

# AERO INDIA 2021

## The show must go on

Over 600 exhibitors, including 203 virtual exhibitors, have registered for Aero India 2021

AERO INDIA 2021 is on course for its 13th edition. While it will be curtailed to only three business days of activity, it still is symbolic of the intent to move forward with business in the new normal. Aero India will see a few firsts and will happen in the backdrop of some historical developments, policy changes, and Atma Nirbhar Bharat Abhiyaan, which have given impetus to the Industry. Over the next decade, billions of dollars of defence acquisitions are under consideration in an endeavour to achieve capabilities to meet the current challenges. The aerospace sector being capital intensive will take the lion's share, coupled with the dynamic and vibrant civil aviation industry in the country.

As of January 30, 2021, Aero India 2021 reportedly has registration from a total of over 600 exhibitors including 203 virtual exhibitors having a combination of over 522 Indian and more than 77 foreign participants from around 14 countries. It will hold the distinction of being the first hybrid air show in the world providing business elements both in physical and 24\*7 accessible virtual form. The aero show will begin against the backdrop of a forward movement on the aero-engine complex, a proposal to converge both civil and military MRO in India, the biggest indigenous order worth around Rs 48,000 cr for 83 LCA Tejas aircraft and also



reported progress on the AVRO replacement program. Indigenously developed helicopters will be a significant focus area both for domestic and export opportunities. Procurement programs like the NUH and NMRH should gain the required momentum towards completion. With the balance procurement as part of MMRCA 2.0 still undecided and the future AMCA under design stage, the field will see major producers worldwide showcasing their advanced fighter aircraft with state-of-the-art arsenal.

This decade is critical for India from various aspects. We expect to see the fruition of some of the significant decisions taken in the last few years — the defence corridors, the DTIS projects, the aero-engine complex,

modernization of all concerned aerospace platforms, integration of UAVs into the defence ecosystem in India — the list goes on.

Aero India 2021 is expected to be a watershed event to charter a development path for ten years of indigenous development so that Indian companies work on increasing their capability and capacity to meet the demand. Persistent groundwork and policy impetus will be required to ensure that Aero India 2021 predominantly acts as the show for export markets.

**Maj Gen Rohit Gupta, SM (Retd):**  
Head, Aerospace and Defence at Primus Partners

**Amit Dugar: VP, Aerospace and Defence at Primus Partners**

## Nod for \$6.5-bn India-made combat jets, business for 500 firms in ecosystem

A SIGNIFICANT business opportunity for local companies in the beginning of 2021, India on January 13 approved the procurement of the \$6.5-billion locally-made combat jets for the air force, boosting the Indian aerospace and defence industry that has been fighting hard against COVID-induced negative sentiments of 2020.

Indian government's highest decision-making body, the Cabinet Committee on Security, which was chaired by Prime Minister Narendra Modi, gave its green signal for signing the deal between the Ministry of Defence (MoD) and the state-run Hindustan Aeronautics Limited (HAL) for the manufacture of 83 'Tejas' Light Combat Aircraft (LCA) for a total cost of Rs 46,898 crore (\$6.5 billion).

This spend — Rs 1,202 crore (\$165 mil-



lion), which will go towards creating a design and development infrastructure — by the Indian government was much awaited by the Indian aerospace and defence industry and the Indian Air Force (IAF), both for different reasons.

While the industry wanted deals so they can come out of their difficult situation induced by COVID lockdown, the air force wanted to enhance its combat fleet strength that has been falling below acceptable lev-

els lately and has touched 30 squadrons against an approved 42 squadrons, due to the phase out of the Soviet-origin MiG-series combat jets.

HAL, which has completed licenced production of Sukhoi Su-30MKIs and the Hawk Advanced Jet Trainers in recent years, will see its order book swell with this latest purchase by the government.

The purchase of the Tejas is part of Modi's \$250-billion military modernisation plan that will continue till 2025 and is key to India's efforts to counter a collusive threat from nuclear-armed neighbours China and Pakistan.

Today's approval included the procurement of 73 Tejas Mk1A variants of the

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"Highly appreciate efforts of the Indian organisers to hold in the current conditions the 13th edition of Aero India 2021 — one of the most prominent exhibitions in the world. Historically, Russian-Indian defence ties constitute the main pillar of the special and privileged strategic partnership between our two friendly countries. We are successfully moving towards implementation of all priority projects — S-400 systems deliveries, AK-203 Kalashnikovs contract, Ka-226 helicopters supplies and production in India, as well as an advanced cooperation in the areas of combat aviation (including Su-30MKI), main battle tanks (T-90), frigates, submarines and missiles, along with joint production of the unique Brahmos. I am very proud to note that

Russia will be one of the biggest exhibitors at the Aero-India 2021. We plan to demonstrate Su-57, Su-35 and MiG-35 fighter jets, helicopters Ka-52, Ka-226, Mi-17B-5, Mi-26, S-400 systems, and many others. Wishing the organisers and participants successful engagements and all the best!"

**H.E. MR NIKOLAY R. KUDASHEV, Russian Ambassador to India**

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## Nod for \$6.5 bn India-made combat jets, business for 500 firms in ecosystem

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Defence Research and Development Organisation (DRDO) designed combat aircraft and 10 of its Mk1 trainer aircraft.

India's Minister of Defence Rajnath Singh tweeted, "The CCS chaired by PM Sh. @narendramodi today approved the largest indigenous defence procurement deal worth about 48000 Crores to strengthen IAF's fleet of homegrown fighter jet 'LCA-Tejas'. This deal will be a game changer for self reliance in the Indian defence manufacturing."

It is the first 'Buy (Indian-Indigenously Designed, Developed and Manufactured)' category procurement of combat aircraft with an indigenous content of 50 per cent, which will progressively reach 60 per cent by the end of the manufacturing period.

An indigenously designed, developed and manufactured four-plus generation fighter aircraft, Tejas is expected to be a potent platform to meet the operational requirements of the IAF.

Tejas Mk-1A variant is equipped with critical operational capabilities of Active Electronically Scanned Array (AES) Radar, Beyond Visual Range (BVR) missile, Electronic Warfare (EW) suite and air-to-air refuelling (AAR).

