SP's SHOW NEWS

AN SP GUIDE PUBLICATION

2021 AERO INDIA
The Runway to a Billion Opportunities

रक्षा उत्पादन विभाग
DEPARTMENT OF DEFENCE PRODUCTION

DAY-2
THURSDAY
FEBRUARY 4, 2021

PUBLISHERS OF
SP'S MILITARY YEARBOOK, SP'S CIVIL AVIATION YEARBOOK,
SP'S AVIATION, SP'S AIRBUZ,
SP'S LAND FORCES, SP'S NAVAL FORCES,
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HAL'S LIGHT COMBAT HELICOPTER SHOWING ITS MIGHT DURING THE SHOW

"INDIA OFFERS UNLIMITED POTENTIAL IN DEFENCE AND AEROSPACE. AERO INDIA IS A WONDERFUL PLATFORM FOR COLLABORATIONS IN THESE AREAS. THE GOVERNMENT OF INDIA HAS BROUGHT FUTURISTIC REFORMS IN THESE SECTORS, WHICH WILL ADD IMPETUS TO OUR QUEST TO BECOME ATMANIRBHAR." **PRIME MINISTER NARENDRA MODI** @NARENDRAMODI

"FROM RUNWAYS TO AIRWAYS, AERO INDIA PRESENTS A POOL OF OPPORTUNITIES" DEFENCE MINISTER RAJNATH SINGH

(ABOVE) AERO INDIA 2021 TAKES OFF: SPECTACULAR DISPLAY BY IAF'S SUKHOIS; (RIGHT) DEFENCE MINISTER RAJNATH SINGH INAUGURATES THE SHOW

AYUSHEE CHAUDHARY

Declaring open the 13th edition of the Aero India show on Wednesday, Defence Minister Rajnath Singh highlighted the encouraging significance of Aero India 2021 in the backdrop of the global pandemic and said that the international exhibition continues to create opportunities from runways to airways. "Despite the constraints caused by the global pandemic, I am pleased to see such a large number of participants in this year's event. It is coming from the world's leading nations in the field of military and aviation. The world has now started to recognise India as a trusted defence investment destination," he said. The Aero India 2021 is scheduled for three days and promises to display the vast potential of India, and the

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PUBLISHER AND EDITOR-IN-CHIEF
Jayant Baranwal

SENIOR CONTRIBUTORS
Air Marshal (Retd) B.K. Pandey
Lt General (Retd) Naresh Chand
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
Vimlesh Kumar Yadav
Sonu S. Bisht
Group Research Associate: Survi Massey

MANAGER - HR & ADMIN
Bharti Sharma

ASST. MANAGER - HR & ADMIN
Pooja Tehlani

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, 24620130
Fax: +91 (11) 24647093

E-mail: info@spguidepublications.com

Owned, published and printed by Jayant Baranwal on behalf of SP Guide Publications Pvt Ltd.

Printed at Kala Jyothi Process Pvt Ltd, Hyderabad

www.spguidepublications.com

SP GUIDE PUBLICATIONS

For Advertisement / Editorial queries, please contact us at Hall-E (E4.6)

PHOTOGRAPHS: SP Guide Publications (Archive), Karthik Kumar, IAF, PIB, respective OEMs and miscellaneous

multifarious opportunities that the country offers in the field of defence and aerospace sector. "This is the world's first hybrid aero and defence exhibition. It is truly a sangam of rising demand, greater innovation, conducive opportunity and maturing ecosystem in defence and aerospace," he added.

During the curtain raiser of the event, Singh had said that against the backdrop of Bengaluru, the event would offer opportunities for collaboration and cooperation between Indian and global industry leaders, academicians, visionaries, centre and state administrations. It would also bring together the defence ministers of various countries, service chiefs, policy makers, foreign OEMs, industry, entrepreneurs and academia to showcase, connect and collaborate as well as highlight policy reforms driving India's new defence manufacturing revolution.

The Chief Minister of Karnataka, B.S. Yediyurappa said, "I want to congratulate the state administration for ensuring the availability of the infrastructure to have an event of this magnitude. Karnataka is home to many R&D institutions, aerospace industries, and a vibrant start up culture with about 65 per cent of the nation's aerospace related exports and 67 percent of all aircraft and defence related services happening from here. It is also the first state in the country to announce an aerospace policy in the promoted investment of ₹14,700 crore and employment potential of over 10,000 people. Bengaluru promises many opportunities ahead for the industry."

The opening ceremony also witnessed the handing over of the contract of 83 LCA (Light Combat Aircraft) Tejas Mark 1A, worth ₹43,000 crore to Chairman and Managing Director of HAL (Hindustan Aeronautics Limited), R. Madhavan by the Ministry of Defence (MoD) officials in the presence of the Defence Minister.

The major focus of this year's air show is on the defence capabilities of India and the indegnisation programs to be presented not just for India but also for the world. "We plan to spend 130 billion dollars in military modernisation in next 7-8 years," Singh said, adding that this event is encouraging for collaboration.

The contract presented to HAL is probably one of the biggest defence 'Make in India' contract till date, noted the Defence Minister. Tejas, manufactured by the HAL, is a single engine and highly agile multi-role supersonic fighter aircraft capable of operating in high-threat air environments. The first LCA Tejas Mark 1A is expected to be supplied by February 2024. Ministry of Defence has set a target of making 83 planes over the next six years. The jets will be in two variants - 73 of these will be 'Tejas Mk-1A' configuration while 10 jets will be the Tejas Mk-1 configuration, used as a 'trainer aircraft.'

On Tuesday, Singh also opened a new HAL manufacturing facility for Tejas in Bengaluru, which is expected to double the production rate from the present eight planes per year to 16.

Rajnath Singh enumerated the highlights of Aero India 2021 including inauguration of India pavilion – based on the theme of Rotary wings, Conclave of Defence Ministers of Indian Ocean Region, Conclave of Chiefs of Air Staff of various countries, India – Russia Military Industrial Conference, Startup Manthan etc. He said, more than 200 MoU (Memorandum of Understanding) partnership agreements are expected to be signed at the Bandhan event. ●

INDIA HELISPHERE LIFTS OFF INDIGENOUS ROTARY WING ECOSYSTEM

The India Pavilion titled, The India Helisphere, is the major attraction at this edition of the Aero India show. Hindustan Aeronautics Limited's (HAL) India pavilion is centred around the theme of the rotary wing capabilities in India and was inaugurated on Wednesday by the Defence Minister Rajnath Singh. The pavilion showcases our design and manufacturing supply chain through the multiple facets of rotary wing ecosystem, said Singh during the opening ceremony of Aero India. This pavilion is a major step to underline the promotion of defence exports from the nation and the indigenous possibilities that the country's defence sector is showcasing.

This is also an effort in increasing the components expanding the vision of making India one of the biggest global defence hub from design to manufacture in public and private both, the Minister highlighted.

Aero India 2021 is a catalyst in realising the goals of defence and aerospace sector and will boost investment, ecosystems and appreciation in manufacturing in India, the Minister highlighted.

To nudge the Atmanirbhar Bharat ki Udan through the India Helisphere, the Defence Minister unveiled the upgraded ALH (Advanced Light Helicopter) Dhruv's civil version which is ready for certification.

Integrated with advanced glass cockpit advanced vibration control, navigation and communication systems, the ALH – Civil is designed to meet the requirements of civil customers, noted HAL. With the maximum take-off weight of 5500 kg and maximum cruise speed of 240 kmph, the ALH-Dhruv can carry customised roles for VIP, VVIP travel, off-shore onshore operations, search and rescue, casualty evacuation, disaster relief, tourism, etc. and is also capable of night operations.

In line with the theme, HAL's Rotary platform LUH (Light Utility Helicopter) Military is the centerpiece of the display. The LUH Military is indigenously designed and developed, three ton class new generation single engine helicopter, powered by turbo shaft engine and equipped with Glass cockpit.

