

# AEROMAG

DAY 3

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*Air Chief Marshal Vivek Ram Chaudhari PVSM AVSM,VM,ADC visiting the Rafael stall at Aero India.*

## Defence Minister Calls for Greater Cooperation in Global Security

**D**efence Minister Rajnath Singh hosted Defence Ministers' Conclave on the sidelines of Aero India 2023 in Bengaluru on Tuesday. The conclave was attended by 160 delegates from several countries, including Defence & Deputy Defence Ministers from 27 countries, 15 Defence and Service Chiefs and 12 Permanent Secretaries from 80

countries. The conclave attested to India's tremendous growth and engagement in the defence and security sectors.

Singh called for greater cooperation to deal with fast-paced changes in an increasingly-complex global security scenario. He said that India stands for rules-based international order, in which "the primordial instinct of the might being

right is replaced by the civilisational concept of fairness, cooperation, respect and equality amongst all sovereign nations".

"Untethered to any faction or alliance of one group of nations against another, India has worked ceaselessly for the upliftment of all nations, especially developing ones," he said.



*S. Somanath, Chairman of the Indian Space Research Organisation - ISRO and Secretary, Department of Space is visiting the LMW stall at Aero India 2023.*



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A detailed view of a Mi-28NE combat helicopter in flight, showing its main rotor, tail rotor, and various armaments. The helicopter is dark green and black with yellow accents. The number '1811' is visible on the side.

## Mi-28NE

Combat helicopter



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## **Government-Industry partnership based on equality & mutual trust: Rajnath Singh**

**D**efence Minister Rajnath Singh has called upon Indian & global industry leaders to support the Government's endeavour to design, develop and manufacture cutting-edge products, using critical technologies, within the country to attain complete 'Aatmanirbharta' in defence, with the overall objective of achieving shared global peace and prosperity. He was addressing over 70 CEOs of local and global Original Equipment Manufacturers (OEMs) during a Round Table organised as part of Aero India 2023.

The minister asserted that India does not want to remain just an assembly workshop and is looking to engage with friendly countries in defence and security based on sharing expertise and capabilities under the 'Make in India, Make for the World' vision of Prime Minister Narendra Modi. He assured industry leaders that



the government is open to new ideas and is committed to fully harness the energy, entrepreneurial spirit and capability of private sector partners in the area of defence production. He extended government's full support towards removing obstacles and facilitating businesses.

Rajnath Singh voiced the Government's resolve of nurturing a vibrant and world-class defence manufacturing industry, terming it as the key driver of Indian economy. He enumerated a number of far-reaching reforms undertaken by Ministry of Defence to create a business-friendly climate in the country. These include setting up of defence corridors in Uttar Pradesh and Tamil Nadu; simplification of industrial licensing processes; hike in cap on FDI in defence; opening of government trial and testing facilities

for the private sector; increase in capital outlay for defence in Budget 2023-24 and launch of Technology Development Fund and Innovations for Defence Excellence. He said, these reforms will enable Indian defence products to compete with established global defence and aerospace companies.

The CEOs Round Table was organised on the theme 'Sky is not the limit: opportunities beyond boundaries'. The participating companies included Boeing, Lockheed Martin, Israel Aerospace Industries, General Atomics, Liebherr Group, Raytheon Technologies, Safran, General Authority of Military Industries, Hindustan Aeronautics Limited, Bharat Electronics Limited, Bharat Dynamics Limited, BEML Limited, Mishra Dhatu Nigam Limited, Larsen & Toubro, Bharat Forge, Dynamic Technologies and BrahMos Aerospace.

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# Being and Splendour of Electromechanics



Karin Punning, CEO, Englo LLC, sounds philosophical while recounting how the firm, launched in Estonia in 1991, has grown into a global leader in design and manufacturing of intelligent electromechanical measuring devices, spanning a wide range of applications including environmental, construction, mining, military, commercial and more

**Karin Punning**  
CEO, Englo LLC

**How successful has Englo been in achieving its vision of becoming a global leader in the design and manufacturing of intelligent electromechanical measuring devices? What are the major milestones?**

We are still on our way to reach the level to be satisfied. There are so many excellent companies in the world, it would be an honour to be one among them. Besides, electromechanics is used for very many purposes therefore it even couldn't be the purpose for any company, it is just impossible to be the best in such a wide area!