"The LCA-Tejas is going to be the backbone of the IAF fighter fleet in years to come. LCA-Tejas incorporates a large number of new technologies many of which were never attempted in India. The indigenous content of LCA-Tejas is 50% in Mk1A variant which will be enhanced to 60%," Rajnath Singh tweeted.

The Cabinet's approval for the Tejas procurement included infrastructure development by the IAF under the project to enable them to handle repairs or servicing at their base depot so that the turnaround time would



get reduced for mission critical systems and would lead to increased availability of aircraft for operational exploitation.

This would enable IAF to sustain the fleet more efficiently and effectively due to availability of repair infrastructure at the respective bases.

"Under the Aatmanirbhar Bharat Abhiyaan (Self-Reliant India Initiative), India is continuously growing in its power to indigenously design, develop and manufacture advanced cutting edge technologies and systems in the defence sector," the MoD said in a statement after the Cabinet's decision.

"About 500 Indian companies including MSMEs (Micro, Small and Medium Enterprises) in the design and manufacturing sectors will be working with HAL in this procurement. The programme would act as a catalyst for transforming the Indian aerospace manufacturing ecosystem into a vibrant self-sustaining ecosystem."

According to HAL officials, the production rate for this increased requirement by IAF is being augmented from eight to 16 aircraft annually

**An indigenously designed, and developed fighter aircraft, Tejas is expected to be a potent platform to meet the operational requirements of the IAF**

through the creation of state-of-the-art new facilities in Bengaluru.

"The HAL has already set-up second line manufacturing facilities at its Nasik and Bengaluru Divisions. Equipped with the augmented infrastructure the HAL will steer LCA-Mk1A production for timely deliveries to the IAF," the Indian defence minister tweeted.

Tejas would have the highest level indigenisation in comparison to any programme of this scale with progressive indigenisation of critical technologies, thereby making India a technologically self-reliant nation. The programme would look at developing technologies indigenously, the officials, with direct knowledge of the project, said.

LCA 'Tejas' programme follows the system integrator model and has created a national aerospace ecosystem with the participation of 560 companies from Large to Small and Medium Enterprises, which encompass all the facets of aircraft design and manufacturing, they said.

The LCA Mk1A programme is expected to generate 5,000 primary jobs in India, apart from fostering local industry and driving skill development of the young Indian work force. More than 200 Indian companies are involved in tooling, GSEs, and GHEs supplies for the Tejas Mk1 programme.

Till date, the LCA project is estimated to have produced 50,000 primary and secondary jobs across the nation. For the first time in the nation's aerospace history, the LCA programme has enabled partnership with Indian private players to manufacture aircraft fuselage and wings.

Some of the major companies contributing in the LCA programme from the Indian private sector are VEM Technologies Private Limited, Larsen & Toubro, Dynamatic Technologies Limited, Alpha — Tocol Engineering Services Private Limited, Tata Ad-

vanced Material Limited, Data Patterns India Private Limited, Pendios Technologies Private Limited, and Compupower Private Limited, among many others.

"The decision taken will considerably expand the current LCA ecosystem and help in creating new job opportunities. HAL follows a system integrator model in LCA Mk1A program and acts as an umbrella organisation, fostering manufacturing & design capabilities in pvt. industry," Rajnath Singh tweeted.

Former HAL chairman Dr R. K. Tyagi complimented the Narendra Modi government for the "positive decision" regarding the Mk1A variant of Tejas, and congratulated the HAL, the DRDO and the IAF for the government decision.

"It is a great step towards self-reliance in aerospace manufacturing in India and will create an excellent ecosystem with HAL, Bharat Electronics Limited, L&T and other 160 plus Indian companies, including MSMEs, participating in the production of the Tejas jets. The future of LCA is important for India," Tyagi said.

"We must form a national advisory group of LCA for effective execution and technology adoptions. HAL also needs to increase annual production capacity. The skills gained under the LCA project should now be converted into a new national programme for Indian Regional Transport Aircraft."

"The LCA-Tejas programme would act as a catalyst for transforming the Indian aerospace manufacturing ecosystem into a vibrant Aatma Nirbhar self-sustaining ecosystem. I thank the Prime Minister Shri @narendramodi for this historic decision taken by the CCS today," Rajnath Singh tweeted.

— N C Bipindra  
IndoStrat Enterprises

Russia and India have been supporting and building up mutually beneficial strategic partnership for decades. Our cooperation is firmly based on unprecedented trust at all levels of interstate interaction, on long-term ties and mutual respect. Bilateral military-technical cooperation between our countries is strengthening every year. Rosoboronexport and Rostec State Corporation are ready to cooperate with India in any direction.

**ALEXANDER MIKHEEV**  
Director General  
JSC Rosoboronexport



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## Thales: a steadfast partner in India's growth story

AS INDIA marches towards its goal of 'Aatmanirbharta' or self-reliance, it opens up immense opportunities for local and global organisations across defence and aerospace sectors among others to work together and strengthen the industrial ecosystem in the country.

Backed by its strong presence in diverse verticals like defence, aerospace, transportation and digital identity and security, Thales has been an unwavering partner to India's ambitious plans and growth story by sharing its niche technologies and expertise. As a company driven by its purpose of building a future we can trust, Thales has been striving to closely work with its customers and cater to their requirements with the best possible solutions. Recently, Thales moved to a bigger and smarter India headquarter that also has a bigger engineering centre dedicated to its digital identity and security business in Noida, Uttar Pradesh. This new office is a key stake for Thales in India; it symbolizes the group's long-term commitment to the country, and demonstrates how Thales is growing bigger and becoming more local here. In its journey of close to 70 years in the country, Thales has built a mature industrial footprint backed by its joint ventures with Bharat Electronics Ltd (BEL) dedicated to radars, with Samtel dedicated to military avionics and



Picture Credit: DASSAULT A. BONFORT



**Mr. Emmanuel de Roquefeuil,**  
VP & Country Director,  
Thales in India

Reliance Aerostructure Limited for electronic warfare and airborne radar as well as over 75 supply chain partners, and other industrial partners. The company has also been closely working with Hindustan Aeronautics Limited (HAL) for over

five decades.

Thales is a proud member of the Rafale India team. It has also successfully undertaken the upgrade of the Mirage 2000 programme together with Dassault Aviation while working closely with HAL, among other key programmes of the Indian Air Force, Indian Navy and Indian Army. It continues to bring its latest technologies that serve the modernisation needs of the Indian Armed Forces.