DEFENCE MINISTER RAJNATH SINGH INAUGURATING THE INDIA PAVILION

With scaled models and the Indian helicopter manufacturing ecosystem on display, the pavilion showcases various indigenously designed and developed fixed and rotary wing platforms, technologies covering power plants and future generation combat-capable airborne solutions like the LFDS-X, an airborne sonar system which can be deployed from rotary wing platforms, RUAV (Rotary Unmanned Aerial Vehicle), transmission systems, rotor blades, shafts, etc.

Depicting the future of Rotary Wing Systems, the prototype of RUAV 200 was also on display which is a fully autonomous unmanned helicopter for deployment in hostile and otherwise inaccessible conditions at high altitudes. It can operate from altitudes of 5500 m, carry a payload of up to 30 kg and comes with a maximum range of 100 km.

The Defence Minister accompanied with the Chief Minister of Karnataka went around the pavilion to witness the rotary wing ecosystem at display. ●

BIRDS ON SHOW

1. RAFALE FLYPAST DURING THE INAUGURATION **2.** B-1B LANCER REITERATED INDO-US RELATIONSHIP **3.** ATMANIRBHAR BHARAT KI UDAN - TEJAS LOOKING UP **4.** MESMERISING DISPLAY OF SARANG AEROBATIC TEAM **5.** C-17 FLANKED BY FLANKERS **6.** APACHE GUNSHIP ON THE TARMAC ENTHRALLING THE CROWD **7.** SURYAKIRANS LINE-UP ON THE RUNWAY AWAITING THEIR TURN **8.** LCA TEJAS, HTT-40 BASIC TRAINER & INTERMEDIATE JET TRAINER FROM THE KITTY OF HAL SHOWING INDIA'S GROWTH TOWARDS SELF-RELIANCE **9.** IAF'S RAFALE RECONFIRMING ITS COMMITMENT TOWARDS INDIAN SKIES **10.** B-1B LANCER FLYBY DURING THE SHOW TO CONVEY THE MESSAGE FROM U.S. GOVERNMENT TOWARDS CEMENTING THE BILATERAL RELATIONSHIP


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(LEFT) F/A-18 BLOCK III SUPER HORNET; (RIGHT) P-8I OF THE INDIAN NAVY

"OUR VISION IS TO BRING THE BEST OF BOEING TO INDIA AND EXPORT THE BEST OF INDIA TO THE WORLD"

*In conversation with **Michael Koch**, Vice President, Boeing Defence, Space & Security, India*

***SP's ShowNews* (SP's): Boeing has strengthened its defence business in India with many of its iconic platforms servicing the Indian armed forces. How do you see the Indian market growing from your perspective?**

Michael Koch (Koch): India's defence sector is poised for growth and Boeing is committed to supporting and enabling this progress. Boeing has had a presence in the country for over 75 years now, and we've had many firsts with India. India was the first international customer for the P-8, is the largest international operator of C-17s and P-8s, and the Harpoon missile was the first US weapon system on an Indian-built fighter.

The future looks promising and we continue to see several opportunities in India. We're engaged with our defence customers on their requirements for the Indian Air Force's Multi-Role Fighter Aircraft and the Indian Navy's Carrier-Borne Fighter programme. Early last year, the Ministry of Defence signed the contract for the acquisition of an additional six Apaches for the Indian Army.

Today, with 11 C-17s, nine P-8Is with three more on order, 22 AH-64 Apaches with six more on order with the Indian Army, and 15 CH-47 Chinooks, India is at the front and center of Boeing's business plans.

We're also seeing the growth in our localisation of MRO services and training, and the value Boeing Defence India, our local establishment in India, is able to provide through the lifecycle of Boeing products. We work with the Indian Air Force and the Indian Navy to provide exceptional operational capability and readiness to the P-8Is, C-17s, and Head of State aircraft through local sustainment services in India. Boeing is also providing pilot training for the Indian Air Force fleet of the C-17 aircraft; and we are in the process of providing training to Indian Navy pilots on the P-8I.

We're contributing to the growth of India's aerospace industry; that's why we're investing in partnerships across the ecosystem in skilling, research & technology, and manufacturing. India's role in our global supply chain is big and getting bigger. Our commitment to India is deep and it's for the long term; our vision is to bring the best of Boeing to India and export the best of India to the world.

SP's: Boeing recently announced the results of the ski jump trials of the F/A-18 Block III Super Hornet. Are there any updates on your talks with Indian Navy for their fighter requirements?

Koch: Boeing and the US Navy recently proved that the F/A-18 Super Hornet can operate from a ski jump, thereby demonstrating the aircraft's ability to operate on Indian Navy carriers.

We are engaging with the Indian Navy and have responded to the Request for Information for the Multi-role Carrier Borne Fighter (MRCBF) programme. This is a very exciting opportunity to partner with both the Indian Navy and the US Navy. The F/A-18 Super Hornet is the frontline carrier-based fighter of the US Navy, and will not only provide superior war fighting capability but also create opportunities for cooperation in naval security and aviation between the United States and India. The aircraft will be an incredible tool to ensure security and safety in the Indo Pacific region for decades to come.

SP's: Why do you believe the Super Hornet will meet the Indian Navy's requirements for a carrier borne fighter?

Koch: It is important to understand that apart from being the most lethal, advanced and combat-proven aircraft, there would be benefits from the incredible know-how and technology investments made by the US Navy related to aircraft carriers and fighter operations at sea. As a strategic partner for security, US Navy is leaning in to provide the best solution available for Indian Navy. This includes the F/A-18 Block III Super Hornet, but it also includes deep capabilities in sustainment, logistics, flight ops, carrier and network integration, etc. These machines are powerful on their own, but they are far more potent when they are part of a fully integrated network of capabilities.

The Super Hornet was designed for the carrier deck and benefits from decades of experience Boeing and US Navy had operating classic Hornets. The Indian Navy would receive the benefit of US Navy's multi-billion dollar investments in Block III technologies, including advanced networks, longer-range detection with Infrared Search & Track, an all-new Advanced Cockpit System, improved signature reduction and a 10,000+ hour life. The F/A-18 Block III Super Hornet will be a game changer for the Indian Navy providing them several unique and differentiated capabilities.

Another important operationally relevant distinction is that the Super Hornet would prove a force multiplier for the Indian Navy through enhanced networked warfare with other US origin assets that the Indian Navy and the Indian Air Force have, or are in the process of acquiring. The F/A-18 Super Hornets can optimally interface with the P-8I, augmenting lethality of these platforms and enhancing India's force projection capabilities.

As part of Boeing's "for India, by India" philosophy, the Block III Super Hornets can be serviced in partnership with the Indian Navy, US Navy and industrial partners from India and the US throughout the lifecycle of the aircraft. This will further develop advanced expertise in aircraft MRO in India, resulting in higher availability of the aircraft at competitive pricing. All these together, with the fact that the Super Hornet is the most affordable tactical fighter in its class 'per flight hour' differentiates Boeing's F/A-18 Block III Super Hornet offer for the Indian Navy.

SP's: P-8I has always proven its capabilities and has been a strong pillar for Indian Navy when it comes to maritime security. There are three more to be delivered? Any update on the remaining P-8I delivery and your future plans for P-8I fleet?

Koch: In November, last year, Boeing delivered the ninth P-8I to the Indian Navy. This was the first of the four options aircraft, with the remaining three scheduled for delivery this year. The Indian Navy was the first and is the largest international customer for the P-8. This aircraft is an integral part of the Indian Navy's fleet and is approaching an impressive milestone of 30,000 flight hours since induction in 2013.