We could be the best only in a very narrow field of production of the electromechanical measuring devices.

**What is the share of defence products in the overall business of Englo? What are the main products and services on offer in defence sector?**

The defence products accounts for approximately half of our products and turnover. It has been our strategy from the very beginning to deal with more than one direction of R&D and production, in our case with two directions: the defence/mining/security and building/road construction. The company's well-being and future are less hurt if it deals with more than one field of activity.

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**Englo has a wide range of products for surveillance and inspection in different applications including environmental, construction, mining, military, commercial and more. Could you elaborate?**

No, I couldn't explain it as it has been our 31-years-long life! We founded our company immediately after Estonia got its independence in 1991. There was nothing in our pocket except for great willpower and the experiences in R&D and production of electronic devices for chemical analyses. We started from zero, growing together with our State and its needs and possibilities. Unfortunately, there was no need of equipment for chemical analyses! The first customers came almost at the same time and they were from defence and road construction institutions. These were really quite strange fields for our experiences but as we say "only the brave wolf's chest is fat". To stay alive and fulfil your dreams we have accepted all orders that seemed to be within our reach in terms of our experience and knowledge. It was a difficult, but exciting and challenging time and we came out of it stronger and with a lot of knowledge.

However, we wouldn't recommend anyone to follow the same strategy!

**What are the latest updates on your export business? How do you plan to expand it further?**

We have great plans, specially in expanding our production capabilities and export. To step closer to our dreams we are looking for cooperation with the companies and/or institutions who could be our partners to go on in this direction. We are open to suggestions to discuss about them.

**How strong is the company's R&D capabilities, quality performance measures, and the production facilities?**

All our devices correspond to the quality demands of EU. Please, visit our website [www.englo.eu](http://www.englo.eu) for more information about our devices.

Our R&D capabilities are strong and correspond to currently needed level. Certainly, together with the growth of production facilities and export will also increase the need for extra growth in R&D sector.

**Could you share with us the company's expansion plans and focus areas?**

The growth should have to occur relatively simultaneously in all sectors, e.g. in the export, in production capacity and in R&D sector. We should admit, we are strong in all of our sectors, e.g. R&D and production of the electromechanical devices for building/road construction and defence/security/mining! That will make the future more complicated! Think about it more deeply, it could also be stronger and more flexible.

The question is: Will you be interested to come along with us?



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# Defence Gets Rs 5.94 Lakh Crore in Budget 2023-24, A Jump of 13% Over Previous Year



Raksha Mantri Rajnath Singh terms Union Budget 2023-24 as growth-oriented; Says, it will help in achieving the Government's goal of making India a \$5 trillion economy within few years.

The Union Budget for Financial Year 2023-24 envisages a total outlay of Rs 45,03,097 crore. Of this, Ministry of Defence has been allocated a total Budget of Rs 5,93,537.64 crore, which is 13.18% of the total budget. This includes an amount of Rs 1,38,205 crore for Defence Pensions. The total Defence Budget represents an enhancement of Rs 68,371.49 crore (13%) over the Budget of 2022-23.

The Non-Salary revenue outlay has been enhanced significantly from Rs 62,431 crore in Budget Estimates (BE) 2022-23 to Rs 90,000 crore in BE 2023-24, representing a 44% jump. This expenditure is expected to close critical gaps in the combat capabilities and equip the Forces in terms of ammunition, sustenance of weapons and assets, military reserves etc. This Budget has also sustained the thrust on Modernisation and Infrastructure Development of the Defence Services, by continuing

an upward trend in Capital Outlay.

Increase in the Non-Salary/operational allocations

In keeping with the Government's resolve and focus towards maintaining a high level of Operational Preparedness of the Defence Services to face current and future challenges, the Non-Salary Revenue/operational allocation gets a boost of Rs 27,570 Crore, with the budgetary outlay under this segment augmented from Rs 62,431 crore in BE 2022-23 to Rs 90,000 crore in BE 2023-24. This will cater to sustenance of Weapon Systems, Platforms including Ships/Aircrafts and their logistics; boost fleet serviceability; emergency procurement of critical ammunition and spares; procuring/hiring of niche capabilities to mitigate capability gaps wherever required; progress stocking of military reserves, strengthening forward defences, amongst others.