Thales also understands the potential and the societal impact of the digital revolution that the world is witnessing. The company's investment of more than 7 billion euros globally in the digital innovations such as connectivity, Big Data, arti-

cial intelligence, and cybersecurity stands as a testament to this belief. These technologies have been supporting businesses and organisations across different sectors in which Thales operates, and also governments in their decisive moments.

Innovation fostered by research and development is a key value for Thales. Its Engineering Competence Centres (ECC) in the National Capital Region and Bengaluru coupled with its tie-ups with Indian academia embody this key value. The Bengaluru engineering competence centre specialises in defence, aerospace, and transportation, and the one in Noida and Gurugram is focused on Digital Identity and Security including cybersecurity, IoT, biometric as well as big data analytics solutions.

Leading through innovation and co-creation, Thales is all geared up to groom the next generation of talented engineers. The company has a resolute to continue supporting its customers' ambitions as they push towards the future, powering the India of tomorrow, today.

Going forward, Thales will continue to develop capabilities for local engineering, procurement from India and strengthen its local partnerships. Building collaborations with the Indian industry and transforming the country into a defence manufacturing hub shall remain a priority of Thales' focus for India.

## Start-ups in Aerospace and Defence sectors

OVER THE last ten years, India has emerged as one of the strongest start-up centres for the world - driven by factors such as cultural change, vast talent pool, access to funding, consolidation, evolving technology and strong domestic market. The numbers are growing in good pace — from nearly 3,000 start-ups in 2014 to approximately 10,000 by 2020, surely indicating a potential revolution that may bring mass entrepreneurship into picture. While many sectors are leading from the front like Fintech, Healthtech, Edutech, Data Analytics and B2B Commerce, some sectors like Aerospace, Defence, Food tech and Pharma are poised to take off in near future.

Technology and innovation are the bedrock of a vibrant Aerospace & Defence (A&D) ecosystem and start-ups act as a perennial source for nurturing technologies. India currently has 194 defence tech startups working under the startup India mission, of which, 44 are working with 'Innovations For Defence Excellence (iDEX)' initiative and developing solutions related to automated robotics, individual protection systems, navigation systems and Unmanned Aerial Vehicle (UAVs)/drones.

Several initiatives have been launched in order to achieve self-reliance and to foster innovation and technology development in Aerospace & Defence (A&D) through iDEX. Separate procedure for 'Make-II' category (Industry funded) has been notified under Defence Procurement Procedure to encourage indigenous development and manufacture of defence equipment. Number of industry friendly provisions such as relaxation of eligibility criterion, minimal documentation, provision for considering proposals suggested by industry including start-ups/individual etc. have been introduced in this procedure. The government has further proposed to set up innovation hubs, Incubation centres in several institutions and organizations in the country like DRDO under iDEX & Atal Innovation Mission (AIM).

The DRDO has evolved a new industry-friendly patent policy for the transfer of DRDO developed technologies to industries. The policy will help Indian start-ups to get free access to use DRDO patents and work on innovative solutions aimed to improve India's defence capabilities. The Indian government is also considering to fund 250 start-ups over the next five years (approximately Rs 500 crore) to achieve around 50 'tangible innova-



tion' for the Indian Aerospace and Defence sectors.

As per latest SIPRI report, India, known to be one of the top importers in defence, has entered the list of top 20 exporters of defence equipment in 2020. As we target a \$26-billion Aerospace & Defence (A&D) industry in India, backed by strong domestic demand and \$5-billion exports by 2025, startups in this field need to enhance their contribution both towards technology development and world class manufacturing. Start-up eco system in Israel is an ideal example that can be imitated. It presents a perfect mix of technology and innovation, stemming primarily from start-ups, and has powered Israel to become an advanced, hi-tech global centre for Aerospace & Defence (A&D).

Successful start-ups emerging from India are a result of clear vision, commitment, patience and persistence, and A&D sector is no exception to it. We need to identify and fill technological gaps with innovative approach, out-of-box ideas, agility to the customer requirements, speed of technology development, for generating sustainable start-ups in A&D.

The government on its part needs to continue with the momentum of launching new initiatives/ schemes under the aegis of Aatmanirbhar Bharat/ Make In India/ Startup India, tracking them and ensure 'On-Ground' implementation and benefits to the targeted entities, aided by policies and faster decision-making and approvals. It should act as a catalyst to help start-ups surmount industry entry barriers thereby encouraging top brains and entrepreneurs to enter A&D sector, resulting in development of innovative technologies, achieving efficiency at optimum cost.

The ultimate aim however is to stand up to the demands for self-reliance in arming the Indian armed forces and also boosting business by exporting to friendly nations thereby becoming a strong technoeconomic force to reckon in the this volatile global geopolitical situation.



**Vikas Manral**  
CoFounder of  
SolutionBuggy  
and A&D expert

## Reaffirming commitment to advancing India's security

LOCKHEED MARTIN is showcasing its diverse portfolio of defence capabilities and solutions at the 13th edition of Aero India 2021 in Bengaluru. The company's exhibit this year includes a broad span of state-of-the-art capabilities, including the F-21 aircraft, MH-60R "Romeo" multi-mission helicopter, and the C-130J Super Hercules aircraft.

"Aligned with the Indian government's 'Aatmanirbhar Bharat' Abhiyaan and the 'Make in India' initiative, we look forward to participating in Aero India 2021 and reinforcing our commitment to supporting the growth of an indigenous defence manufacturing ecosystem while continuing to deliver our best capabilities to support the Indian MoD and Services," said William (Bill) Blair, vice president and chief executive, Lockheed Martin India. "We see tremendous strength and opportunity in India's defence industry — both



**William L. Blair,**  
Vice President and Chief  
Executive, Lockheed Martin India

public and private including start-ups and Micro, Small & Medium Enterprises (MSMEs). Aero India serves as an excellent platform for us to explore new partnerships and strengthen existing ones."

Lockheed Martin's presence at the show will be in strict accordance with



MH-60R

COVID-19 protocols laid down by the Ministry of Defence and state government to ensure the safety of employees, customers, and visitors.

