story of the Indian defence sector, saying that it has come a long way in the last few years and is marching ahead on the path of empowering the nation with full zeal and dedication. He termed Aero India as one of the pillars which has strengthened the defence sector and has given it a new identity.

"Aero India's deafening roar echoes India's message of Reform, Perform and Transform", the Prime Minister remarked. He mentioned that the entire world is taking note of the reforms made for 'Ease of Doing Business' in India and touched upon the various steps taken to create an environment that favours global investments as well as Indian innovation. He also mentioned the reforms made in Foreign Direct Investments in defence and other sectors and the simplification of processes for issuing licenses to industries while also increasing their validity. The Prime Minister said that in this year's Budget, tax benefits for manufacturing units have been enhanced.

"Where there is demand, expertise as well as experience, industry growth is natural." He assured the gathering that efforts to strengthen the sector will keep going forward even stronger.

In line with the Prime Minister's vision of 'Make in India, Make for the World', the Aero India is focusing on displaying indigenous equipment/technologies and forging partnerships with foreign companies. The emphasis on Atmanirbharta in the Indian Defence sector will be displayed throughout as the event will showcase the country's progress in design leadership, growth in UAVs Sector, Defence Space and futuristic technologies. Further, the event will promote the export of indigenous air platforms like Light Combat Aircraft (LCA)-Tejas, HTT-40, Dornier Light Utility Helicopter (LUH), Light Combat Helicopter (LCH) and Advanced Light Helicopter (ALH). The event will also help in integrating domestic MSMEs and startups in the global supply chain and attract foreign investments including partnerships for co-development and co-production.

Referring to the Defence Minister's Conclave and CEO Roundtable that is being organised along with the show, Prime Minister Modi said that active participation

DEFENCE MINISTER RAJNATH SINGH SPEAKING AT THE INAUGURATION

in the sector will enhance the potential of Aero India.

The inaugural also included a fly past and a flying display. From Sarang to Surya Kirans, LCH Prachand to LUH, Sukhoi to Rafale and MiG-29, ALH Rudra to LCA Tejas caught the attention and set the spirits high through various maneuvers and formations including the Tiranga formation by the Surya Kirans, Varuna, Arjun, Netra, Trishul and Gurukul formations.

The Prime Minister also inaugurated the India Pavilion and went through the displays showcasing India's indigenous defence prowess and interacted with the CEOs present at the pavilion. The India Pavilion has a new DefSpace section as well this year that showcases how the space industry can align with the defence industry in India and bring about a further boost to India Inc.'s strengthening self-reliance defence capabilities.

The 'India Pavilion', based on the 'Fixed Wing Platform' theme, is showcasing. India's growth in the area, including the future prospects. There will be a total of 115 companies, displaying 227 products. It will further showcase the growth of India in developing an ecosystem for Fixed Wing platform which includes the demonstration of various structural modules, simulators, systems (LRUs) etc of LCA-Tejas aircraft being produced by Private Partners. There will also be a section for Defence space, New Technologies and a UAV section which will give an insight about the growth of India in each sector.

He called upon the private sector to invest in the defence sector which will create new opportunities for them in India and in many other countries.

"The India of today thinks fast, thinks far and takes quick decisions", Prime Minister Modi said as he drew the analogy of India in Amrit Kaal to a fighter jet pilot. The Prime Minister said that India is a nation which is not afraid but excited to soar to new heights. India is always rooted however high it flies howsoever is its speed, the Prime Minister stressed.

A COMMEMORATIVE STAMP WAS RELEASED BY THE PRIME MINISTER

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"In the longer term, we would be keen to acquire the Indian Multi-Role Helicopter (MRH) which would be designed and developed indigenously"

*In this **second 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*

(LEFT) AIR CHIEF MARSHAL V.R. CHAUDHARI FLEW A SORTIE ON LCH PRACHAND;
(RIGHT) INDUCTION OF INDIAN MULTI-ROLE HELICOPTER (IMRH) IS LIKELY TO COMMENCE FROM 2032.

***SP's ShowNews* (SP's): Rotary Wing Fleet**

(a): How about the combat readiness of IAF's helicopters' fleet?

Chief of the Air Staff (CAS): Indian Air Force operates a variety of helicopters from the legacy Chetak/Cheetah to the Heavy Lift Chinook, from communication to attack platforms and from old generation to modern helicopters. The IAF helicopter capability has increased manifold in the past one decade with the induction of state of art helicopters like Mi-17V5, Chinook, ALH MKIV, Apache and latest Light Combat Helicopter. All these platforms have multi-role capability and are equipped with the latest avionics, weapons and other role equipment required to undertake the allotted tasks. The successful employment of these platforms in Eastern Ladakh bears testimony to their capability and versatility. Additionally, our helicopter fleet has always been at the forefront of all national tasks, aid to civil authorities and for providing vital support for infrastructure development in remote and border areas.

(b): Will be nice if you can kindly share any futuristic plans?

CAS: Recently, we have signed a contract for procurement of 10 Light Combat Helicopters (LCH) in the Limited Series Production version wherein four helicopters have already been inducted in October 2022. We plan to acquire more than 50 LCH in the near future. Likewise, procurement of Light Utility Helicopter (LUH) is also being progressed as a replacement for the Chetak/Cheetah helicopters. In the longer term, we would be keen to acquire the Indian Multi-Role Helicopter (MRH) which would be designed and developed indigenously. The design and development (D&D) is likely to take six to eight years and would cater for future MRH requirements of the IAF. Induction of IMRH is likely to commence from 2032 if there is no delay in the D&D.

SP's: How do you perceive the evolving roles of unmanned versus manned platforms?

CAS: If you recollect an answer, I gave to a question at our annual press conference, prior to Air Force Day in October; I had said quite clearly, that 'The Future is Unmanned.' The air domain was the first sphere where the unmanned aircraft had proliferated. This is primarily due to a larger line of sight distance which permits long ranged remotely controlled operations. But, as over the horizon links become common and machine autonomy increases, we will see a boom across all domains. In fact we are already seeing it on land and sea as well.