As a precursor to this increase in the

Non-Salary Revenue segment, the government during the Mid-term review had also enhanced the operational allotments of the current financial year by Rs 26,000 crore, which works out as 42% of the present allocation. This unprecedented increase in the Revised Estimates 2022-23 has ensured liquidation of the entire carry over liabilities during the current year thereby ensuring that there is no dent in the next year's operational outlay of the Services.

The enhanced allocations in the Budget will also cater to Training Aids & Simulators for Agniveers and ensure that they achieve the set standards of training for induction in the Defence Forces.

Thrust on Modernisation and Infrastructure Development Sustained in Union Budget

In the Union Budget 2023-24, the Capital Investment Outlay has been increased steeply for the third year in a row by 33 per cent to Rs 10 lakh





54<sup>th</sup>

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crore, which would be 3.3 per cent of GDP. This will be almost three times the outlay in 2019-20.

Accordingly, the Capital Allocations pertaining to modernisation and infrastructure development of the Defence Services has been increased to Rs 1,62,600 crore representing a rise of Rs 10,230 crore (6.7%) over FY 2022-23. Also, the increase in the Capital Budget since 2019-20 has been Rs 59,200 crore (57%). This increase is a reflection of the Government's commitment towards sustainable augmentation in the area of modernisation and infrastructure development of the Defence Services.

MoD is committed towards infrastructure strengthening in the Border Areas, particularly the Northern Borders

The Capital Budget of Border Roads Organisation (BRO) has been increased by 43% to Rs 5,000 crore in FY 2023-24 as against Rs 3,500 crore in FY 2022-23. Also, the allocation under this segment has doubled in two years since FY 2021-22. This will boost the Border infrastructure thereby creating strategically important assets like Sela Tunnel, Nechipu Tunnel & Sela-Chhabrela Tunnel and will also enhance border connectivity.

Recognising the crucial role of Research, Innovation and Technological development towards capacity building of the Armed Forces as well as fuelling India's Mission of Aatmanirbharta

Towards strengthening Research and Development in Defence, the allocation to DRDO has been enhanced by 9%, with a total allocation of Rs 23,264 crore in BE 2023-24.

To further foster innovation, encourage

technology development and strengthen the Defence Industrial ecosystem in the country, iDEX and DTIS have been allocated Rs 116 crore and Rs 45 crore respectively representing an enhancement of 93% for iDEX and 95% for DTIS over 2022-23. This will fulfill the Ministry of Defence's vision to leverage ideas from bright young minds across the country.

The Union Budget 2023-24 has announced a National Data Governance Policy to unleash innovation and research by start-ups and academia. This will enable access to anonymized data which will further boost the Defence Start-ups and iDEX scheme.

The Union Budget has also announced that the revamped Credit Guarantee scheme for MSMEs which will take effect from 1st April 2023 through infusion of Rs. 9,000 Crore in the corpus. This will enable additional collateral-free guaranteed credit of Rs 2 lakh crore. Further, the cost of the credit has also been reduced by about 1 per cent. This scheme will give a further fillip the MSMEs associated with the Defence Sector.

Budgetary provision to comprehensively raise the overall ease of living for esteemed veterans

The Defence Pension Budget registers a notable jump of 15.5% in FY 2023-24. In absolute terms, this amount is Rs 1,38,205 Crore in BE 2023-24 against Rs 1,19,696 crore in BE 2022-23. Further, RE 2022-23 allocations at Rs 1,53,415 crore records a significant jump of 28%, amounting to Rs 33,718 crores. This includes an amount of Rs 28,138 Crore to meet the requirement on account of revision of Armed Forces

Pensioners/ Family Pensioners under One Rank One Pension (OROP).

Towards the Government's commitment in transforming Healthcare outreach to our veterans, Defence Budget 2023-24 registers a notable increase of 52% in the allotment for Ex-Servicemen Contributory Health Scheme (ECHS) with BE allocation of Rs. 5431.56 Crore in FY 2023-24 against Rs. 3582.51 Crore in FY 2022-23. This enhancement will ensure 'Cashless Health Services' and improved 'Service Delivery' to our veterans and their dependents across India.

Welfare of Agniveers

The Union Budget 2023-24 has provided Exempt-Exempt-Exempt (EEE) status to the Agniveer Fund.