Our focus has been, and will continue to be, delivering the world's best maritime patrol aircraft to the Indian Navy. We've been supporting India's growing P-8I fleet by providing spares, ground support equipment and field service support. Boeing's logistics support has enabled the highest state of fleet-readiness at the best possible cost. Boeing is currently completing construction on a Training Support & Data Handling (TSDH) Centre at INS Rajali, Arakkonam, in Tamil Nadu, and a secondary centre at Naval Institute of Aeronautical Technology, Kochi, as part of a training and support package contract signed in 2019. The localised, 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.

Continued on page 15...

WORLD'S DEADLIEST CRUISE MISSILE BRAHMOS SHINES AT AERO INDIA 2021

BrahMos – reckoned as world's fastest, deadliest cruise missile – is one of the major attractions at Aero India 2021. Designed and developed by India-Russia Joint Venture (JV) entity BrahMos Aerospace, the supersonic weapon with precision strike power is bedazzling the crowds yet again.

The highly versatile BrahMos weapon system comes with a lethal trident-like combination of speed, precision, and power. It has emerged as the "ultimate game-changer" for India. Operationalised in the Indian Army, Navy and Air Force, BrahMos has established itself as a major force multiplier in modern-day complex battlefields having impeccable land-attack and anti-ship capabilities from multiple platforms for multi-role missions.

The "stealthy killer" straight away annihilates its target at a maximum velocity of Mach 2.8 after cruising at altitudes varying from as low as 10-metres to up to 15-km. BrahMos can be fitted in ships, mobile autonomous launchers, submarines and aircraft to precisely neutralise land and sea-surface targets.

BRAHMOS MISSILE

BrahMos Aerospace, the JV entity between India's DRDO and Russia's NPOM, is exhibiting the air, land and sea variants of the powerful weapon system at the biennial event, pegged to be Asia's premier air show. BrahMos has given a major fillip to India's "Atmanirbhar Bharat" programme by rendering an unmatched potential to the Indian Armed Forces to vanquish any enemy in high intensity, modern conflict situations.

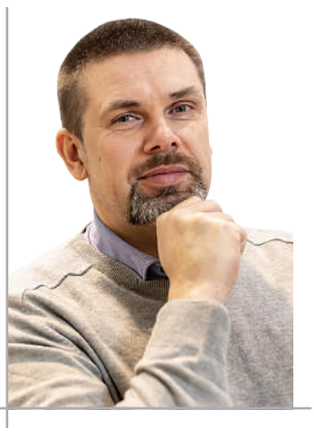
BrahMos Land-based System: The Indian Army has become the first and only army in the world to have a regiment of supersonic cruise missiles with advanced capabilities. The mobile land-based configuration of BrahMos has achieved several advancements over the years in the form of Block I, Block II and Block III variants – each having its own distinct potentiality to hit and destroy high value enemy targets.

BrahMos Air-Launched System: The BrahMos airborne weapon has given the Indian Air Force (IAF) a distinct capability to completely knock down strategic enemy assets on the ground or sea from large, stand-off ranges with deadly accuracy. The advanced air-launched cruise missile (ALCM) can operate in day-and-night, all-weather conditions. After undergoing a series of successful launches from the IAF's Su-30 MKI air combat platform, BrahMos-A has been successfully inducted in the IAF's Tigersharks Squadron in 2020.

BrahMos Ship-based System: The naval strike variant of BrahMos is operational on all frontline destroyers and frigates of Indian Navy. The missile can be fired from vertical and inclined launchers against both land and sea-surface targets. It can also be launched in 'salvo' mode to destroy targets in same or different directions. The weapon has also been successfully tested from an underwater platform in 2013, establishing its capability to be fitted onto submarines in future.

Futuristic BrahMos Versions: Traversing the world of futuristic weapon systems, BrahMos Aerospace has initiated work on a hypersonic BrahMos version. This highly advanced variant would be a quantum leap in modern missile technology as it would be developed to cruise at an ultra high speed of up to Mach 8. Yet another futuristic variant will be BrahMos-NG (next-gen), having smaller, smarter dimensions.

BrahMos Aerospace is also exhibiting various indigenously developed components and systems at the mega event. Also exhibited are a full-scale BrahMos airborne weapon integrated on the Su-30 MKI fighter aircraft at the outdoor display alongside the actual Mobile Autonomous Launcher with 3-BrahMos missile configuration.



(LEFT) KNUT ÖVREBÖ, CHIEF ENGINEER AT FUTURE AIR SYSTEMS, SAAB BUSINESS AREA AERONAUTICS;
(MIDDLE AND RIGHT) GRIPEN E FOR THE MRFA PROGRAMME OF THE IAF

A FUTURE-PROOF FIGHTER JET FOR IAF

Air combat is now defined by technology. With the evolution of the battlespace, a fighter needs to be able to handle much more than before and quicker than ever

Modern fighter jets have typically been designed to withstand 8,000 total hours of flight time during their operational lifespan. With an average of 200 hours in the air each year, this means they are expected to continue delivering high performance in sorties and missions for somewhere between thirty and forty years.

Because fighters represent an extensive investment for governments, it is vital that they remain effective and operationally competitive throughout their entire time in service. That means they need to adapt to each significant new technology and threat that comes along to change the way a fighter jet operates. For Gripen that's not a problem since that way of thinking is in the DNA of Gripen from the beginning.

According to Knut Övrebö, Chief Engineer at Future Air Systems, Saab business area Aeronautics. "What makes Gripen quite unique is that it is designed to remain at the forefront of capabilities for decades. I am part of a team that is developing a product that is regularly enhanced to keep it at its best over 40 years."

KEY TO LONGEVITY - ADAPTABLE, OPEN ARCHITECTURE

We've already made a huge leap in just one generation in developing new technology to help the pilot with elements of flying the aircraft and with decision-making tasks, says Knut Övrebö. Knowing that the key to the longevity of Gripen would be its platform--the initial technology on which the plane is based--the conceptual designers made it open architecture. Gripen E's platform has a modular design that can be easily adapted, to utilise future solutions that doesn't necessarily have to be built in-house. This allows the rapid integration of new technology and functions as they are developed, in order to take on and defeat new combat challenges without excessive cost or downtime.

As Övrebö explains, "The systems integration hub is where Saab excels compared to others. This is where all technical disciplines merge into an optimised solution."

According to Mats Palmberg, "We have seen that the IAF is able to keep deployed and in fighting fitness its aircraft for three to four decades. Given that the digital environment has changed so much and the changes would be accelerating further in the decades ahead, Gripen E has the inherent architecture to dynamically address the integration of new capability as well as meet the challenges of deployment of such technologies by adversaries."

The actual hardware that Aeronautics produce is generally limited to the airframe and the structure. Other parts such as computers, displays, sensors and weapons, must be procured from elsewhere. But most key enabling systems, including all systems that are deemed strategically vital, can actually be delivered by other Saab business areas. This combined strength and diversity of business units makes Saab unique compared to competitors in the fighter market.

Technology is advancing rapidly and thereby also the threats, so to ensure that a modern combat aircraft doesn't become obsolete in ten years after its launch, it must be adaptable. Upgrades are essential, but it's also essential that they are easy to manage, quick to implement and affordable to sustain for today, and for the future.

MAKING TOMORROW'S GRIPEN TODAY

Knut Övrebö describes the evolution of Gripen from the late 1970s, where designers in the Saab Aeronautics design department "basically had a blank sheet of paper to fill", up to 1993 and the initial exploration of what Gripen could look like in the future. At this time, the research included investigating ideas about extending sensing capabilities, weapons capacity, missile range and the endurance of the fighter.

When it comes to the future design of Gripen, designer have to forecast the technological trends that can help Saab take the aircraft further.

Today, taking advantage of new functional materials such as nanotechnology, and huge advances in manufacturing and development, future fighters may one day have radically different properties. These include airframes that are regularly and easily replaced, while the inside of the fighter continues to be developed and enhanced. The future Gripen and its successors will benefit from the technologies being developed now.