Our study of recent conflicts has thrown up certain limitations of such aircraft in a contested airspace. Therefore, in the near term, there may be instances where it may not be prudent to deploy unmanned systems & others where they would be the platform of choice. Further down the line, we are likely to see systems that are designed as 'optionally manned' from the word go. More collaboration between manned and unmanned systems is also on the anvil. The IAF is also pursuing a similar project with HAL which is progressing quite well.

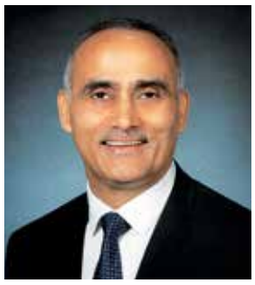
"I am very proud that the IAF has facilitated the development of a genuine swarming capability through our Mehar Baba Swarm Drone challenge"

SP's: There is enormous number of talks on drones within our country. Can you kindly indicate how do you perceive the roles of these drones in military operations/war times?

CAS: Manufacturing of 'Drones' or Remotely Piloted Aircraft (RPAs) in India is already witnessing a major rise. Smaller drones, such as those available commercially, are useful tactical platforms for both recce and maybe, even strike. Easy to operate from dispersed locations, they would test existing air defence sensors which are optimised to detect larger, faster and higher aerial vehicles. The IAF has worked with the Ministry of Home Affairs (MHA) and Ministry of Civil Aviation to devise rules and guidelines for operation, control and management of drones in India, as also neutralising hostile drones. Talking about this segment, I am very proud that the IAF has facilitated the development of a genuine swarming capability through our Mehar Baba Swarm Drone challenge that started in 2019. The capability so developed by start-ups has been leveraged for solutions by all three services.

At the other end of the spectrum are the heavier, larger, military grade drones. These can perform a wider range of missions, over far longer ranges. But as I had briefly alluded earlier, this segment is vulnerable to existing air defence sensors and weapons systems. However, there is still some space even if somewhat limited, for their operations in today's battlefield. This space would expand as technology develops in the times to come.

*Continued in **SP's ShowNews** Day 3...*



SURENDRA AHUJA

"Ensuring mission-readiness for our customers and providing them seamless services and support on our platforms is an imperative for Boeing"

SP's ShowNews *in conversation with* ***Surendra Ahuja, Managing Director****, Boeing Defence India*

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

SP's ShowNews **(SP's): Can share some highlights from the journey of the Indian Navy's P-8I fleet, which just completed a decade in December, 2022?**

Surendra Ahuja (Ahuja): Earlier in December, 2022 we completed a decade since the first P-8I was delivered to the Indian Navy. This is a significant milestone in our growing relationship with the navy. Notably, the Indian Navy was also the first international customer for the P-8 and today operates one of the largest non-US fleet. Since the induction of the P-8I in the Indian Navy, Boeing has been supporting the fleet to ensure high rates of mission readiness. The 12 P-8Is in the Indian Navy's arsenal significantly contribute to the Indian Navy's capacity to keep the vast areas of interest in the Indo-Pacific under surveillance – while also playing a greater role in regional maritime security. The patrol aircraft is an integral part of the Indian Navy's fleet and has surpassed 35,000 flight hours since it was inducted. In addition to unmatched maritime reconnaissance and anti-submarine warfare capabilities, the P-8I has been deployed to assist during disaster relief and humanitarian missions. We believe there is a need for long-range maritime surveillance and ASW requirements in the Indian Ocean Region and the Indian Navy may have a requirement for more P-8Is and also more Harpoons and we stand ready to support them.

We continue to support the Indian Navy's P-8I fleet through Boeing's services business - providing spares, ground support equipment, and by positioning field service representatives at INS Rajali and INS Hansa so they are available to the Navy on 24x7x365 basis. Boeing's integrated logistics support has helped the Navy attain the highest state of fleet-readiness. Boeing has built a 60,000 sq. ft. Training Support & Data Handling (TSDH) Centre at INS Rajali, Arakkonam in Tamil Nadu as part of a training and support package contract signed in 2019. The facility was handed over to the Indian Navy, and the trainings commenced in April, 2022. The secondary centre at the Naval Institute of Aeronautical Technology, Kochi was also handed over to the Indian Navy last year. The indigenous, ground-based training will allow the Indian Navy crew to increase mission proficiency in a shorter time, while reducing the on-aircraft training time resulting in increased aircraft availability for mission tasking.

SP's: How does Boeing support the sustenance of the C-17 fleet with the Indian Air Force?

Ahuja: We support the Indian Air Force C-17 fleet under the Globemaster Integrated Support Program (GISP) that maintains high mission capability rates by providing them access to an extensive support network for parts availability and economies of scale. Boeing provides comprehensive C-17 Globemaster III training solutions for aircrews and loadmasters with advanced simulation, courseware and computer-based training. C-17 operators can practice the complete range of tasks required for tactical military airlift operations and humanitarian missions, along with mission rehearsal of all scenarios including emergency procedures. Boeing's in-country C-17 training center has completed thousands of training hours for aircrews and loadmasters.

SP's: How Boeing services drives the defence growth in India?

Ahuja: Today, India operates 11 C-17s, 22 AH-64 Apaches (with six more on order), 15 CH-47 Chinooks, 12 P-8Is, 3 VVIP aircraft (737 airframe) and two Head of State aircraft (777 airframe), all Boeing platforms. Ensuring mission-readiness for our customers and providing them seamless services and support on our platforms is an imperative for Boeing. If we start with a quick look at the last five years, Boeing has accelerated growth in India with a razor-sharp focus on the key areas of:

- Customer engagement – meeting the Indian Navy and Indian Air Force's modernisation and mission-readiness needs.
- Services growth – localisation of our services, and the value Boeing Defence India, our local establishment in India, is able to provide through the lifecycle of platforms offered.
- Supplier expansion – building an indigenous and robust supplier-partner network with a focus on Aatmanirbhar Bharat.