Through a series of tweets, Raksha Mantri Rajnath Singh congratulated Finance Minister Nirmala Sitharaman for presenting a growth-oriented Union Budget for FY 2023-24, stating that priority has been given to provide support to farmers, women, marginalised sections and the middle class, under the leadership of Prime Minister Narendra Modi.

Rajnath Singh asserted that the Budget demonstrates the government's commitment towards supporting growth and welfare oriented policies that will benefit all sections of society including small businesses owners, farmers, and professionals alike.

The Raksha Mantri exuded confidence that the Union Budget 2023-24 will help in achieving the Government's goal of making India a \$5 trillion economy and among the world's 'Top Three' economies within a few years.



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# CSIR-NAL Develops National Strengths in Aerospace



CSIR-National Aerospace Laboratories (NAL), the only government aerospace research and development laboratory in the country's civilian sector, is a high-technology oriented institution focusing on advanced disciplines in aerospace. CSIR-NAL has provided significant value-added inputs to all the Indian national aerospace programmes. It has developed many critical technologies for the strategic sector and continues to support the mission-mode programmes of the country under Aatmanirbhar Bharat. Dr. Abhay A Pashilkar, Outstanding Scientist is currently the Director, CSIR-National Aerospace Laboratories, Bengaluru, India. Speaking with AeroMag Asia, Dr. Pashilkar talks about CSIR-NAL's latest operations and aircraft development programmes.

*Dr. Abhay A Pashilkar, Outstanding Scientist is currently the Director, CSIR-National Aerospace Laboratories, Bengaluru, India. In an interview with AeroMag Asia, Dr. Pashilkar speaks about CSIR-NAL aircraft development programmes. Excerpts from the interview:*

**Dr Abhay A Pashilkar**  
Director, NAL

**NAL is proceeding with the development of 19-seater aircraft SARAS Mk II. What are the latest news on the project and what are the highlight features of the aircraft?**

SARAS-Mk II aircraft specifications have been evolved through the interactions with Airline Operators and Armed Forces to meet their current operational requirements. SARAS-Mk II is a 19 Seat Light Transport Aircraft with multirole capabilities like Passenger transport, Troop transport, VIP transport and Casevac (Air Ambulance). The aircraft is exclusively designed for operations from short runways, hot and high airfields, and semi-prepared runways for connecting Tier 1 & Tier 2 cities/towns. SARAS-Mk II is one of the unique aircraft where operational benefits are maximised through the Pressurised Cabin, Digital antiskid braking, Autopilot with Cat II landing, two lever engine operation, Lightweight materials etc., keeping cost minimum.

At present, the SARAS-Mk II programme has completed the wind tunnel studies and preliminary design of all the systems. We also realised all high fidelity test facilities to reduce the flight test efforts where the majority of test points can be demonstrated on the ground. The design is carried out with extensive use of digital tools like 3D platforms, virtual reality, advanced Catia and PLM to reduce the design efforts. The aircraft has been designed for ease of manufacturing and assembly with the use of dynamic digital mockup tools (DMU) to reduce assembly

and maintenance time. The establishment of a dynamic high fidelity simulator to evaluate the aircraft performance including handling qualities, controllability, stability, autopilot, crosswind landing etc., with the pilot-in-loop has aided to optimize & accelerate the design cycle time.

**India is the fastest growing airline market and there is a huge demand for civil aircraft and engines. What is the status of the Regional Transport Aircraft project?**

CSIR-NAL is working on the feasibility of the development of Regional Transport Aircraft since 2018. The requirements are evolved through interactions with Airline Operators and Armed Forces. The aircraft will have 90 seat capacity and can be adaptable to military transport aircraft by modification in the rear fuselage. The Government of India has given in-principle approval for the Project Definition Phase (PDP) of the programme and CSIR-NAL is undertaking the PDP jointly with DRDO-ADA & HAL and we are expecting to complete this phase by end of 2023.

Under the PDP, design activities related to top level aircraft requirement, statistical studies, take-off weight estimation, constraint analysis, wing design, empennage design, and cabin layout & fuselage design have been completed.

The project is to be implemented under the nodal ministry, Ministry of Civil Aviation (MoCA) by forming a Special Purpose Vehicle (SPV) in partnership with

to be selected global private partner. The outcome of the PDP will clearly bring out the design options of the aircraft, cost and time estimates for the Full Scale Engineering & Design Phase (FSED) and Series Production Phase (SPP) to be taken-up by the SPV. The funding for the FSED phase would come from the government, whereas the SPP is to be funded by the global private partner. The initial discussion with global partners are ongoing and we are looking forward for involving global partner from the PDP phase itself in the Aero India event.