Lockheed Martin has nearly 240 suppliers — including MSMEs that feed into its two joint ventures, TLMAL and Tata Sikorsky Aerospace Limited — that benefit from the vision of Lockheed Martin and Tata working to-

gether. Lockheed Martin has integrated more than 70 Indian suppliers, including MSMEs, into its global supply chain. At the show, the company representatives will discuss partnership opportunities with Tier 1 suppliers and prospective Indian industry partners that strengthen India-US defence industrial ties and "Make in India" opportunities.



## Key support aircraft awaiting approval

*The first 24 aircraft manufactured in India will have 30 per cent indigenous content which is expected to progressively increase to 60 per cent for the remaining*

India's air force is keenly awaiting approvals for procurement of two aircraft that will help bolster its operations and will turn out to be force multipliers for the Indian military. One is the European aerospace major Airbus' C295 cargo plane, a 'make in India' proposal for which has been pending to be placed before the Cabinet Committee on Security (CCS) of the central government for a final decision. The other is the Indian Air Force's requirement for a midair refueller that will enhance the range of almost every combat aircraft in the fleet.

The CCS will soon take a call on the procurement of 62 medium transport C295 aircraft for the IAF and the process has been set in motion to place the procurement proposal for a decision, according to officials. In March 2019, a contract negotiating committee (CNC) of the Ministry of Defence had concluded negotiations with the joint venture company formed between India's Tata Advanced Systems Limited and Airbus, as partners in the bid for contract to supply the 62 twin-engine turboprop C295 aircraft.

"A contract will be entered into with the joint venture for the 62 aircraft after the proposal is cleared by the CCS. The process has been initiated," said an IAF source. The total cost of the contract is expected to cost more than \$3.1 billion.

Apart from the 56 C295 aircraft that will be meant for the IAF, the remaining six will be handed over to the Indian Coast Guard (ICG). The Defence Acquisition Council of the GOI had cleared the proposal to procure 56 C295 aircraft for the IAF in 2015. The proposal for procuring six additional aircraft for the ICG had been made in 2016.

In 2013, the IAF had floated a tender to procure 56 medium transport aircraft in order to replace its fleet of Hawker Siddeley HS748 Avro transporters that have been in service for over 50 years now. The HS748 transport aircraft have been man-



### The Cabinet Committee on Security will soon take a call on the procurement of 62 medium transport C295 aircraft for the Indian Air Force

ufactured in India by defence public sector unit Hindustan Aeronautics Limited (HAL) through Transfer of Technology from the British aircraft manufacturer Avro.

At present, the IAF operates around 50 HS748 transport aircraft but these have been facing issues pertaining to ageing due to lack of upgrades and are on the verge of being phased out of service. The C295 is a highly versatile tactical aircraft that can be used for different missions including for early warning systems, for mid-air refuelling or for maritime patrolling and anti-submarine warfare.

The C295 aircraft is also being considered as an effective replacement for IAF's twin-engine turboprop military transport aircraft Antonov An-32, which have been in operation since 1984. Nearly 100 An-32 platforms are in service with the IAF, but the aircraft have been marred with a series of accidents as well as lack of timely upgrades due to non-availability of spare parts. The Soviet-era An-32 transport aircraft, now being manufactured in Ukraine, has been involved in at least 14

crashes in India.

The joint venture facility for the manufacture of 46 C295 aircraft in India is likely to be set up near Bengaluru in Karnataka. The first 24 aircraft manufactured in India will have 30 per cent indigenous content which is expected to progressively increase to 60 per cent for the remaining 22 planes.

Senior Air Force officers, including Air Chief Marshal RKS Bhadauria, have indicated that the IAF is now keen on "leasing" midair refueller aircraft instead of outright purchase, at this point in time, as the requirement for such a capability has been increasing felt by the force.

Recent reports have suggested that the IAF has already sent out requests for leasing from Boeing and the European aerospace major Airbus at least two tankers to overcome India's critical shortage of midair refuelling capability.

It said the Airbus has been asked to quote pricing for leasing of two of its A330 Multi Role Tanker Transport (MRTT) aircraft. Boeing, on the other hand, has been sent a request for only one of its tanker KC-46, a derivative of the Boeing 767 passenger jet. This has led to speculation that India might end up leasing three tankers and will go in for a large order of six refuellers in the years to come, based on the experience of using these leased aircraft.

On two previous tendering processes of the IAF, the force had made up its mind

to buy the A330 MRTT, and it was believed that this aircraft would be the choice of the IAF for leasing of this capability too. However, in anticipation of a full-fledged tender for purchase of the tankers, Boeing had made its case before the Indian defence establishment for the KC-46 tanker and expressed its intent to bid to meet the Indian requirement.

Leasing as a procurement option has been included in the Defence Acquisition Procedure that came into effect from November 1, 2020. India had last year leased two General Atomics' Sea Guardian drones for surveillance purposes for the Indian Navy. The tanker leasing by IAF will be the second such effort if this procurement proposal is processed at the earliest by India.

IAF currently operates six Russian Ilyushin IL-78 tankers, first inducted in 2003, and clearly wants to acquire more of the midair refuelling capability to enhance its operational range and strategic reach, which means the fighter aircraft can operate for longer durations and do not have to return to the air bases for refuelling, thus expanding its scope of availability in the air to counter enemy threats.

India's Rafale, Sukhoi and the recently approved Tejas Mk1A aircraft, all have midair refuelling capability. The midair refuelling is a new capability, a major enhancement for the Tejas Mk1A from its Mk1 Final Operational Clearance configuration. In fact, the Rafales that flew from France to India before its induction last year were refuelled midair by two A330 MRTT of the French Air Force, as the Indian combat jets flew 8,500 km from Merignac to Ambala air base.

Based on this experience, the French government has offered six A330 MRTT aircraft to India on an inter-governmental contract, if IAF was interested in having the Airbus aircraft as a force multiplier.

— N C Bipindra  
IndoStrat Enterprises

## BAE Systems to show air, land, sea capabilities

THE GLOBAL defence, aerospace and security company, BAE Systems, will exhibit a number of its world-leading capabilities, alongside its commitment to Make in India, at next week's Aero India, taking place from 3-5 February in Bengaluru. Under the theme of "Partnering in India to Make in India", the company will demonstrate how its products and services — across land, air and sea — provide a vital advantage to its Indian customers, as well as drive indigenous production.