Hence, we had setup Boeing Defence India (BDI) with an aim to provide holistic lifecycle solutions for defence customers in India. Cost-effective solutions, timely support, and flawless execution are critical elements of BDI's commitment to the market and our customers. Boeing's integrated logistics support is already enabling the highest levels of fleet-readiness. We are seeing growth in our services business and, with it, growth in the value Boeing creates through product lifecycle support and training. From performance-based logistics contracting and integrated fleet support to maintenance, modifications and repairs, Boeing provides a broad spectrum of innovative products and services across platforms which directly support and enhance capabilities while reducing total cost of ownership for our customers globally. Boeing's investments in services infrastructure, building local capabilities, workforce training and partnerships in India are aimed at ensuring the Indian armed forces successfully complete their missions, operate their assets at peak condition and do so affordably.

In 2021, we launched the Boeing India Repair Development and Sustainment (BIRDS) Hub. BIRDS is an initiative to bring together ecosystem partners to shape India as a strategic destination for aerospace engineering, maintenance, repair and sustainment services. This is a one-of-its-kind initiative that seeks to provide customers with best-in-class solutions, efficient turnaround times, and optimal economical value, all available in-country. Under this programme, we have by now signed strategic partnerships with leading indigenous players like Horizon Aerospace, Air Works, and AI Engineering Services Limited (AIESL). An important aspect of the hub is training programmes to increase skilled manpower by developing sub-tier suppliers and medium, small and micro enterprises (MSMEs) to build high quality MRO capabilities in India. Our programmes have skilled close to 4,000 frontline aerospace manufacturing workers and aircraft maintenance engineers.

SP's: What kind of work is being performed at the Boeing India tech centre which contributed to cutting edge tech innovation for the aerospace sector?

Ahuja: The Boeing India Engineering & Technology Center (BIETC) in India is leveraging a talented pool of 4,500+ engineers and innovators across Bengaluru and Chennai to drive growth and innovation in aerospace. Boeing has had an engineering presence in the country since 2009, and BIETC was formally established in 2016. The center currently houses Boeing's engineering, test, research and technology, information technology and digital analytics teams. These technologists undertake high-quality, advanced aerospace work and offer engineering expertise to Boeing's defence, space, and commercial businesses, spanning engineering design of structures and systems, manufacturing support, developing systems to test our aircraft, and providing digital solutions to our airline customers. Cutting-edge R&D in traditional and emerging areas is performed at the center, including next-generation airplane health management, environment-friendly coatings, advanced networks and secure-communications where teams leverage new-age technologies such as Artificial Intelligence, Machine Learning, Internet-of-Things, Cloud, Model-Based Engineering, and Additive Manufacturing to enhance quality, safety, and productivity. Boeing is investing $200 million in a new 43-acre state-of-the-art wholly-owned engineering and technology campus in Bengaluru. This will be Boeing's largest facility of its kind outside the US.

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IAI Satellites – Leading in Space Development

IAI space prowess is demonstrated in +40 years of experience and expertise in space technologies and New Space approach to achieve top-tier performance

(LEFT) OPSAT 3000; (RIGHT TOP) IAI MINI COMMUNICATION SATELLITE (MCS); (RIGHT ABOVE) DROR 1

Seeking to reach the highest frontier, IAI pioneered missions in space in 1988, placing Israel's first satellite, OFEQ-1, in low earth orbit. Today, IAI is a satellite powerhouse, having placed dozens of reconnaissance, communications, and scientific research satellites in orbit.

IAI's OptSat line of reconnaissance satellites has evolved over generations, and it is currently positioned at the forefront of high-resolution imaging satellites used by intelligence services worldwide. In the 21st-century combat arena, the ability to quickly receive and utilise intelligence data from space is becoming increasingly central to the success of warfare operations worldwide. Imagery consumers are accustomed to obtaining satellite imagery at high resolution to provide clear, accurate, well-defined images enabling extraction of fine details from satellite images.

With an image resolution range of more than / higher than 40 centimeters, with geo-location accuracy, IAI's OptSat 3000 is significantly lighter than equivalent satellites with the same performance levels. Due to its lower mass and higher agility, it acquires images of many more targets with agility, throughput, and advanced operational autonomy. OptSat 3000 provides imagery for strategic and tactical intelligence, where rapid, precise visual intelligence on suspicious targets is critical to a mission's success. IAI is also developing nano and microsatellites. The 25 kg OptSat 180 is packaged in a CubeSat standard (12U), offering a wide range of launch options. The satellite delivers live video and color images in a resolution of one meter, with sensors suitable for reconnaissance, research, and science.

IAI also designs and manufactures Synthetic aperture radar (SAR) satellites enhancing the intelligence collection capabilities at night and above cloud coverage. These satellites provide resolutions and detection capabilities that significantly boost the users' ability to monitor large areas, supporting strategic surveillance and tactical operations. SAR products are enhanced by image processing algorithms enabling automatic change detection and identification of typical man-made objects such as missile launchers, vehicles, and ships. Like other IAI satellite platforms, TecSar is significantly smaller, lighter, and more maneuverable than other satellites in their category.

IAI also provides communications satellites and has recently unveiled several new space concepts, including the Mini-Communication Satellite (MCS). It is unique due to its small size and light weight, and the MCS can be launched together in rideshare with other satellites, significantly lowering deployment costs. The MCS also has "space smartphone" capabilities, enabled by software-defined digital communication that allows operators to deploy frequent communication and updates. In addition, IAI has been commissioned to develop and build Israel's national communication satellite, Dror 1. The new satellite will carry an advanced digital communication payload, delivering communication agility throughout the satellite's lifetime in space. Dror 1 will provide Israel's communications needs for the next 15 years.