**NAL's High Altitude Platforms (HAP) is a futuristic path breaking technology. How will it be a game-changer in telecommunication applications?**

NAL has also taken up the development of High Altitude Platforms (HAP) for applications like broadband communication, surveillance, earth observation, climate research etc. HAP is a solar-powered UAV with Beyond Visual Line of sight operation capability. The subscale model is expected to fly by September 2023 to evaluate the Reynold Number effects, flight mechanics, stability and control as well as avionics & autopilot performance. The functional subscale model prototype was demonstrated at Wings India 2022. The Proof-of-Concept of full-scale HAP is expected to be demonstrated at a height of 20 km with 2 hrs endurance in 2025.

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# Indo-Russian JV starts manufacturing Kalashnikov AK-203 rifles for Indian Army



Indo-Russian Rifles Private Limited, a joint venture between Russia and India, registered and located in India, whose founders on the Russian side are Rosoboronexport and Kalashnikov Concern (both are subsidiaries of the Rostec State Corporation), has started producing Kalashnikov assault rifles.

**"R**ussia and India are linked by strong partnership relations. Military-technical cooperation between the two countries has resulted in the construction of the joint venture Indo-Russian Rifles Private Limited. With the launch of series production of Kalashnikov AK-203 assault rifles, high-quality, convenient and modern small arms will begin to enter service with India's defense and law enforcement agencies. The model combines excellent ergonomics, adaptability to different shooters and high performance characteristics, it is one of the best assault rifles in the world," said Sergey Chemezov, General Director of Rostec.

The joint venture plans to ensure 100% localization of the production of AK-203 rifles in India. In future, the company may also increase output and upgrade its production facilities to

manufacture advanced rifles based on the Kalashnikov assault rifle platform,

"Korwa Ordnance Factory in Amethi, Uttar Pradesh, has produced the first batch of 7.62 mm Kalashnikov AK-203 assault rifles. The beginning of deliveries to the Indian Army is expected soon. At the same time, the factory's capacity makes it possible to fully equip the personnel of other law enforcement agencies in India with AK-203 assault rifles, which, due to their high adaptability, are suitable for various operators. In addition, the joint venture will be able to export its products to third countries," said Alexander Mikheev, Director General of Rosoboronexport.

Indo-Russian Rifles Private Limited fully complies with the Government of India's Made in India initiative and DAP 2020. Today, India is the first country to start producing the AK-200-series

assault rifles of the world-famous brand.

The AK-200-series assault rifles have retained all the advantages of the traditional AK scheme: reliability, durability and ease of maintenance. At the same time, they fully meet the latest requirements for firearms in the world in terms of ergonomics and the ability to mount high-tech additional equipment.

Russia and India continue to implement military-technical cooperation projects. Their current and future programs are maximally focused on technological cooperation, including on the basis of joint ventures, in the format of licensed production and joint R&D projects. Rosoboronexport aims to cooperate on terms of transfer of technology put forward by the Indian side and in accordance with the Make in India initiative.