"The airframe constitutes around twenty-five percent of the total cost of a current fighter. By applying new materials and rethinking the design and manufacturing we can reduce the cost," says Övrebö.

Environmental considerations have also been addressed in designing Gripen of the future. Saab has already conducted test flights using 100 per cent biofuel and manufacturing processes are constantly being enhanced to make them more environmentally sustainable.

Among the promising candidate areas for future Gripen development are enhanced sensors and weapons, complementary unmanned components and autonomous control enabling missions that see interaction between manned and unmanned aircraft. By the mid 2040s we should expect to see a new generation of air systems. These will include new generation weapons, sensors, functional materials, and multi-spectral stealth technology.

MODERN CONFLICTS AND SMARTER FIGHTERS

Fighting in modern conflicts requires being constantly one step ahead of opponents. Rapid technological progress has driven the development of longer reach weapons and radars with greater precision, low signature targets and advanced electronic warfare.

Air combat is now defined by technology. With the evolution of the battlespace, a fighter needs to be able to handle much more than before and quicker than ever too.

"IT and computing technology have grown exponentially in the area of what information can be made available to pilots in the fighter, as well as what the fighter can do," says Knut Övrebö.

Gripen achieves the optimal balance between the pilot's and the fighter's decision space, by letting fighter intelligence take on a larger role. Gripen's fighter intelligence is able to work autonomously in several areas simultaneously; this provides the pilot with cueing and suggestions that range from weapon selection to full manoeuvring of the fighter in an emergency. In addition, it shares and displays the right tactical information, giving an optimised battlespace overview to the Gripen pilot at precisely the right moment.

"There is an ambition that in 10 to 15 years we can combine Gripen with unmanned systems. In this way, more advanced tasks can be integrated, such as aircraft that can release small subsystems of aircraft decoys that fly for a few minutes, disposable surveillance robots and other systems that aid the pilot by gathering vital defence information; these also keep the pilot and the fighter out of harm's way."

While Saab needs to carry out more research and obtain more strategic information, Övrebö says that the company is looking at the possibility of totally unmanned or optionally manned aircraft. Such a radical step in autonomy would benefit pilots as they could focus fully on the management and coordination of the mission rather than on the actual flying of the fighter.

"We've already made a huge leap in just one generation in developing new technology to help the pilot with elements of flying the aircraft and with decision-making tasks. ●

(LEFT) BOAZ LEVY, PRESIDENT AND CEO, IAI; (MIDDLE) HAROP SYSTEM; (RIGHT) ROTEM VTOL

IAI TO PROVIDE LOITERING MUNITIONS SYSTEMS TO ASIAN COUNTRIES

Three recently-signed deals worth over $100 million include the sale of 'ROTEM' VTOL Tactical Loitering Munition and land and naval version of the HAROP system

Israel Aerospace Industries (IAI) announced the signing of three significant contracts valued at over $100 million, in which it will supply loitering munitions systems to several countries. The contracts include winning an international tender for the sale of the multi-purpose – 'ROTEM' system – to a foreign country, sale of the naval version of the HAROP system to the Navy of a country in Asia and sale of the ground version of the HAROP system to another customer in Asia.

Boaz Levy, IAI's President and CEO said, "IAI is a global pioneer in developing the operational concept of loitering munitions systems, which has ripened to a family of unique and accurate attack systems. These systems, which have added impressive achievements to the operational capability of fighting forces around the globe, constitute central and decisive attack components for advanced battlefields of the future.

These contracts are further proof of the importance and confidence modern armies place in accurate munitions systems as part of their arsenal, and may be harbingers of additional business activity in this field. IAI will continue to develop and improve a range of strike systems in order to give its clients around the world a precise operational solution."

The Maritime HAROP system provides an operational solution for a range of vessels, from off-shore vessels to fighting frigates in the naval theater. In a complex naval theater, the HAROP system gives mission commanders in a fleet of ships the capability to independently and organically collect intelligence, assess targets and strike.

The intelligence gathered by the HAROP is directly integrated in the vessel's control room and allows for quick, accurate and lethal decision-making. Use of the HAROP on naval platforms is an operational alternative and complementary element to using sea-sea missiles, with a wide range of uses and with optimal cost-efficiency for the navy. The maritime and land combat proven HAROP provides an operational solution for a range of low and high intensity conflict scenarios and for anti-terrorism activity.

The HAROP is equipped with day/night cameras and has the ability to search, find and attack with maximum precision both static and moving targets, on land or at sea and at a long range. A strike can take place from any direction and at any angle of attack.

'ROTEM' is the first Vertical Take Off & Landing (VTOL) Tactical Loitering Munition combat proven and used in operations by several of the world's militaries as a small loitering device based on a drone platform and is a power multiplier for tactical forces in a range of fighting scenarios, including security operations and maneuvers. The system provides a reconnaissance, observation and attack envelope with maximum autonomous performance, integrating a simple and intuitive operation interface that can be used by a single fighter from a touch-screen tablet.

The 'ROTEM' VTOL Tactical Loitering Munition carries day/night cameras and a warhead weighing up to one kilogram and is optimally designed to carry out combined missions of intelligence gathering a nd attack. The system incorporates a unique safety mechanism that enables its safe return to the fighter on the ground if an attack was not carried out. The 'ROTEM' system has proven its operational effectiveness for precise, surgical strikes against a range of different targets.

The loitering munitions family developed by IAI includes the Harpy-NG – a third generation of the system homing against radiating targets, the HAROP, a second-generation of a precision electro-optical attack system, the Mini-Harpy, dual (Electro-optical day&night + Anti-Radiation seeker) tactical advanced munitions system and the tactical loitering Green-Dragon system, as well as the 'ROTEM' VTOL Tactical Loitering Munition.

IAI is a focal point of national and global technological knowhow in the field of attack systems, air defence, radars, satellites, remotely operated aircraft, civilian aviation and cyber.

(LEFT) AIR DEFENCE FIRE CONTROL RADAR; (RIGHT) SOFTWARE DEFINED RADIO (SDR)

FOSTERING INNOVATION AND TECHNOLOGY DEVELOPMENT IN DEFENCE

***Anandi Ramalingam**, Director Marketing, Bharat Electronics Limited talks about their participation at Aero India 2021, their latest technologies, exports and the road map for future growth*

***SP's ShowNews* (SP's): What are your plans on increasing BEL's exports? How do you plan to increase your global presence?**
Anandi Ramalingam (Ramalingam): BEL is fast expanding its global presence, putting its best foot forward to give a thrust to exports worldwide. All-out efforts are being made to tap new markets across the globe. In a bid to develop new markets in the Indian Ocean Region (IOR), BEL has operationalised overseas marketing offices in Oman, Vietnam, Sri Lanka and Myanmar. BEL has also expanded its Singapore and New York Regional Offices to handle marketing activities. BEL is also thinking of establishing similar offices in Nigeria, Brazil, Armenia and Kazakhstan.

The Government is encouraging defence exports through many policy initiatives and has set a target of ₹35,000 crores by 2024-25. BEL has identified Exports and Offsets as one of its thrust areas and has drawn up plans to offer its select products and systems to various export markets. The Company has put in efforts for increasing its business opportunities in South East Asia, Europe, Middle East, Africa and North America through constant engagement with customers and is also working closely with other Indian companies and local partners in the respective countries as part of maximising its geo-strategic reach and increase its global footprint.

SP's: What are the products that you export and to which all countries do you export?
Ramalingam: BEL has been exporting products such as Communication Systems, Coastal Surveillance System, Missile Systems, Radars, Electronic Warfare Systems, Electro Optic Systems and Electro Optic Fire Control Systems, Radar Finger Printing System, Naval Systems, Radar Warning Receivers, Electronic Voting Machines and various other equipment to USA, UK, Russia, Italy, Brazil, Germany, France, Israel, Indonesia, Honduras, Malaysia, Maldives, Mauritius, Myanmar, Namibia, Seychelles, South Africa and many other friendly countries. BEL achieved Export sales of $48.59 million during FY 2019-20.