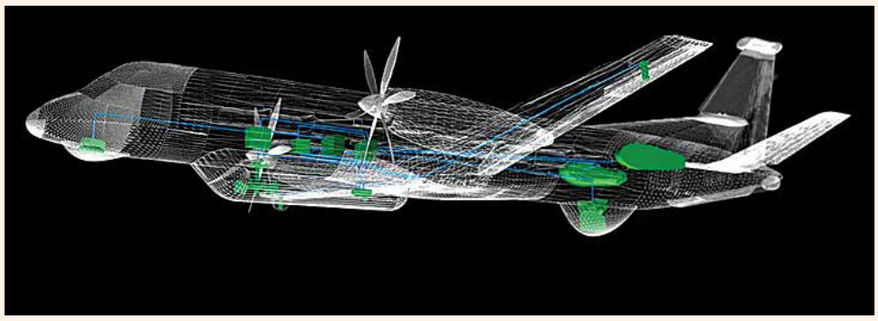
In 2019 IAI's Beresheet spaceship, co-developed by IAI and SpaceIL, attracted worldwide attention by flying 6.5 million kilometers to the moon (orbital route) in an attempt to land on the moon's surface. While the small spacecraft failed to complete a soft landing, the achievements demonstrated in this mission represent the team's innovative, technological, and engineering knowledge in building space vehicles. Weighing only 600 kilograms, it was the smallest spacecraft to attempt the moon landing, manifesting IAI's determination, achievements, and experience in building small, lightweight space vehicles.

Forty years after its first space mission, Beresheet was the first spacecraft to orbit the moon and attempt a landing as a private initiative rather than a government programme. Demonstrating the unique Israeli creative and innovative spirit, the spacecraft was developed and constructed within a few years at the cost of just 100 million US dollars - significantly cheaper than similar projects that have cost billions. IAI is working on the second lander, Beresheet 2, to complete the mission and continue Israel's proud space legacy.

HENSOLDT's "Kalætron" – Electronics Spectrum Gazing!

Providing a strong foundation for new network centric warfare capabilities in the modern battle space

The concept of Multi Domain Operation or All Domains Operation will be central while preparing for the Future Wars scenario. Kalætron developed by HENSOLDT provides an answer to regain spectrum dominance through its superior capabilities for tactical and strategic ISR as well as protection from enemy air defence. As a force multiplier, Kalætron helps in developing a credible MDO capability which will be the new normal for deterrence.



KALÆTRON PROVIDES SUPERIOR CAPABILITIES FOR TACTICAL AND STRATEGIC ISR AND REGAINING SPECTRUM DOMINANCE

Kalætron is a combination of KALEI-(doscope) and (Elec)-TRON whereas the ligature æ stands for "artificial Intelligence inside HENSOLDT electronics.

Kalætron is the answer for regaining spectrum dominance in modern and dense scenarios by providing superior capabilities for tactical and strategic ISR as well as protecting allied forces from enemy air defence. Currently the Kalætron product Family is based on three major pillars:

- Kalætron RWR
- Kalætron Integral
- Kalætron Attack

The Kalætron product family support the fast decision making and enhanced situational awareness, advanced protection of platform and personnel as well as suppression of enemy air defence. Kalætron is the epitome of a centre of complementary and excelling capabilities with significant growth potential and applying an integrated approach to dominate the electromagnetic spectrum. Furthermore, Kalætron will become a strong foundation for new network centric warfare capabilities which are key enabler for overall superiority in the modern battle space.

The architecture of Kalætron is fully digital, modular and scalable having building block elements like innovative Digital Front End Receiver, Central Processor and different types of Antennas. For example, RWR application can easily be upgraded to ESM by adding additional building blocks and Software.

KALÆTRON RWR

The fully digital, modular and scalable Radar Warning Receiver (Kalætron product family) provides superior performance for threat detection and reaction time starting from the antenna system until the generated digital output stream to cope with the new requirements for survival of platform and personnel in modern warfare scenarios. The system has proven a superior detection range compared to analog systems (wideband/narrowband receivers). It detects and track all emitters at very long distance in short time and enhances situational awareness of the pilot for avoiding actual radar threats. The system has proven its outstanding multi-signal capabilities and proven COMS suppression by using software defined filters in respective scenarios. The system is capable of recording an enormous amount of data (PDWs) which has never been available for post mission evaluation before (ELINT characteristics) is especially designed for the challenging and dense electromagnetic environment of tomorrow.

KALÆTRON INTEGRAL

While Kalætron RWR is serving as an advanced system for superior platform protection, Kalætron Integral provides assets for tactical and strategic abilities to gather intelligence on hostile emitters with respective locations. With its clear designation for ISR missions it contains solutions as well as products for

- ESM
- ELINT
- COMINT
- SIGINT

Possessing such capabilities Kalætron Integral serves both the mission planning and post-mission analysis as well as giving a tactical and strategic advantage to commanders and users.

KALÆTRON ATTACK

Air forces and their transport and combat aircraft are threatened by new air defence capabilities (A2 / AD, IADS, LPI capabilities, frequency agility, enhanced missile performance, etc.). The crews' safety, the aircraft survivability, and its systems assertiveness must be ensured and supported in all times. Our state-of-the-art air- Electronic Warfare capabilities are a prerequisite for "Freedom of Movement" and a tool for the commanders to foster "Freedom of Operations". With our Kalætron Attack Product Line, HENSOLDT develops a key solutions with a universal and for the first time fully digitised technology, aimed to achieve/aid the entire chain of desired effects – no matter from a close or from a long distance thus optimally fulfilling the requirements of an Electronic Combat role for the Eurofighter or any other fast mover. Kalætron Attack is the basis for providing the following capabilities:

- Stand-off jamming (SOJ)
- Escort jamming (ESJ)
- Stand-in jamming (SIJ)

The innovative solutions offered by Kalætron can cope with current and future operational scenarios. There is a solution for every customer requirement. The Kalætron architecture is designed to be completely platform independent. The Kalætron system inherent modularity – with its high quality digitalisation done close to the source of information – provides the benefit of lower risk and less installation costs for platform integrator, as well as enhanced installed performance.

INS Kavaratti and INS Kiltan: The Saab Edge to India's Potent ASW Corvette

Saab composite superstructure concept is an affordable, lightweight, non-corroding alternative to steel or aluminium structures that saves around 50 per cent in structural weight

The Indian Navy's preparedness has been greatly enhanced by the induction of indigenously built Anti-Submarine Warfare (ASW) stealth corvettes "INS Kavaratti" and "INS Kiltan" under Project 28 (Kamorta class).