# LMW Aerospace & Defence



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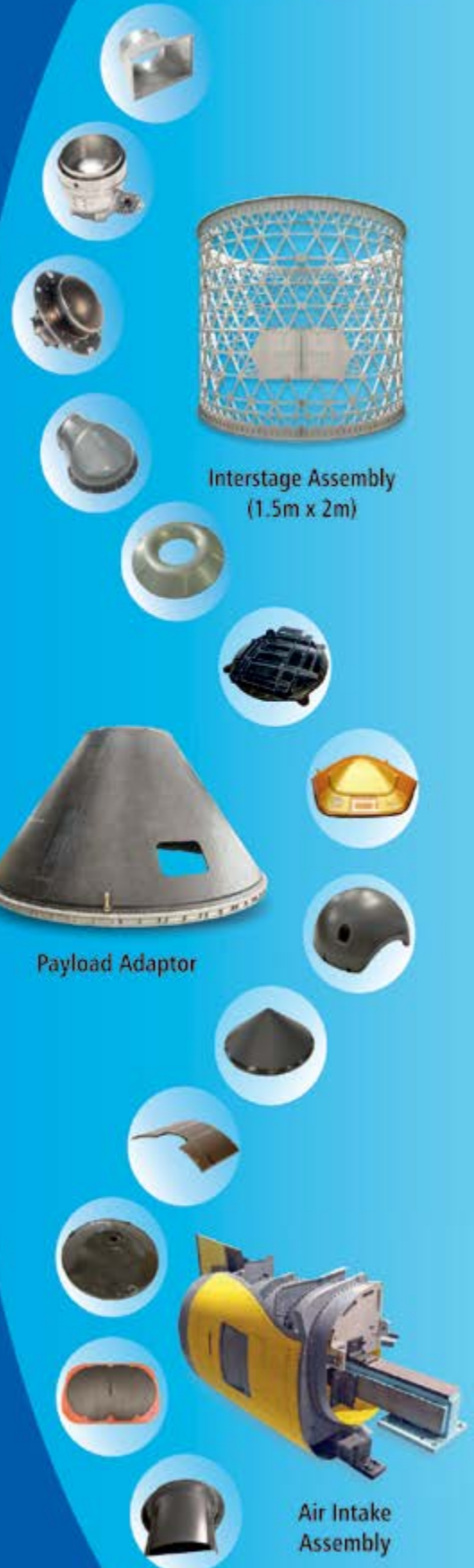
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Vice Admiral Sanjay Mahindru, AVSM, NM, Deputy Chief of the Naval Staff, Rear Admiral Deepak Bansal VSM, Assistant Chief of Naval Staff ( Air Materials ) and Naval officers visiting DRDO Pavilion at Aero India.



Nidhi Bansal, Director, TDF at DRDO Pavilion.





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# Rajnath Singh calls for increased investments in UP, TN Defence Industrial Corridors



Prime Minister Narendra Modi and Defence Minister Rajnath Singh at UP Investors Meet.

Defence Minister Rajnath Singh has called for more investment in Uttar Pradesh & Tamil Nadu Defence Industrial Corridors (DICs) to achieve 'Make in India, Make for the World' as envisioned by Prime Minister Narendra Modi for shared global prosperity. He was addressing a parallel sectoral session 'Advantage Uttar Pradesh: Defence Corridor', organised as part of Uttar Pradesh Global Investors' Summit inaugurated by the Prime Minister in Lucknow. He urged the defence sector companies to increase their investment and emphasis more on R&D to take the defence industry to newer heights and ensure overall growth of the country.

Rajnath Singh described fool-proof security as the strongest pillar of a prosperous nation, asserting that the Government is leaving no stone unturned to build a self-reliant defence industry which provides state-of-the-art weapons & technologies to the Armed Forces, crucial to make the nation 'Aatmanirbhar'. He pointed out that after centuries of foreign rule and imports dependency for decades post-independence, the country is witnessing the rise of a self-reliant defence sector due to the collaborative efforts of the Government and the industry, especially the private sector in the last few years.

"In the last 7-8 years, under the leadership of the Prime Minister Modi, India has risen once again to regain its old glory while creating a new identity for itself. After coming to power, we had two options with respect to the defence sector. First was to blame the previous governments for the circumstances and the second was to create a new path that leads to unprecedented growth. We chose the second option and moved ahead with dedication & enthusiasm. Now, with each passing day, we are getting closer and closer to our goal of 'Aatmanirbharta' in defence. Today, along with all other sectors, defence is moving ahead at a fast pace to achieve self-reliance while contributing to the economic progress of the country. Major steps, including setting up of two DICs are adding to that momentum," he said.

"There are corridors of power in the country which are necessary for running the governance of the country. When these

corridors start interfering in the work of the industries, red-tapism increases and the businesses are adversely affected. Keeping this in mind, two dedicated corridors (UP & Tamil Nadu) were created for industrialists, free from unnecessary interference of the government," the minister said.

Rajnath Singh was of the view that Uttar Pradesh today possesses all essentials- from law & order, environment for investors, infrastructure development to quality education, health and nutrition - required to set up an industry in the state. He made special mention of the industry-friendly 'Aerospace & Defence Policy' which was issued by the state government to promote defence production. He termed it as another important step that provides a favorable environment for the private sector to move forward.