Ravi Nirgudkar, India, Managing Director, BAE



**Ravi Nirgudkar**  
India, Managing Director,  
BAE Systems

Systems, said: "BAE Systems is proud to take a lead role at Aero India 2021. The Company's participation endorses our place as a founding partner of defence manufacturing in India and as a key supporter of Aatmanirbhar Bharat and Make in India in the defence sector. "Whilst Aero India 2021 will be a different event to other years, it will still provide a great opportunity for the BAE Systems team — from India and overseas — to engage with our key stakeholders and partners and explore ways to expand the company's in-country supply chain."

## Empowering Defence, Aerospace sectors

TWO PROMISING developments in Indian aerospace and defence manufacturing have been the focus on 'Make-in-India' and the emphasis being placed on Small and Medium Enterprises. These are steps in the right direction which will boost production and propel growth. SMEs in India provide 45% of our industrial output, 40% of our exports, and contribute to 17% of the nations GDP. There are 42.5 million SMEs in the country (both registered and unregistered) which employ 40% of the Indian workforce (second only to the Agricultural sector) and produce over 9,000 different products.

There have been some credible success stories that have emerged as suppliers to the likes of Boeing, Airbus, Lockheed, Dassault, Thales, Safran, etc. These have been results of disciplined process follow-ups, steep learning and diligent quality adherence. This also included heavy hand holding by the global giants. While this started as Offset obligations on the OEMs doing business with Indian Government, the small manufacturing organisations have been quick to invest their time and efforts and in return imbibe the global best practices.

Most Foreign Equipment Manufacturers have set up their bases in India for products as varied as aircraft, guns, electronics, vehicles and a host of others. An aircraft OEM typically manufactures the nose of the aircraft (which is packed with the most vital sen-



**Neelu Khatri**  
Managing Director,  
BluOrange Synergies Pvt Ltd

sors and electronics). All other components such as the fuselage, wheels, seats, pipes and each of the 40,000 major and minor component that go into the making of an aircraft are sourced from their suppliers. These suppliers prepare products to match the exact specifications required, deliver as per a tight schedule thus converging into assemblies and integration to form an aircraft or an engine or gun.

If stringent quality and timelines are followed, Indian small businesses could well serve many products as diverse as rivets, seats, motherboards, wheels, pipes carburetors, fuel tanks, gear boxes, software, etc. This model has evolved well in the Indian automobile industry. Aerospace and Defence SMEs could also potentially get into this web of sustained and long-term partnership matching the expected quality. It would boost our own standards of quality and delivery, provide a fillip to local employments and start a self-perpetuating cycle of growth.

Small enterprises hold the key to growth and encouraging them will enhance their productivity. It will lure foreign investment and boost manufacturing especially if they find a place in the reliable and steady supply chain. 'Make in India' initiative can only then truly elevate India to be the next manufacturing hub of the world. SOPs of tax holidays, easy financial support and provisioning of better infrastructure by the state governments will definitely enhance this productivity further.

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## Boeing: Make in India, for the world

*Building internal capabilities will drive innovation and contribute to the growth of Indian aerospace and defence*

BOEING IS committed to supporting the considerable growth potential in India's aerospace sector including aircraft, infrastructure expansion, and services. At Aero India, we will continue our discussions on India's future aviation, defence, and security requirements, as we leverage and develop in-country manufacturing and engineering skills. We will be demonstrating our commitment to India and highlighting our strategic investments in developing India's aerospace ecosystem.

Boeing will showcase capabilities in multi-role fighter aircraft, vertical lift platforms, aerial multi-role tankers, unmanned systems, and commercial platforms, in addition to our services, technologies, and local sustainment

capabilities. The exhibit will feature a range of advanced capabilities including the F/A-18 Block III Super Hornet, F-15EX, KC-46A, AH-64E Apache, P-8I, 737-10, and 787-9.

At Boeing, we believe building internal capabilities will drive innovation and contribute to the growth of Indian aerospace and defence. Boeing teams in India undertake high-quality, advanced aerospace work spanning engineering design of structures and systems, manufacturing support, developing systems to test aircraft, and providing digital solutions to air-



AH-64E Apache

line customers. Cutting-edge R&D in traditional and emerging areas such as next-generation airplane health man-

agement, environment-friendly coatings, advanced networks and secure-communication are areas where teams

are leveraging new-age technologies to replace traditional approaches. We continue to grow a globally competitive supplier base in India, with strong partnerships aligned with the Aatmanirbhar Bharat vision. Our sourcing from India stands at US\$1 billion per year from a large and growing base of 250 suppliers who are manufacturing critical systems and components for some of Boeing's most advanced products. Our joint venture with Tata, Tata Boeing Aerospace Limited (TBAL), in Hyderabad is producing aero-structures for Boeing's Apache helicopter, including fuselages, secondary structures and vertical spar boxes for Indian and global customers, employing over 500 engineers and technicians. Apache fuselages and

structures made in this cutting-edge factory are not just for the Indian Army but also customers around the world, including the US Army. We look forward to seeing the Indian Army's recently contracted six new Apaches rolling down that production line. The state-of-the-art facility is an example of Boeing's strategic focus on Make in India.

Given the current environment, we have designed our presence at Aero India taking all necessary precautions to safely engage with our customers, suppliers and the media. We will conform to the guidelines laid down by the Ministry of Defence and the state government to ensure the safety of our team members and visitors at the exhibition.



Salil Gupta  
President, Boeing India



Picture credit: Boeing

## MBDA puts on shows its 'Make In India' missiles and weaponry

MBDA, the maker of the Rafale's game-changing weaponry, is showcasing its Make in India commitments during Aero India 2021. Notably MBDA's stand in Hall B 3.4 features a display wall of missile system components made in India by the company's large Indian industrial ecosystem. Also exhibiting in Hall B is L&T MBDA Missile Systems Ltd, MBDA's joint venture with Larsen & Toubro, which will be displaying the systems it has offered to the Indian Armed Forces as well as its work on MICA missile launchers for the Indian Air Force's new Rafale fighter aircraft.