The INS Kavaratti and the earlier inducted INS Kiltan are built with composite superstructures delivered by Saab. Apart from significantly lowering the top weight, the Saab superstructure of carbon fibre composite material integrated with ship's metallic main hull comes with improved stealth features and lower maintenance costs. The carbon fibre inherently shields against a wide range of signals, such as electromagnetic, IR, pressure, acoustic, radar and heat, and is therefore an important factor behind the corvette's phenomenal stealth properties. The stealth features ensure that the ship is hard or impossible to find by the enemy below water surface or above. Stealth features allows you to gain more time and use the countermeasures more efficiently. In other words 'Stealth' means increased survivability.


INS KAVARATTI

One of the most important benefits of the composite superstructure is that less power (and fuel) is needed to achieve contractual speeds i.e., higher speed can be achieved if same power is applied. Driven by an ever-increasing trend to put sensors and weapons high up in the ship, a composite superstructure enables ship designers to reduce top weight and improve stability. A modern high-tech laminate of carbon fibre is one of the strongest, but lightest, materials known to mankind. Saab composite superstructure concept is an affordable, lightweight, non-corroding alternative to steel or aluminium structures that saves around 50 per cent in structural weight.

The P28 Kamorta class are 109-metres and 2,500-tonne ASW corvettes, built by Indian Garden Reach Shipbuilding and Engineering (GRSE) in Kolkata. The Indian superstructures delivered by Saab almost equals the size of Visby-class corvettes. The ship is highly manoeuvrable with a top speed of 25 knots. The ASW stealth corvette is armed with a range of indigenously developed cutting-edge weapons and sensors, including "a medium-range gun, torpedo tube launchers, rocket launchers and a close-in weapon system". It also has the capability to carry anti-submarine warfare helicopter, which provides forward presence.

"The two ASWs are significant additions to the Indian Navy and we are happy to have played a part in making it happen. We are keen to continue working closely with the Indian Navy and the Indian shipyards to support its capability building endeavours," says Mats Palmberg, Chairman and Managing Director of Saab India.

Rolls-Royce Reinforces Commitment to Partner India for Combat Engine Co-development

Rolls-Royce continues to contribute to the development of the aerospace and defence ecosystem in India

Rolls-Royce is participating at Aero India 2023 and using the show to serve as a platform for the company to reiterate its readiness to partner India for co-development of critical combat aircraft engine technologies.

The company will also take the opportunity to familiarise defence customers with its advanced technology solutions for air defence, and its full range of naval-marine offerings, including the power-dense MT30 marine gas turbine for aircraft carriers, frigates and destroyers.

Kishore Jayaraman, President - India and South Asia, Rolls-Royce, said "We firmly believe in India's vision of defence indigenisation with a sharp focus on developing critical defence technologies in-country. We are ready to partner the country for its combat engine co-development programme, and are well-positioned in India with an ecosystem of partners. Such a programme will not only catapult the country's defence production and export capabilities, but also create a strong foundation for technology development in the future."

Commenting on Rolls-Royce's readiness for the partnership, Alex Zino, Executive Vice President - Business Development & Future Programmes, Rolls-Royce, said "We are proposing a collaborative, co-development model for the country's fighter engine programme. Our offering is not merely about the transfer of technology, but the creation of a full range of engine capability to boost India's future technology development and add thrust to its vision of being a leading global defence player."