Apart from elaborating on the opportunities in Uttar Pradesh, the minister listed out many other steps taken by the Central government to strengthen the defence industry. These include measures to encourage private sector participation; earmarking of a certain part of the capital expenditure of defence for domestic procurement; allocation of a huge part of the defence budget to purchase domestic items; notifications of positive indigenisation lists; enhancement of FDI limit and reforms in the banking sector.

Rajnath Singh also threw light on the opening up of avenues for the private sector to help the country stay abreast with the latest technological advancements amid the constantly-evolving global

security scenario. These include Transfer of Technology through DRDO at zero fee; access to government labs; dedicating a quarter of the defence R&D budget to industry-led R&D; introduction of the Strategic Partnership model, which provides an opportunity to Indian private entities to tie-up with global Original Equipment Manufacturers and launch of the Innovations for Defence Excellence (iDEX) initiative & Technology Development Fund to promote start-ups and innovators.

The minister added that the efforts taken by the Government are bearing fruit as India is manufacturing defence equipment to fulfill its own security needs, but is also catering to the requirements of friendly countries under 'Make in India, Make for the World'. He added that defence exports have increased manifold to over Rs 13,000 crore last year, as compared to less than Rs 1,000 crore in 2014. The Indian defence sector has emerged as an area with immense possibilities, he said.

Earlier, Chief of Defence Staff General Anil Chauhan also addressed the gathering. Industry leaders and other stakeholders actively participated in the seminar and presented their suggestions to promote private participation in Defence Industry and give a boost to Indian Defence Manufacturing.

Chief Nodal Officer of UPDIC Air Chief Marshal RKS Bhadauria (Retd), CEO UPEIDA Arvind Kumar and other dignitaries and officials from industry, central and state governments were also present.



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# Boeing to Showcase Cutting-Edge Defense and Security Solutions at IDEX 2023



Boeing will exhibit its state-of-the-art defense and security products and services at the International Defense Exhibition and Conference (IDEX) Feb. 20-24.

IDEX is the largest defense exhibition in the Middle East and North Africa, and will be held at the Abu Dhabi National Exhibition Centre under the patronage of His Highness Sheikh Mohamed bin Zayed Al Nahyan, President of the UAE and Supreme Commander of the UAE Armed Forces.

"IDEX offers an important opportunity to showcase our defense and security portfolio, meet with regional customers and partners and explore opportunities for further cooperation," said Kuljit Ghata-Aura, President of Boeing Middle East, Turkey and Africa. "Boeing has an established track record of more than 45 years of partnership with the UAE and over 70 years of experience in the Middle East."

Boeing and its subsidiaries will be showcasing the advanced capabilities of its platforms at IDEX 2023, including the



CH-47 Chinook, a modernized multi-mission helicopter with a fully integrated digital cockpit management system and advanced cargo-handling capabilities; the T-7, an advanced pilot training system with fighter-like performance and state-of-the-art avionics; the KC-46A, the world's most advanced multi-mission aerial refueler; and the Integrator ER, a long-range Group 3 Unmanned Aircraft System for intelligence, surveillance and reconnaissance.

Boeing will also showcase solutions and capabilities from its Global Services portfolio, including sustainment, modifications and modernization, upgrades, training, and maintenance services. These offerings are designed to support the defense modernization and mission readiness of customers in the UAE and the Middle East.



Ravi Nirgudkar - Managing Director and Pankaj Kaushik - Vice President (Government Affairs) from BAE Systems India, meeting Dr. Murugesh R Nirani, Minister for Large and Medium Industries, Karnataka and Gunjan Krishna, Commissioner for Industrial Development and Director of Industries and Commerce on the sidelines of Aero India 2023. Karnataka Udyog Mitra Managing Director Gangadharaiah also seen.

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*The Russian Delegation members at Aero India 2023.*



# HAL: India's Innovative Splendour



One of the oldest and largest aerospace and defence manufacturers in the world, Hindustan Aeronautics Limited (HAL) has made its mark as a pioneering Asian innovator in designing and manufacturing of fighter jets, helicopters, jet engine and marine gas turbine engine, avionics, software development, spares supply, overhauling and upgrading of military aircraft. Mihir Kanti Mishra, CEO, Bangalore Complex, HAL, gives us an insightful overview on the current and futuristic developments that HAL is involved with, while focussing on Aero India 2023, the mega exposition in which HAL shines forth as the main organizer. HAL will showcase its range of products and technologies centred on the theme 'Innovate. Collaborate. Lead.' Excerpts from a Special Interview:

**Mihir Kanti Mishra**  
CEO, Bangalore Complex, HAL

**India is keen on improving its UAV fleet. Could you talk about the operational highlights of integration and testing of UAVs - Target Drones and MALE UAVs - by the aircraft division of HAL Bangalore Complex?**

HAL Aircraft Division, Bangalore has been involved in production of UAVs from 1998 with Pilot Less Target Aircraft, Lakshya in association with Aeronautical Development Establishment (ADE).