Some of the other products and systems which are being promoted for exports include Homeland Security solutions, Smart City solutions, Border Protection systems and Coastal Surveillance System. Having established a Coastal Surveillance System (CSS) for a few neighbouring countries, BEL is interacting with Ministry of External Affairs for supply of CSS to other friendly countries.

Recently, the Government approved the export of the indigenously developed Akash Missile System to friendly foreign countries.

SP's: How do you plan to tap the Offset clause for exports?
Ramalingam: BEL is also focusing on Offset as a potential avenue for revenue generation. BEL is interacting with many foreign OEMs to meet Offset obligations in various RFPs of the MoD, on account of the Offset policy incorporated in the Defence Procurement Procedure. BEL has identified contract manufacturing (build to print and build to spec) for foreign OEMs and partnerships in the form of Transfer of Technology of the latest systems and solutions as areas of emerging export opportunities. Efforts are also on to establish long term supply chain relationship with global players.

SP's: How is your company gearing up to realise the Government's 'Atmanirbhar' initiative?
Ramalingam: Defence has been identified as a core sector to boost the 'Make in India' vision of achieving $5 billion Exports. Major initiatives by BEL towards Make in India/Atmanirbhar Bharat include strong thrust on R&D, Collaborative R&D, Defence Innovation Organisation incorporated by BEL and HAL to create an ecosystem to foster innovation, and technology development in Defence by engaging R&D institutes, academia, industries, start-ups and individual innovators. To promote the Make in India initiative, BEL has established Make in India Display Cells, appointed Nodal Officers for Outsourcing & Vendor Development in all its Units and updated its policies and procedures. BEL has implemented the Make-II Policy of Government of India and issued several EoIs to Indian vendors. The Company has been putting in efforts to create a strong vendor base in India and has currently more than 21,000 vendors including domestic vendors and MSMEs. BEL is extending its Test facilities for use to private industries.

BEL is pursing development/ production opportunities with DRDO under DcPP model for various indigenous development/production programmes. The Company has entered into partnerships / strategic alliances with foreign OEMs as well as major Indian industries to address large and strategic programme requirements, leveraging its complimentary capabilities and assuming the role of a Lead integrator / Tier-1 partner for indigenous manufacturing. BEL is constantly exploring possibilities of forging JV Partnerships.

BEL successfully rolled out 30,000 ICU ventilators within a record time for treating COVID-19 patients and make India self-reliant in high-end medical equipment. The project involved substantial import substitution within a short period of time. Post COVID, A separate vertical called Medical Electronics Division has been opened to focus on networked and remotely operated solutions with latest technologies like IoT, AI, Cloud-based services, e-diagnostics and online healthcare services.

SP's: Can you throw some light on the key growth drivers for BEL going ahead?
Ramalingam: Existing business segments such as Radar & Missile Systems, Communication & Network Centric Systems, Anti-Submarine Warfare & Sonar Systems, Tank Electronics, Gun Upgrades, Electro-Optics, Electro-Explosive and Electronic Warfare & Avionics systems will continue to drive BEL's growth in the coming years.

BEL has been putting in continual efforts to diversify into several new areas in both Defence and non-defence to sustain growth. Some of the areas BEL is focussing on in Defence are Next Generation Weapon Programmes, Electro-Optics, Airborne Radars, Arms & Ammunitions and Explosives, Unmanned Systems, Night Vision Devices, Inertial Navigation Systems solutions for various platforms, Helmet Mounted Display Systems, Counter Measures Systems for Airborne Platforms, Composites, etc.

In the last five years, BEL's turnover from non–defence business has been around 15 per cent to 20 per cent of the total turnover. Some of the areas being focused upon in non-defence are Air Traffic Control Radars, Space Electronics, Spacegrade Solar Cells, Satellite Assembly & Integration, Railway and Metro Solutions, Software, Electric Vehicles (Li-ion Battery Packs, Fuel Cells, Charging Stations), Homeland Security and Smart City businesses, Smart Metres and healthcare electronic equipment including ICU Ventilators to combat COVID-19.

SP's: What is your current order book size? What is the growth in order book you expect in coming quarters?
Ramalingam: BEL's order book as on December 1, 2020 is more than ₹52,000 crores. BEL has been consistent in order acquisition year-on-year. The Company has orders worth over ₹8,000 crores in the pipeline. All-out efforts are being made to tap new markets across the globe.

(LEFT) RICH JOHNSTON, DIRECTOR OF INTERNATIONAL BUSINESS DEVELOPMENT, LOCKHEED MARTIN AERONAUTICS; (RIGHT) C-130J HAS BEEN OPERATING IN THE IAF FOR ALMOST A DECADE

LOCKHEED MARTIN MOVES UP THE 'MAKE IN INDIA' LADDER WITH C-130J EMPENNAGES

The manufacturer holds high hope for India's global relationships enhancing with TLMAL's expansions and the extensive potential of the C-130J

AYUSHEE CHAUDHARY

At the Aero India show, Lockheed Martin is showcasing its diverse portfolio of defence capabilities and solutions. The company's exhibit during the show includes a broad span of state-of-the-art capabilities, including the F-21 aircraft, MH-60R 'Romeo' multi mission helicopter, the S-76D helicopter, and the C-130J Super Hercules aircraft.

The C-130J airlifter, often referred to as India's Workhorse has been operating in the Indian Air force (IAF) for almost a decade. Supporting multitude of missions that the IAF carries are 12 C-130J that are presently part of the fleet. India is among the 17 countries that were sold the C-130J Super Hercules aircraft by the US. Last year, there were reports of the Pentagon having approved India's request to buy equipment, spare parts and logistical support for its fleet of C-130J Super Hercules cargo aircraft worth $90 million to strengthen the US-India strategic relationship.

It is important to note that India has a very strong connection to every C-130J fleet that's being purchased in the world because every C-130J is truly built in India which amplifies the unique relationship between every C-130J and the nation on the lines of 'Made in India, Flown Around the World'.

Tata Lockheed Martin Aerostructures Limited (TLMAL), a joint venture established in 2010 between Tata Advanced Systems Limited (TASL) and Lockheed Martin Aeroframe Corporation located in Hyderabad, India holds the distinction of being the single global source for the empennages. "TLMAL has the distinction of being the single global source of C-130J empennage assemblies included on all new Super Hercules aircraft produced in Marietta, Georgia, in the USA. And to date, TLMAL has manufactured 140+ C-130J empennages," said Kiran Dambala, COO, TLMAL.

TLMAL, that holds high the banner of 'Make in India', primarily does empennages but is also slowly branching out into fighter wings and into composite manufacturing. "I am proud that in the first round, we indigenised 85 per cent of the detailed parts that go into the empennage, and now we have just kicked off the second phase of the indigenisation and digitisatioin phase and in two years we hope to be 97 per cent indigenised.

Almost one year back, TLMAL had delivered the 100th C-130J Super Hercules empennage from its manufacturing facility in Hyderabad. Empennage assemblies produced by TLMAL include the aircraft's horizontal and vertical stabilizers along with leading edges and tip assemblies. Having met every single delivery for their customers in 2020, TLMAL's focus areas for 2021 include the delivery of 30 ship sets of C-130J empennages, delivering the fighter wing prototype and setting up the capability to indigenise remaining C-130J parts.

Through the years, the C-130J has logged over two million flight hours, delivered to more than 450 aircraft to about 25 operators in 21 Countries as 17 mission variants and has set 54 world aviation records.

"The requirements are not going down, rather sales have increased for C-130J especially with its medical capabilities displayed through the stormy last year. Going further, more orders are expected globally which means more stabilisation and predictability for the airlifter and hence more opportunities for countries to connect with India for empennages. From the USA to New Zealand, France, Germany, Bahrain, Bangladesh and many more countries are making use of the C-130J airlifter's wide range of services," said Rich Johnston, Director of International Business Development, Lockheed Martin Aeronautics.