MBDA is not new to partnership with the Indian Armed Forces and Indian industry. Indeed it has been delivering battle-winning capabilities to the Indian Air Force and collaborating with Indian industry for over 50 years. Throughout this history, there have been two guiding principles: to provide the very best technologies to the Indian Air Force, and to work in true partnership in support of the Indian Defence Industry. The company then is fully committed to the 'Make in India' programme, which aligns with MBDA's long-term strategy.

Aero India 2021 will also be a milestone year for MBDA, marking the first exhibition where Indian Air Force-operated Rafale fighter aircraft will be pre-



Boris Solomiac  
General Delegate, MBDA India



sent. MBDA is well known as the manufacturer of the weaponry that makes Rafale such a potent force in the sky. Perhaps best known is the ramjet powered

and network-enabled Meteor beyond visual range air-to-air missile from MBDA. This next generation missile is widely recognised as a game changer for air combat, and will provide the Indian Air Force with an unrivalled air dominance capability. Key to this is Meteor's throttleable ramjet engine, active radar seeker and datalink that combine to provide un-

matched end-game speed and manoeuvrability at greatly extended ranges, resulting in its all-important 'No-Escape Zone' being more than three times greater than any other existing or planned BVR weapons.

Also arming India's Rafales is the SCALP deep strike cruise missile, which is no less game-changing than Meteor. SCALP has proved itself unerring with its unmatched ability to combine very long range with devastating target effect on even the most hardened of military infrastructure during combat operations. Its long-range enables it to be fired at extended stand-off ranges, beyond the reach of hostile air defence systems or even outside hostile airspace altogether.

Industrial partnership is of equal importance though, given the importance of sovereign industrial defence capability. MBDA has been assisting the development of sovereign Indian missile industry, both public and private, for over 50 years. Partnerships MBDA has formed with Indian industry have seen over 40,000 missiles of the MILAN family produced in India — a noteworthy and ongoing success. Key components for both MICA and ASRAAM missile systems are made in India, and a selection of Indian-made components are on display in a special Make in India display area on the company's stand.

### INTERVIEW

Anandi Ramalingam, Director Marketing, BEL



**What are the latest products and systems that you are planning to exhibit at Aero India 2021?**

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 the state-of-art equipment on offer will be a force multiplier for any Defence force.

**Can you throw some light on the key growth drivers for BEL going ahead?**

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 5 years, BEL's turnover from non-defence business has been around 15% to 20% 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 and Integration, Railway and Metro Solutions, Software, Electric Vehicles (Li-ion Battery Packs, Fuel Cells, Charging Stations), Home-



land Security and Smart City businesses, Smart Metres and healthcare electronic equipment including ICU Ventilators to combat COVID-19.

**How is your company gearing up to realise the Government's Aatmanirbhar initiative?**

Defence has been identified as a core sector to boost the Make in India vision of achiev-

ing \$5 Billion Exports. Major initiatives by BEL towards Make in India/Aatmanirbhar 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, startups 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 GoI 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 pursuing 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 complementary capabilities and assuming the role of a Lead integrator / Tier-1 partner for indigenous manufacturing.

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.

### DESCRIPTION

Light Combat Helicopter (LCH) is a twin-engine, dedicated combat helicopter of 5.8 tonne class. This helicopter has a narrow fuselage and a tandem configuration for Pilot and Co-pilot/Weapon System Operator (WSO). It incorporates a number of stealth features such as reduced visual, aural, radar and infra-red signatures and crashworthy features for better survivability.

### The major features of LCH are:

- Glass Cockpit ■ Crashworthy bottom structure ■ Crashworthy fixed tricycle type with tail wheel landing gear ■ Canted flat panels for low Radar Cross Section ■ Integrated Dynamic System
- Hinge less Main Rotor / Bearing less Tail Rotor ■ Anti-Resonance Isolation System
- Integrated Architecture and Display System (IADS) ■ IR Suppressor ■ Counter Measuring Dispensing System (CMDS) ■ EO pod, Helmet Mounted Display System & EW suite
- 20 mm Gun, 70 mm Rocket & Air to Air Missiles ■ (ATAM) & Air to Ground Missiles (ATGM)

### SPECIFICATIONS

- MTOW : 5800 kg ■ Max. speed: 268 kmph ■ Range : 550 k ■ Service Ceiling: 6.5 km
- Oblique climb rate : 12 m/s
- Power Plant ❖ SHAKTI engine (2 no.) ❖ Power is 1032 kw

### Light Combat Helicopter



### BrahMos Missile



### DESCRIPTION

BRAHMOS is a Supersonic Cruise Missile that can be fired from various platforms and under stringent launch conditions. It has established accuracy, reliability, ease of operation, faster reaction time, and practically no possible countermeasures. BRAHMOS missile has an identical configuration for the land, sea, sub-sea, and air platforms. It is launched from a canister, which also acts as a storage cum transportation container. It has a shorter flight time leading to lower target dispersion and quicker engagement. BRAHMOS missile has a wider range of flight trajectories and operates on "Fire and Forget" principle.

### SPECIFICATIONS

- Range Of 290 kms
- Flight Altitude: 5 m to 15 km
- Speed up to 2.8 Mach all through the flight
- Warhead: Up to 300 kg conventional





## BRAHMOS: Fortifying India's modern warfighting capability

**S**AFEGUARDING THE sovereignty and territorial integrity of India from across the spectrum of land, sea and air, world's deadliest supersonic cruise missile BRAHMOS has massively bolstered the Indian defence force's combat capability in a multi-threat, highly complex, integrated war environment in the backdrop of rapidly evolving security landscape. As a top-of-the-line modern military asset deployed by the country's Tri-Services, the precision attack weapon has rapidly and radically transformed India's military posture and stature in the 21st century.

The number of successful test firing missions undertaken by the Indian Army, Navy and Air Force between October and December 2020 has re-positioned BRAHMOS as the "ultimate force multiplier" having unparalleled deterrent capability in times of volatility and conflict.

The Indian Army conducted two back-to-back successful test firing missions of a new, enhanced BRAHMOS land-attack variant in "top attack" mode on 24th and 25th November 2020 to validate the missile's surface-strike capability over stand-off ranges with meticulous precision. The twin tests also proved swift deployability of the weapon in a very short time to undertake combat operations from India's strategic positions.