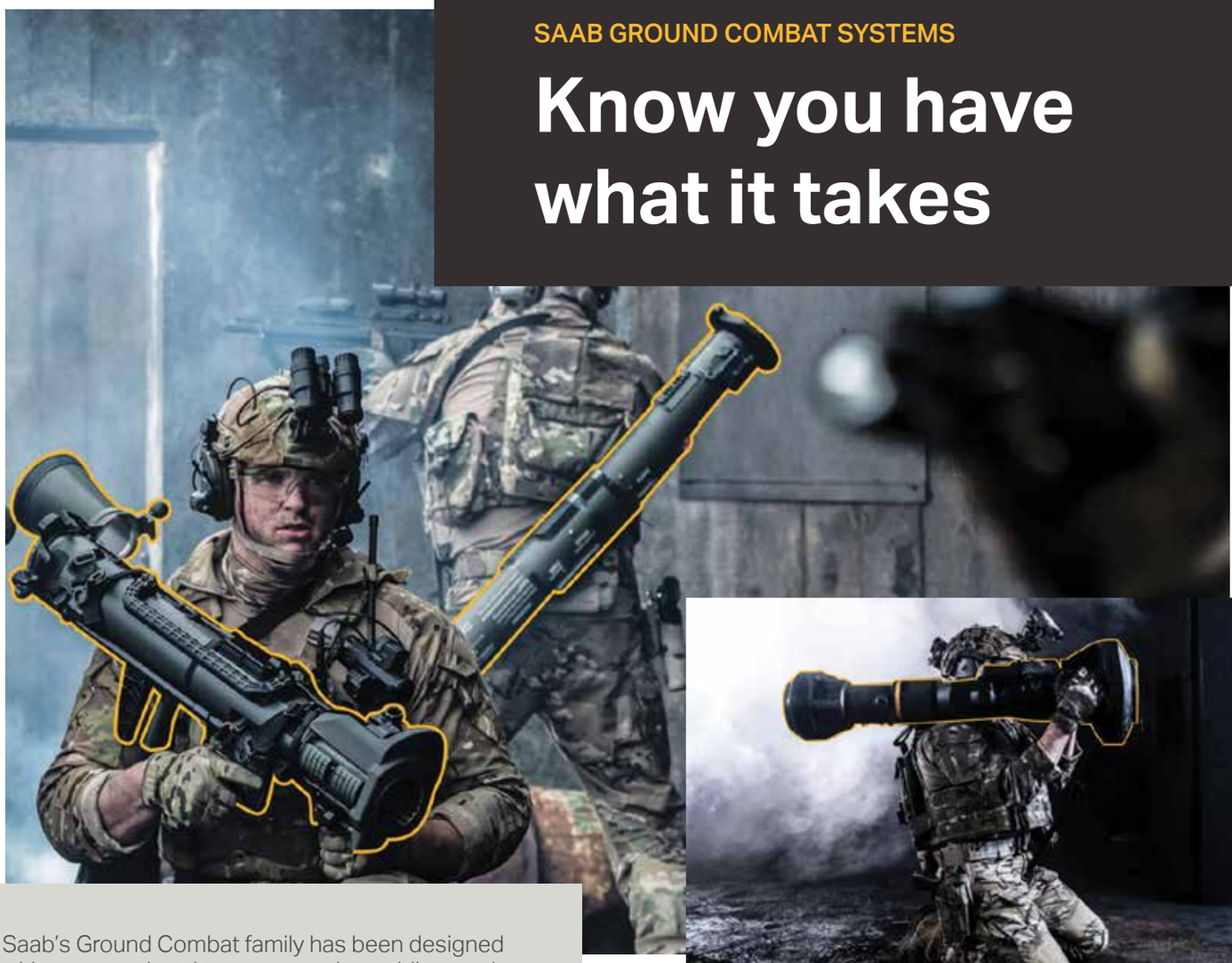

TEMPEST POWERED BY ROLLS-ROYCE

Rolls-Royce has a history of many firsts with the Indian Air Force (IAF) - from powering the first IAF aircraft to delivering the first whole engine technology transfer agreement for the licensed production of Rolls-Royce engines in India. Today, the company has successfully created a robust ecosystem of Indian partners, talent, supply chain, digital, service delivery and manufacturing capabilities. With this rich legacy of partnerships, Rolls-Royce continues to contribute to the development of the aerospace and defence ecosystem in India and is committed to supporting the self-reliance journey.

At Aero India 2023, Rolls-Royce will explore opportunities for its MT30 marine gas turbine for future platforms. The naval turbine offers a superior power-to-weight ratio, generating up to 40MW from a 30-tonne packaged unit, and offers ship designers many more options and flexibility in designing the naval vessels of tomorrow.

SAAB GROUND COMBAT SYSTEMS

Know you have what it takes



Saab's Ground Combat family has been designed with user needs at its core, ensuring soldiers and armies can trust in their capabilities and achieve their objectives safely and effectively. In any situation, with Saab's systems by your side, there is no doubt - you have what it takes.

Carl-Gustaf®

A system for all situations, the Carl-Gustaf increases tactical flexibility as it can adapt to any advanced operation with its varied ammunition range. Light and ruggedised, it provides freedom of action for the soldier in all environments and situations, from close combat and armoured tank neutralisation, to clearing obstacles and engaging enemies in buildings.

NLAW

Combat-proven as the only real short-range 'tank killer' with very high hit and kill probability, the NLAW is an extremely flexible anti-armour weapon that can attack from almost any position, be it high up in a building or hidden below in a ditch. Its combat range and shaped charge makes it the best anti-tank weapon for infantries and dismounted troops in complex terrain.

The AT4 family

The extremely versatile AT4 is effective against armour, structures and personnel. High-explosive missions can be effectively carried out during nighttime and in confined spaces. With the AT4 family, there is a solution for every scenario.

FFV ORDNANCE

SAAB TECHNOLOGIES

SAAB

The Su-57 Fighter Jet: New Generation Aircraft

Su-57 fighter is capable of performing fighter and attack missions in roughly equal proportions

The Sukhoi Design Bureau, part of the UAC, developed hundreds of advanced solutions during the development of the Su-57 fighter jet. The result is an aircraft that can adjust to a pilot's level of training, has low radio, infrared, optical and sound visibility, more than 50 per cent of its surface area consists of composite materials, and pilot equipment anticipates and parries overloads.

The Su-57 is traditionally referred to as a new generation aircraft. The first thing that distinguishes the Su-57 from all other members of the family of fifth-generation aircraft in the world is its multi-functionality. The aircraft was required to meet both air-to-air missions, characteristic of an air superiority fighter, and air-to-surface strike capabilities, characteristic of a fighter-bomber.

RUSSIAN SU-57 FIGHTER AIRCRAFT

Unlike its competitors the Su-57 fighter is capable of performing fighter and attack missions in roughly equal proportions. Besides, the Sukhoi Design Bureau had to find a compromise between different requirements: ensuring low visibility for the aircraft to gain advantages in long-range aerial combat, but also implementing the principle of high maneuverability for close air-to-air combat. The result was a fighter with maneuverability no worse than the best fourth-generation machines.

MODEL WITH CUT-OUTS

The Su-57's appearance alone makes it radically different from the fourth generation. It has a characteristic shape with sloping sides, parallel edges and the like. In addition, to ensure low visibility on the Su-57, the air-launched attack weaponry is located in the aircraft's internal compartments. The aerodynamic design of the Su-57 is unique, too. It features controls that have not previously been used on any aircraft.

METALS/NON-METALS

The Su-57's airframe has four times fewer parts than the Su-27's. More than 50 per cent of the area of the Su-57 exterior surfaces is made up of parts made of composite materials. It was composites that made it possible to make larger cladding elements, while reducing the number of fasteners and the number of conventional parts.

STEALTH IS WELCOME

To reduce visibility special measures have been implemented. These include the use of special radio-absorbing and radio-reflective materials. Shielding materials were also used, in particular, on the antenna compartments. All on-board equipment, such as on the leading edges, was designed to ensure low radar visibility. Certain measures have also been implemented to reduce infrared signature. For example, engine emissions were shielded and purging of heat exchangers of on-board equipment is ensured.

Digital systems appeared on Russian aircraft quite a long time ago. When the Sukhoi Design Bureau was tasked with development of a single-seat multifunctional aircraft, this task came to the fore. Some of these solutions were tested on the Su-30MKI and Su-35 but the Su-57 was the pinnacle that was achieved. This aircraft has the entire flight deck digital.