Johnston highlighted that the multi-mission capabilities of the C-130J aircraft make it a preferred choice for so many of its customers. Some of the many missions that this can carry include weather reconnaissance, special operations, aerial firefighting, rapid ground refueling, combat delivery, air drop, personnel transport and recovery, aero-medical evacuation, intelligence, surveillance & reconnaissance, commercial freighter, humanitarian, etc. The C-130J has been an extensive part of Indian government's vaccination drive as well and has been utilised globally during the pandemic for various medical operations.

"One of the major missions that C-130J can be utilised for is firefighting because of its straight wings, and turboprop engines. It is a very stable aircraft and can fly very low and provide instant power," stated Johnston. We have been in dialogues with the Government of India especially regarding the C-130J's firefighting capability, meteorological support, he added.

Putting forth some key areas that India can look at for the C-130J, Johnston listed the following points:

- Weather reconnaissance as the airlifter can collect vital tropical cyclone, winter storm data and also has the capability to instantly relay meteorological data by satellite.
- Environmental monitoring owing to its spectral sensors for pollutant detection and characterisation as well as the Line-of-sight (LOS), Beyond Line of Sight voice, data and video links.
- Aerial spray given its self-contained roll-on/ roll-off modular aerial spray systems.
- Aero medical evacuation with ability to transport up to 18 ambulatory patients/ 4 critical care patients, ample work area with proper lighting, self-contained patient oxygen system and clean environment with separate medical staff area.

...continued from page 10

SP's: What are the latest products and systems that you are exhibiting at Aero India 2021?

Ramalingam: At Aero India 2021, BEL will showcase state-of-the-art products and systems spanning every domain of its business. The products and systems on display during the Aero India 2021 are clustered as Airborne & Space Application, Satellite and Space Application, Products and Systems for Self-Reliance (Aatmanirbhar Bharat), High Performance Computing & Artificial Intelligence Systems, Land and Naval Products and Systems, Communication and Laser based Products, Non-Defence/Diversification and Outdoor Display Products.

In addition to the above, BEL will also showcase its R&D capabilities by launching/demonstrating some of its new products / technologies. The entire set of state-of-art equipment on offer will be a force multiplier for any Defence force.

SP's: How do you see the Government policy of 74 per cent FDI through automatic route impacting the business?

Ramalingam: The current FDI policy of 74 per cent through automatic route is permitted for industries applying for fresh licence. Nevertheless, BEL considers it to be a positive step towards establishment of some niche technologies in the country. BEL with its long experience in the Defence sector has developed certain core strengths which is its USP to stay competitive in this sector.

HOST OF ACTIVITIES BY DRDO

During the 13th edition of Aero India international air show, Defence Research and Development Organisation (DRDO) is exhibiting its latest defence technologies and demonstrating many systems. Aero India is a platform for aerospace enthusiasts, prospective defence industries, aspirant start-ups and all other stakeholders to participate and witness the advances in global defence and aerospace fields and interact with many national and international delegations and industries.

DRDO is developing technologies for all major defence domains and has been participating at Aero India in a big way in all its editions. The Organisation with its vast defence design and development capability has been working towards Atmanirbhar Bharat and has taken up many policy initiatives to work closely with all stakeholders of the ecosystem. More than thirty laboratories of DRDO connected to aeronautical development are exhibiting their products and technological achievements in this mega event.

More than 300 products, technologies and innovations are being presented in indoor, outdoor, static and flying displays. The models and exhibits are shown in various technology categories and thrust is on digital display of data to highlight the product details. Keeping in view of all COVID-19 guidelines, multimedia-based presentations and product and technology brochures are being provided digitally for download based on QR code.

(LEFT) ENHANCED PINAKA ROCKET SYSTEM; (RIGHT) QUICK REACTION SURFACE TO AIR MISSILE SYSTEM

During a ceremony on February 3, 2021, Defence Minister Rajnath Singh released DRDO export compendium, New Procedure for Design, Development and Production of Military Aircraft and Airborne Stores (DDPMAS) document for air worthiness certification, Aeronautical Research & Development Board (AR&DB) Golden Jubilee Stamp & documents on Journey of the board towards Golden Jubilee of AR&DB.

The major attraction of DRDO's participation in the event is the flying display of Airborne Early Warning & Control (AEW&C) system, Light Combat Aircraft (LCA) Tejas and LCA Navy. While the air display shows the aerodynamic capabilities of the aircrafts, LCA Navy is also on the Tarmac for static display. The highlights of indoor systems include Combat Free Fall System, models of Advanced Medium Combat Aircraft (AMCA), ABHYAS - High-speed Expendable Aerial Target, Twin Engine Deck Based Fighter (TEDBF), FCS System for LCA and Aerostat Systems.

The displays also include Nirbhay missile, P-16 Heavy Drop System, AWACS India Aircraft Model, Kaveri Dry Engine Prototype, Gas turbine blade and Pilotless Target Aircraft Engine (PTAE), etc. In the area of materials, titanium sponge being developed for INS Vikrant, the aircraft carrier is shown along with other important products for aeronautics applications.

Among the engineering products, the exhibits include Aircraft Mounted Accessory Gear Box (AMAGB), AWAGB Bearing, MRSAM Launcher and Two-stroke single/double/four-cylinder engines for UAVs etc. The armament related products being showcased are 250 kg pre-fragmented bomb, 450 kg HSLD Bomb, INS GPS Guidance Kit for 450 kg HSLD Bomb, Missile warhead models of Astra, Helina, Canopy Severance System (CSS) for Tejas Aircraft, IR flare for PTA.

Among the missiles, full scale models of various Surface to Air missiles like, Astra, LRSAM, QRSAM, Air to Air Missile Astra, Anti-Radiation Missile NGARM and Smart Anti Airfield Weapon SAAW are being shown. Besides the missiles, technology sub-systems like RF Seeker, IIR Seeker, PINAKA Guidance Kit, Model of rail track rocket sled (RTRS) facility and exploder for naval warheads etc are also on display.

In the area of electronics and communications, various mission and radar computers, laser warning sensors, AEW&CS data links, various SDR models, light weight portable laser target designator, radars and antennae are displayed. Integrated life support system, emergency survival rations, NBC Suit Mk-5, personal decontamination kit and other life sciences products are shown.

Indian Maritime Simulation System (IMSAS), Air Warfare Simulation System and the Air Defence Simulation System are also demonstrated as working systems. Outdoor exhibits of DRDO include ADFCR (radar vehicle), ADTCR (sensor and power systems), Anti Drone System, QRSAM, Rustom-1, Mobile Launcher Vehicle, MARS, Akash, and Rudram (NGARM) missile among others.

For India Pavilion, keeping in view the theme of Rotary Wing Platforms, over seventeen products applicable to helicopters are exhibited. The products include Low Frequency Dunking Sonar (LFDS) on Advanced Light Helicopter (ALH), torpedoes that can be launched from helicopters, Airborne Software Defined Radio, Radar for Naval Utility, Lightweight Electro Optical Payload (LEOP), Dual Colour Missile Approach Warning System (DCMAWS), and Digital RWR. The other systems applicable for rotary wing platforms include IFF Mk XII, Combat Search & Rescue (CSAR), Heli-Net, SANT Missile and NASM-SR Dummy Model.

A seminar on 'Energising the R&D Capabilities of Industry for 'Atmanirbhar Bharat' is being organised by DRDO on 4th February 2021. DRDO perspectives on industry participation, proactively in defence R&D and manufacturing will be discussed in the seminar. Speakers from India and overseas will deliver talks on various aspects of industry expectations from Government setups and DRDO. On the valedictory day, DRDO will transfer more than ten technologies to various industry partners. This year Aero India 2021 is a hybrid show and DRDO exhibits can also be seen virtually while interacting with the exhibitors.