Reinforcing its deadly ship-strike capability during test firings conducted by the Navy off India's western and eastern sea



INS Ranvijay

coasts — first on October 18, 2020, from the large guided missile destroyer 'INS Chennai' in the Arabian Sea, followed by a second test on December 1, 2020 from Rajput-class destroyer 'INS Ranvijay' in the Bay of Bengal — BRAHMOS precisely engaged naval targets with lethal firepower while performing high-level and extremely complex manoeuvres. The tests re-positioned the precision guided missile as India's best and finest in undertaking naval warfare missions in the high seas.

The Indian Air Force also demonstrated its massively galvanised air combat prowess by conducting a successful launch of the advanced BRAHMOS ALCM (air-launched cruise missile) from its frontline air-superior fighter platform Sukhoi-30MKI against a sea target in the Bay of Bengal on October 30,

2020. Earlier on January 20, 2020, the IAF commissioned the formidable "Tiger-Sharks" squadron of Sukhoi-30MKIs armed with the powerful BRAHMOS-ALCM in southern India. Subsequently on June 10, 2020, BRAHMOS-A received the "fleet release clearance" (FRC) certification from CEMILAC, Bangalore, which paved the way for the IAF pilots to use the deadly weapon during live combat operations.

"BRAHMOS has made an indelible mark in the 21st century world. It has continued to evolve and grow, ever expanding the horizons of its operability, adaptability and deployability. We have been constantly working to improve and enhance the unique capabilities of this highly lethal weapon that has rendered India and its Armed Forces a distinct, unparalleled advantage to counter an

enemy with deterrence and grit. We are proud that BRAHMOS remains truly indispensable and an ultimate force multiplier asset for our military," says Dr Sudhir K Mishra, Director General BrahMos, DRDO, and CEO & MD of BrahMos Aerospace, the India-Russia defence JV producing the weapon system.

Since its maiden successful launch on June 12, 2001, the missile has been tested for over 80 times having highest success rate — an impeccable and enviable record for any country.

Meanwhile, reinforcing its pledge to an Aatmanirbhar Bharat and the Make In India programme, BrahMos Aerospace has expedited its efforts to incorporate more indigenous content in the BRAHMOS weapon system. The number of successful test firings of the missile featuring major indigenous technologies and components undertaken over the past two years, including the recent one on September 30, 2020, have fortified India's national security parameters immensely even while paving the way for reduced production costs of the weapon. The indigenised systems include the seeker, booster, metallic/non-metallic airframe, fuel management system, all ground support equipment among others.

Owing to its incredible attributes and record number of successful test firings till date, BRAHMOS has become one of the most sought-after weapons by several nations.

## Making quality engines

**T**HE INDIAN government is driving increased focus on modernization of its defence technologies and development of indigenous defence manufacturing capabilities with a strong role for both private and public sector. Rolls-Royce shares a rich heritage of partnership with the Indian defence forces, dating back over eight decades when it powered the country's first air force and navy carriers. Today, over 750 Rolls-Royce engines across 10 engine types power Indian Military aircraft. With over 50 years of naval propulsion experience, Rolls-Royce has pioneered some of the most important technical advances in marine propulsion.



**Louise Donaghey**  
Sr. Vice President - India and South East Asia, Rolls-Royce

As we explore opportunities to expand our partnerships in India, at Aero India this year we will be familiarising customers with our naval propulsion capabilities with a focus on the MT30, the world's most power dense in-service gas turbine.

MT30 gives navies more power in less machinery space than alternative engine types and offers ship designers much more options and flexibility in designing future-ready naval vessels.

Derived from the Aero Trent engine family, MT30 offers excellent reliability that allows the ship to operate anywhere in the world without loss of performance or power, with reduced through-life maintenance. One of the key strengths of MT30 is that it has the power for today and tomorrow, so it effectively helps to future proof a platform against the future demands for increased electrical power from system upgrades such as weapons and sensors.

Chosen to power the US Navy's Lit-

toral Combat Ship (LCS) USS Freedom more than twelve years ago, MT30 has become the gas turbine of choice for many advanced programmes for navies world-wide including the U.S. Navy, Republic of Korea Navy, the Royal Navy, the Royal Australian Navy, the Royal Canadian Navy, the Italian Navy, and the Japanese Maritime Self Defence Force. Typically rated between 36MW to

40MW at 100 degrees Fahrenheit (depending on application), and with 100% power-retention through-life, the MT30 is powering some of the world's most capable and advanced naval ships. There is much potential for this product to power the vessels of the Indian Navy and we are committed to serve them.

Keeping in mind India's goals of indigenization and self-reliance, Rolls Royce's commitment to serving the Indian armed forces remains strong as ever. The future will be not about technology transfers and manufacturing alone, but creating a broader ecosystem that includes co-design, co-development, co-manufacturing, supply chain and support. This entails capability creation and skilling, and at Rolls-Royce we consider this one of our core strengths. In India, we are already nurturing skills, developing local supplier base and building capabilities to match global standards of quality and delivery.



Tejas

### DESCRIPTION

Tejas — Indian Light Combat Aircraft (LCA) — together with its variants is the smallest and lightest Multi-Role Supersonic Fighter Aircraft of its class. This single-engine, Compound-Delta-Wing, Tailless Aircraft is designed and developed by ADA with HAL as the principal partner along with DRDO, CSIR, BEL, DGAQA, IAF & IN to meet diverse needs of the Indian Air Force (IAF) and Indian Navy (IN). Tejas is an amalgamation of contemporary concepts and technologies such as relaxed static-stability, fly-by-wire Flight control, advanced glass cockpit, integrated digital avionics systems and advanced composite materials for the airframe.

### SPECIFICATIONS

- Max Speed : Supersonic at all altitudes
- Service Ceiling : 50,000 ft
- 'g' Limits : +8/-3.5

### WEIGHT

- Take-off Clean : 9900 kg
- Empty : 6950 kg
- External Stores : 3500 kg

### DIMENSIONS

- Span : 8.20 m
- Length : 13.23 m
- Height : 4.40 m

### POWER PLANT

- F404-GE-IN20
- Thrust - 8600 kg



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## Army's armed aviation fleet set to get a boost as multiple inductions take place

India is set to boost the army's aviation wing with armed rotary wing capability in the next few years as multiple inductions are taking place following a security assessment

These new inductions comprise six Boeing Co. produced Apache AH64E gunships, 78 Rudra helicopters, which are the weapon system integrated 'Dhruv' Advanced Light Helicopter variants, and the 95 indigenous Light Combat Helicopters, the last two from the Hindustan Aeronautics Limited's (HAL's) stable.