SU-57 FOR EACH PILOT

On the one hand, a fifth-generation fighter is a fairly sophisticated machine. But on the other hand, it should be able to be flown by a medium-trained pilot. This is why the Su-57 has several levels of automation. For the least trained pilots, the aircraft can solve all tasks by itself, but with average quality. For more trained pilots, it is possible to vary the systems with which a particular task is handled. The advanced pilots, however, can delve into the level of system mode control. This way, even an intermediate level pilot can operate this aircraft with a fair degree of efficiency. Over time, however, they will be able to increase their level and start using the Su-57's full capabilities in all situations. ●

Major Boost for 'Atmanirbharta'

Maiden Landing of LCA Navy and MiG-29K Fighter Aircraft onboard INS Vikrant

(LEFT-RIGHT) LANDING OF LCA (NAVY) AND MIG-29K ONBOARD INS VIKRANT

INS Vikrant, the first indigenous Aircraft Carrier, has been undertaking extensive Air Operations with Rotary Wing and Fixed Wing aircraft since December 13, 2022 towards Air Certification and Flight Integration Trials for achieving the ultimate aim of being 'Combat Ready'. As part of the aviation trials, landing of LCA (Navy) and MiG-29K onboard INS Vikrant was carried out on February 6, 2023 by Indian Naval Test Pilots.

The landing of LCA (Navy) on deck has demonstrated 'Atmanirbharta' in India's capability to design, develop, construct and operate indigenous Aircraft Carrier with indigenous Fighter Aircraft. It is indeed a landmark achievement being the first time that trials of a prototype aircraft - indigenously designed & produced by Aeronautical Development Agency (ADA) & Hindustan Aeronautics Limited (HAL), has been successfully undertaken on an indigenous Aircraft Carrier. Further, the landing of MiG-29K onboard INS Vikrant is also a significant achievement as it marks the successful integration of the aircraft with the indigenous carrier as well as further enhances the Combat Readiness of the Navy.

On this occasion, Admiral R. Hari Kumar, Chief of the Naval Staff said, "The successful landing and take-off of the indigenous LCA Navy on India's first Indigenous Aircraft Carrier is a momentous step forward towards the realisation of our collective vision of Atmanirbhar Bharat. The maiden landing of the MiG-29K also heralds the integration of the fighter aircraft with INS Vikrant. Congratulations to all those who made it happen."

INS Vikrant is the most complex warship ever built by our country. It is a matter of pride that the ship has been designed in-house by Indian Navy's Warship Design Bureau and constructed by Cochin Shipyard Limited. The ship had sailed for maiden Sea Trials on August 4, 2021. Since then, she has undergone sea sorties for trials of Main Propulsion, Power Generation equipment, Fire Fighting systems, Aviation Facility Complex equipment etc. The Carrier was commissioned into the Indian Navy on September 2, 2022, by Prime Minister of India. The construction of the Carrier is a big boost to the 'Atmanirbhar Bharat' vision of the Government of India. ●

Prime Minister Modi Inaugurates India Pavilion

Prime Minister Narendra Modi and Defence Minister Rajnath Singh visited the India Pavilion with Chief Minister of Karnataka B.S. Bommai and Defence Secretary Giridhar Aramane

The 'India Pavilion', based on the 'Fixed Wing Platform' theme, showcases India's growth in the area, including the future prospects. There are a total of 115 companies, displaying 227 products. It showcases the growth of India in developing an ecosystem for Fixed Wing platform which includes the demonstration of various structural modules, simulators, systems (LRUs) etc of LCA-Tejas aircraft being produced by Private Partners. There is also be a section for Defence space, New Technologies and a UAV section which will give an insight about the growth of India in each sector.

A full scale LCA-Tejas aircraft in Full Operational Capability (FOC) configuration will be at the centre stage of India Pavilion. LCA Tejas is a single engine, light weight, highly agile, multi-role supersonic fighter. It has quadruplex digital fly-by-wire Flight Control System (FCS) with associated advanced flight control laws. The aircraft with delta wing is designed for 'air combat' and 'offensive air support' with 'reconnaissance' and 'anti-ship' as its secondary roles. Extensive use of advanced composites in the airframe gives a high strength to weight ratio, long fatigue life and low radar signatures.

Embraer Showcases the C-390 Millennium

Embraer is showcasing the C-390 Millennium military multi-mission tactical air transport aircraft, which is on static display at Aero India 2023. Complementing the C-390 Millennium's presence at the show is Embraer's booth (Hall B, B2.2 B) that offers visitors a closer look at Embraer Defense & Security's comprehensive portfolio and innovative solutions, which include the A-29 Super Tucano, the P600 AEW&C, and the radars & border surveillance solutions.

"We are proud to bring Embraer's iconic C-390 Millennium to India for our guests to experience the true capabilities of this 21st-century military multi-mission aircraft," said Bosco da Costa Junior, President & CEO, Embraer Defense & Security. "India is a key market for Embraer, and we are keen to establish partnerships in the country that can further boost India's defence industries and capabilities. We look forward to engaging with India's defence & aerospace ecosystem at this event."

C-390 MILLENNIUM IN FLIGHT

Since it entered into service with the Brazilian Air Force (FAB) in 2019, the C-390 has proven its capability, reliability, and performance across a variety of missions. FAB's fleet of five aircraft, all refuelling versions, designated KC-390, have already accrued more than 7,500 flying hours, and recent numbers have shown a mission completion rate of 99 per cent, demonstrating outstanding productivity in its category. Embraer has orders for the C-390 Millennium from Portugal & Hungary, both NATO member nations. The Netherlands, also a NATO nation, selected the C-390 Millennium in 2022.

The C-390 is the most modern next-gen military tactical transport aircraft, and its multi-mission platform offers an unbeatable combination of low operating costs and fast turnaround. The aircraft can carry more cargo (26 tonnes) compared to other medium-sized military cargo aircraft and flies faster (470 kts) and further on a standard crew duty day.