With an endeavour to integrate various stakeholders of defence systems development in the country, the DRDO has planned an enriching experience of indigenous defence technologies and systems. As many as 30 first time models/full scale systems are on display. Various interactions are expected with the scientists to explain and demonstrate the systems and exhibits.

The exhibition of DRDO at Aero India 2021 is an excellent opportunity for Indian aerospace community to foster the cause of indigenous development of military systems and technologies with the spirit of self-reliance and national pride.

NORDIC UNMANNED ACQUIRES TWO CAMCOPTER S-100 UAS

Nordic Unmanned has acquired two CAMCOPTER S-100 systems. The first was delivered last week and the remaining will be delivered in Q2 2021. This acquisition comes after successful sulphur sniffer operations in Denmark and France. The CAMCOPTER S-100 was also recently operated for the world's first full-scale offshore UAV cargo delivery to the active oil and gas platform Troll A in Norway. These operations were both carried out by Nordic Unmanned and Schiebel.

CAMCOPTER S-100

Schiebel and Nordic Unmanned are both under contract with EMSA (European Maritime Safety Agency) to fulfill its Remotely Piloted Aircraft System (RPAS) services. Nordic Unmanned specifically for maritime pollution and emissions monitoring. The CAMCOPTER S-100 measures the ships' sulphur emissions to check compliance with the EU rules governing the sulphur content of marine fuels. Measurements are transmitted in real time through the EMSA RPAS Data Centre to the relevant authorities.

The CAMCOPTER S-100 operates day and night and can carry multiple payloads with a combined weight of up to 50 kg. Due to its minimal footprint and size, it is ideally suited for maritime operations.

Hans Georg Schiebel, Chairman of the Schiebel Group, said "The CAMCOPTER S-100 UAS has proven its outstanding capabilities and high performance at numerous EMSA operations carrying out maritime surveillance and emission monitoring all over Europe."

Knut Roar Wiig, CEO at Nordic Unmanned, said "It's with great satisfaction, that we have successfully taken delivery of our first Schiebel CAMCOPTER S-100 system. This is according to our communicated investment plan and we plan to put this first system into operations this spring for EMSA and look forward to the next system delivery."

HAL SHOWCASING 'AATMANIRBHAR FORMATION FLIGHT'

HAL LEADING THE INDIGENISATION EFFORTS: (LEFT) HTT-40; (RIGHT) RUDRA

A unique flying display of HAL's indigenous platforms (both fixed and rotary wing) aptly titled 'Aatmanirbhar Formation Flight' is a part of the flying display during the 13th edition of Aero India-2021. HAL is displaying its prowess in defence and aerospace centered on the theme 'Conceive. Indigenise. Collaborate' at the world's first hybrid exhibition.

The 'Aatmanirbhar Formation Flight' consisting HAL products such as LCA trainer (LIFT Trainer), HTT-40, IJT, Advanced Hawk Mk 132 and Civil Do-228 are flying in a special formation showcasing the spectrum of trainers and signifying self-sufficiency in the trainer segment. HTT-40, Advanced Hawk Mk 132 and Civil Do-228 are available for customer demonstration flights. Sukhoi 30 MKI, Advanced Light Helicopter (ALH) Dhruv, Light Combat Helicopter (LCH), Light Utility Helicopter (LUH) are also taking part in the flying display. Static display include Do 228, Hindustan Turbo Trainer (HTT)-40 and LUH and ALH Mk III.

HAL's major attraction at HALL-E is the Combat Air Teaming System (CATS) simulator. The simulator has TEJAS–MAX cockpit as the mother-ship platform with the embedded air teaming intelligence concepts to demonstrate the fully integrated as well as autonomous wingman platforms and swarming of drones to engage in the mission. Immersive mission visualisation is projected over a wider screen apart from the command and display at TEJAS-MAX cockpit.

The outdoor display adjacent to HAL stall features Rotary wing products namely LCH, ALH Mk IV Rudra and ALH Civil variant.

HAL's indoor pavilion is spread over an area of around 1,126 sqm in Hall-E and showcases indigenously designed and developed fixed and rotary wing platforms, technologies covering power plants and future generation combat capable airborne solutions.

With the central theme of the India Pavilion being Rotary wing capabilities in India, HAL's Rotary platform Light Utility Helicopter (LUH) is the center piece of the display with scaled models of IMRH, ALH, LUH, LCH and the Indian helicopter manufacturing ecosystem / supply chain partners around it.

HAL is promoting indigenously-built platforms to visiting defence delegations and hold business meetings with OEMs, and customers besides signing agreements and contracts with its business partners for various projects.

Product launches, handing over ceremonies and major announcements on key activities etc. are a part of the HAL schedule during the Show.

DEFENCE MINISTER AT BRAHMOS PAVILION

DEFENCE MINISTER RAJNATH SINGH ON FEBRUARY 3, 2021 VISITED THE BRAHMOS AEROSPACE PAVILION ON THE INAUGURAL DAY OF AERO INDIA 2021 EXHIBITION. THE DEFENCE MINISTER WAS BRIEFED BY DS & DG, BRAHMOS (DRDO) AND CEO & MD OF BRAHMOS AEROSPACE DR SUDHIR KUMAR MISHRA ABOUT THE PROGRESS AND ACHIEVEMENTS MADE IN VARIOUS BUSINESS ACTIVITIES SET BY THE PRIME MINISTER UNDER THE AMBITIOUS ATMANIRBHAR BHARAT PROGRAMME. IN ADDITION, THE DEFENCE MINISTER ALSO INAUGURATED THE 10TH EDITION OF BRAHMAND WORLD DEFENCE UPDATE 2021.

DEFENCE MINISTER RAJNATH SINGH ADDRESSING THE INAUGURAL SESSION OF CHIEFS OF THE AIR STAFF CONCLAVE AT AERO INDIA 2021

DEFENCE MINISTER RAJNATH SINGH MEETING THE IRANIAN DEFENCE MINISTER, BRIGADIER GENERAL AMIR HATAMI ON THE SIDELINES OF AERO INDIA 2021

A B-1B LANCER RETURNS TO BASE AFTER SUPPORTING A BOMBER TASK FORCE MISSION IN THE INDO-PACIFIC REGION

FLYBY OF US AIR FORCE B-1B LANCER AT THE SHOW. HERE IS ALL YOU NEED TO KNOW ABOUT THIS VINTAGE BOMBER.

Presence of the B-1B Lancer, long-range strategic bomber also represents the strengthening US-India defence cooperation

GETTING CLOSE: B-1B LANCER FLIES OVER THE EAST CHINA SEA DURING A TRAINING MISSION

AIR MARSHAL B.K. PANDEY (RETD)

Among the highlights of Aero India 2021 is the fly-past of the B-1B Lancer, long-range strategic bomber of the United States Air Force (USAF). This platform was commissioned into service with the USAF since 1985 and is expected to continue to be in the frontline service till around 2040.

SUPERSONIC LONG-RANGE BOMBER

The B-1B Lancer is a supersonic long-range, multi-mission, heavy bomber that was originally designed to deliver nuclear weapons. However, in the mid-1990s, the B-1B switched to an exclusively conventional combat role. In its history of service over the last three and a half decades, the B-1B Lancer has taken part in a number of missions including Operation Allied Force - an air war against Serbia initiated in March 1999 by NATO, and Operation Enduring Freedom - a global war initiated in October 2001 by the US government against terrorism. This platform was nearly continuously deployed in combat operations over Afghanistan and Iraq since 2001.