While the Apache gunships are meant for the three Strike Corps — 1, 2 and 21 corps — facing Pakistan along the Line of Control, it could be deployed and used in support roles along the Line of Actual Control facing China too, as has been done in Ladakh, where the two nations are currently in a military faceoff since May 2020.

The fourth strike corps for the mountains along the Line of Actual Control, that is the 17 Corps of the Indian Army, will get the Light Combat Helicopters produced by the Hindustan Aeronautics Limited, the lone state-run aircraft maker of India.

The Rudras are for the 10 Pivot Corps, six of which have a defensive role, with some offensive elements, facing Pakistan. Of these 10 Pivot Corps, only one Corps based at Leh has both China and Pakistan to deal with. Three other Pivot Corps under the Eastern Command are for putting off a Chinese offensive.

India signed the contract for the Apaches for the Indian Army in February 2019 during the visit of then American President Donald Trump. This additional Apaches — 22 of these gunships were bought for the Indian Air Force in 2016 — are for the Indian Army. Boeing has already completed the delivery of the 22 Apaches to the Indian Air Force in 2020 and will do deliveries of the helicopter to the Indian Army from 2023.



India bought the Apache in a hybrid procurement, which means a part of the procurement will be a direct commercial sale between the Ministry of Defence and Boeing, while another significant part of the deal is through the foreign military sale route, which is a government-to-government contract with the United States.

The foreign military sales contract for the Apache will be for its munitions, training, aircraft certification, and components such as the engines, EO sensors and the radar, while the direct commercial sales deal is for the aircraft (without the engines and the sensors), logistics support for the aircraft, some spares, and services.

The Apache AH-64E that the Indian Army will get is the latest offering from Boeing, the version which has been delivered to the United State Army since November 2011. However, in terms of its capabilities, the Indian Army's Apache will be identical to the Indian Air Force's 22 Apache, according to the company executives.

With regard to Rudra, the Indian Army began inducting them in the force some-

**Rudra is India's first indigenously produced armed helicopter. It has been manufactured by HAL. The first squadron of Rudra was raised in Bengaluru in 2013**

time in 2013 and had placed an advanced order on HAL for 60 of these platforms, in anticipation of getting all necessary approvals for the platform's deployment from the military aviation certification organisation. That apart, the army has also placed an order for 18 more of the Rudra helicopters in August 2017 and are now readying to induct these latest variants of the helicopters soon.

Rudra is India's first indigenously produced armed helicopter. It has been developed and manufactured by HAL. The first squadron of Rudra was raised in Bengaluru in 2013 to take care of any teething problems with the newly pro-

duced aircraft and was tried and tested there. Later, it was deployed in the forward areas with the Pivot Corps covering locations such as Jammu and Kashmir, Punjab, and Rajasthan, apart from the Ladakh region.

Rudra project got the go-ahead in 1998 following the successful development of the cargo variant. Rudra is armed with French Nexter THL-20 chin mounted gun turret housing a 20mm M621 cannon. It would be able to carry Belgian 70 mm rockets, European weapon maker MBDA's air-to-air and air-to-ground missiles, the anti-tank Helina missiles and the indigenous Nag anti-armour missiles. All Rudra cockpits will have Kevlar protection and carry Integrated Defensive Aids Suite from Swedish defence company SAAB AB, with electronic warfare self-protection, which is fully integrated into the glass cockpit.

In light of the prevailing situation at the Ladakh border, two HAL-produced Light Combat Helicopters (LCH) were deployed for operations at high altitude in the Leh sector at short notice to support Indian military missions in August 2020.

"It is the lightest attack helicopter in the world designed and developed by HAL to meet the specific and unique requirements of Indian Armed Forces reflecting the crucial role of HAL in 'Atma Nirbhar Bharat'," HAL Chairman and Managing Director R Madhavan said.

Vice Chief of Air Staff Air Marshal Harjit Singh Arora took part in one such operation along with HAL test pilot recently, by taking-off from high altitude location to a forward area for a simulated attack on a high-altitude target. This was followed by a landing at one of the most treacherous

helipads in the region. The LCH successfully demonstrated its quick deployment prowess to forward locations in extreme temperatures.

LCH is a potent weapon platform because of its state-of-the-art systems and highly accurate weapons that are capable of hitting any type of target by day or night. The other features of LCH include its ability to operate in the complete 'Area of Responsibility' and altitudes. It has capability to carry adequate weapon load at high altitudes under varied conditions. All these characteristics make it most suitable for hot and high-altitude operations.

The IAF and the Indian Army together need around 160 LCHs. The Defence Acquisition Council had approved the proposal for an initial batch of 15 LCHs. The IAF issued a Request for Proposal for 15 Limited Series Production (LSP) helicopters (10 for IAF and five for the Army) and HAL had submitted its response. Technical evaluation and the price negotiations have been concluded and the order is expected shortly. However, as a proactive measure, HAL has launched production of LSPs in anticipation of orders at its Bengaluru facility, as of August 2020.

The Corps of Army Aviation has created state-of-the-art training facilities in preparation for induction of both indigenous and foreign manufactured helicopters. Integration training is also being carried out by army pilots with the Indian Air Force pilots, as well as on simulators. "Modernisation is helping Army Aviation to be a more potent force," Indian Army Chief General Manoj Naravane said on these armed helicopters induction.

— N C Bipindra  
IndoStrat Enterprises



"The defense cooperation between India and Israel being showcased at Aero India 2021 is unique, building on the two countries' strengths. I am happy to see more and more Israeli companies finding partners in India's industries and contributing together to both our nations' safety and security. Israel was among the first to actively join the 'Make in India' initiative on the ground, producing for India and the world. In addition to making in India, Israel is also developing with India, making both countries more self-reliant. As we continue to forge new partnerships between our countries, we are shaping a better future for India, Israel and the world."

**H.E. DR. RON MALKA**  
Ambassador of Israel in India

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