The C-390 Millennium can carry out a wide range of missions using the same platform, including Air-to-Air (in-flight) Refueling (AAR) for fixed & rotary wing aircraft, airborne operations, troop & cargo transportation, humanitarian missions, medical evacuation, firefighting, and search & rescue, with simple and rapid reconfiguration between the different configurations using conversion kits and state-of-the-art built-in reconfigurable cargo floor systems. The aircraft was designed to operate on semi-prepared or damaged runways as well as in hostile environments, ranging from hot & humid to cold, dry conditions.

One of Embraer's defence products operating in the country is the Indian Air Force's Netra AEW&C. Built upon the ERJ 145 regional jet platform, the fleet of three Netra is the product of collaboration between Embraer and DRDO. The aircraft took part in the Fly Past grand finale of India's recent 74th Republic Day and is often deployed in key missions.

Army Chief flies the LCH

General Manoj Pande, Chief of the Army Staff flew in a Light Combat Helicopter (LCH) during the ongoing Aero India 2023. COAS was also briefed about the flying characteristics and capabilities of LCH.

Defence Secretary Meets Delegations from Oman, Saudi Arabia and USA

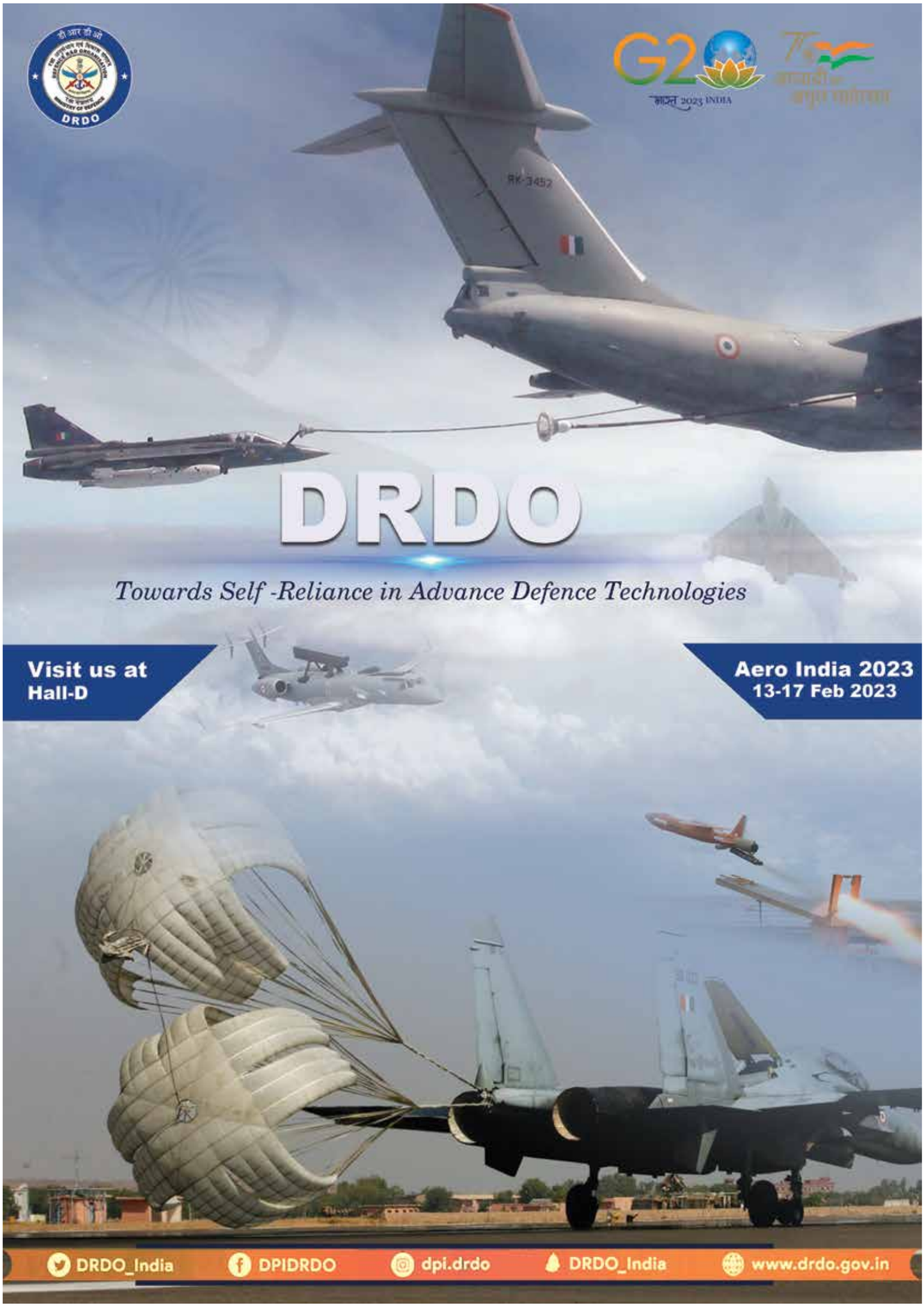
Defence Secretary Giridhar Aramane held bilateral meetings with three defence delegations on the sidelines of Aero India 2023 at Bengaluru.

(CLOCKWISE FROM TOP LEFT)

DEFENCE SECRETARY MET A DELEGATION FROM OMAN LED BY DR MOHAMMED NASSER AL ZAABI, SECRETARY GENERAL, MINISTRY OF DEFENCE;

DEFENCE SECRETARY MET DELEGATION OF THE KINGDOM OF SAUDI ARABIA, AND DISCUSSED A NUMBER OF BILATERAL DEFENCE COOPERATION ISSUES;

A US DELEGATION LED BY JEDIJIAH P. ROYAL, PRINCIPAL DEPUTY ASSISTANT SECRETARY OF DEFENCE FOR INDO-PACIFIC SECURITY AFFAIRS, AND ACCOMPANIED BY AMBASSADOR ELIZABETH JONES, CHARGE D'AFFAIRS US EMBASSY AND MAJOR GENERAL JULIAN CHEATOR, US AIR FORCE, MET THE DEFENCE SECRETARY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