EVOLVING BOMBER

Since the time, the B-1B Lancer entered service, the platform has continually evolved to meet with the demands of a rapidly changing battlefield including a trio of upgrades known as the Integrated Battle Station (IBS). IBS integrates three major aircraft modifications: a new front and aft flight deck, a new diagnostics system and a new data link. These upgrades include the installation of fully digital cockpit displays which enhances situational awareness and communications for air crew as also improve the aircraft's performance. Boeing is also partnering with the US Air Force to conduct full-scale fatigue testing on the fuselage and expand the aircraft's capacity to carry crucial hypersonic weapons. According to the programme leaders, these combined enhancements will ensure that the B-1B Lancer fleet becomes a far more effective global strike platform as well as remains ready, relevant and viable for strike missions across the globe.

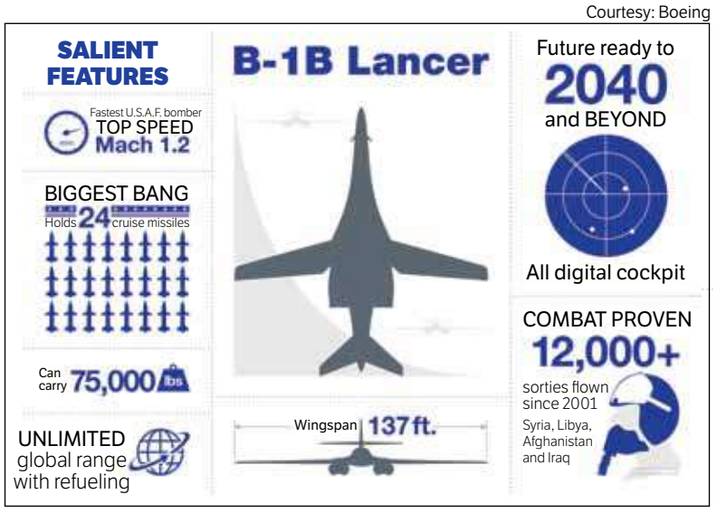
FIRST TO FLY SUPERSONIC WITH SYNTHETIC FUEL

The B-1B Lancer became the first aircraft to fly at supersonic speed using synthetic fuel in March 2008. The fuel was a 50/50 blend of conventional JP-8 petroleum and a synthetic fuel derived from natural gas using the Fischer-Tropsch process. The flight was part of an ongoing programme of the US Air Force to certify the alternative fuel for all of their aircraft in service.

CARRIES A MESSAGE FROM U.S.

Presence of the B-1B Lancer at the Aero India 2021 Air Show represents far more than mere participation of an American military platform as it carries a message from the US Government to the world. As per Don Heflin, US Charge d'Affaires, who is leading a high-level delegation, to the Air Show, of officials from the US Government as well as representatives of the US defence industry, participation in the air show by the US is an example of the deepening defence and strategic partnership between India and the US. "I am pleased to head the US delegation to the Aero India Air Show this year as it reflects our continued commitment to strengthening US-India defence cooperation, in line with India's status as a Major Defence Partner," said Don Heflin.

Courtesy: Boeing



WITH THE NEW YEAR, COMES A NEW AIRLINE FOR THE INDIAN AVIATION INDUSTRY

The new low-cost carrier is connecting smaller towns under the government's UDAN scheme

THE NEW LOW-COST CARRIER, FLYBIG IS BETTING ON REGIONAL CONNECTIVITY, USING AN ATR72, AND CONNECTING SMALLER TOWNS UNDER THE GOVERNMENT'S UDAN SCHEME

AYUSHEE CHAUDHARY

The last year certainly went by, having presented many challenges for the aviation industry. However, it also nudged the industry towards innovation and shifted the focus more towards regional connectivity. Amid the ups and down, it was a positive start to the New Year for the aviation industry in India as the country's newest airline, Flybig, started its operation under the management team of Gurugram-based Big Charter Private Limited.

"As a young country, India still has towns and cities which are not connected by direct flights, people mostly have no option but to use inconvenient and time-consuming modes of transportation. We at Flybig intend to change this in conjunction with the UDAN initiative," the airline stated.

Flybig is betting on regional connectivity as a recovery resource to come out stronger from the pandemic impacts. Using an ATR72, Flybig is connecting smaller towns under the government's UDAN scheme, which is subsidised by the government to promote regional connectivity. UDAN (*Ude Desh ka Aam Naagrik*) is a regional airport development and "Regional Connectivity Scheme" (RCS) of the Government of India, which aims to "let the common citizen of the country fly", envisioning at making air travel affordable and widespread.The new airline will thus operate several weekly flights on routes under the Centre's RCS, which connects smaller towns and cities and includes government support in the form of viability gap funding, besides tax concessions.

Founded by pilot-turned entrepreneur Sanjay Mandavia, Flybig has already collaborated with over 15,000 agents, and is attempting at striking collaborations with online travel agencies as well to keep forging ahead. Mandavia was also reported to be in the race for acquiring Jet Airways. With Tata raising its stakes in Air Asia, Air India's management expected to change and Jet Airways also hinting towards a comeback, Flybig's entry into the Indian Aviation industry is quite exciting.

As of now, Flybig will reportedly operate three times a week to begin with and eventually look for transitioning to five flights per week from February. The inaugural flight of Flybig took off from its base, Indore on January 3 and concluded its journey in Ahmedabad in the course of an hour and five minutes. The airline has also added an Indore-Raipur flight to its network, an Ahmedabad-Bhopal flight is also expected to begin operations next month. By the end of March, Flybig aims to operate flights connecting all the three cities. A 'special flight' has also been organised by the airline for differently-abled on January 31 in Jabalpur, which is expected to be added in the airline's network in the second stage.

To save service hurdles in the short-term flight duration, the new low-cost carrier, Flybig has also reportedly opted for offering snacks as part of the ticket. With this, the fares are also planned to be kept low but services like a second checked bag and priority check-in will come under extra cost. This way, the airline will follow a hybrid model, by serving snacks on board, but un-bundling other services. "We don't want to sell food on-board as the flying time is less. That will prevent us from giving a proper service and could lead to frustration among fliers. Thus we opted to offer snacks as part of the ticket," said Srinivas Rao, Chief Executive of Flybig.

Aviation consultancy CAPA India also attributes low fares as drivers for strong demand on regional routes. "Our model suggests that if small regional airports are connected to a major regional hub, and a cost-effective regional carrier emerges, there would perhaps be a business case for an affiliate airline in India," CAPA India stated in a research report on regional air travel.

Even when it had not launched its maiden flight, Flybig had flown a chartered Delhi-Shillong flight on December 21 after acquiring a permit from regulator DGCA (Directorate General of Civil Aviation) on December 14. The commencement of this was conducted via an aircraft granted on wet lease from SpiceJet. This was also undertaken to coincide with the Meghalaya government's step to open up the state for tourism as domestic travel recovers gradually from the COVID-19 pandemic."We have won the tender from the state government to operate the Delhi-Shillong flight for three years," Rao had said earlier. From January, the company will operate two weekly flights on the route. Eventually, added the senior executive, the company plans to deploy its own aircraft on the route. The airline's second focus is aimed on the North-Eastern region of the country. Apart from the Delhi-Shillong route, which the airline has already explored, Flybig will further operate between other states in the region. The base for the carrier is likely to be Guwahati with the Imphal, Aizwal, and Tezpur being on the list to be flown to.

As the domestic air travel in the country is slowly improving, Flybig has managed to gather a decent response from customers in the initial schedules and is determined to take more and more passengers across the country. Additionally as airline capacity is nearing 80 per cent in the country, expecting a full recovery, Flybig might even be able to tap into newer markets in the future.

Going further as well, the airline will aim to operate turboprop aircraft like ATR72 and Q400, which can accommodate 70-80 passengers, for regional routes. "The strategy is to keep costs low, bring down the number of staff per aircraft reasonably and also avail viability gap funding from the government (to fly on routes under the regional connectivity scheme)," Rao said. The airline is reportedly in talks with HAL (Hindustan Aeronautics Limited) to buy four Dornier aircraft that can be also turned into cargo carrier or an air ambulance, as per the needs.

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