With regard to MALE class UAV - TAPAS, Aircraft Division has initiated production of five airframes and shall be carrying out integration and testing of these prototypes in co-ordination with ADE.

On the Target drones, HAL has successfully delivered the first batch of Abhyas UAV to ADE in October 2022 and has been identified as Development cum Production Partner for Abhyas-HEAT platform. HAL is keen to participate with ADE for all future developments.

**Last year HAL has signed an MoU with Safran Helicopter Engines to extend their cooperation and explore opportunities for new helicopter engines in civil and military markets. Could you share the latest updates on this association?**

An MoU was signed between HAL and Safran Helicopter Engines in July 2022 to explore potential cooperation for the development, certification, production, sale and support of the Engine for the Helicopter through a Joint

Venture company (JVC). This JVC shall undertake development of the engine with the support of the parties with the applicable work share. The discussions are in progress between both the parties.

**Can India be self-reliant in terms of aircraft engines? How does HAL support this dream? What are the challenges?**

HAL has the capability for manufacturing and maintaining Aero Engines. Also, HAL has been stressing on the importance of indigenisation of LRUs/ components of aero engines to attain a higher level of self-reliance. To this effect, HAL has implemented a policy to boost indigenization of components, accessories and systems required for manufacture as well as repair and overhaul of aircraft, engine and equipment. Indigenization with the primary objective of achieving 'Make in India' and lowering dependence on foreign countries, especially for critical items, is one of the key thrust areas of HAL.

HAL has taken initiative with two design projects on engine development. For fixed wing, HAL has taken up design and development of HTFE-25 Engine, a turbo fan engine for powering medium thrust class aircraft and for Rotary wing, HTSE-1200 turbo-shaft engine for powering helicopters.

**What are the latest updates of the LCA project? How does HAL respond to the need to increase the pace of LCA**

**production to meet the requirements of the IAF's modernization?**

HAL has received three different contracts from Indian Air Force for the delivery of LCA-Tejas aircraft along with engineering support package. HAL has produced all the IOC and FOC fighter aircraft which are currently operational with two squadrons of IAF. Production of trainer aircraft against the above contracts is under progress and would be completed by FY 2023-24.

LCA Mk 1A contract was signed in January 2021. Under this Contract, fighter aircraft integrated with AESA Radar, EW Suite, BVR Missile and maintainability improvement will be produced. Design and development activities of Mk1A aircraft is being progressed towards certification of above mentioned capabilities. Further, production activities have commenced concurrently to ensure the delivery of aircraft from February 2024 onwards.

To increase the pace of production of LCA-Tejas, HAL has taken various advancing steps including establishment of two dedicated production lines, one each at LCA and Aircraft Division, setting up of an additional state-of-the-art facility (Plant-II) which is spread across 35,000 sq. m built up area. In addition, productivity improvement initiatives by adopting latest simulation software packages, Diversification of internal supply chain and Enhancement of Private players in production have been taken up by HAL.

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**The Overhaul Division has over 80 years of experience in aircraft MRO. Could you elaborate on its facilities, certifications, achievements and ongoing projects?**

HAL Overhaul Division, Bangalore was established during December 1940 and spread over an area of more than 10 hectares of land. Division has maintained and serviced 25 variety of aircraft ranging from basic trainer to fourth generation fighter aircraft such as Liberator, Fortress, Mitchell, Dakota, Curs, Tiger Moth, Canberra, Kiran, Jaguar, Mirage 2000 and Hawk, to name a few.

HAL has well-equipped Accessories Repair/ Overhaul Centres with excellent infrastructure to handle sophisticated Mechanical, Electrical, Pneumatic, Avionic accessories of aircraft/ helicopters. Over 4,500 aircraft, 6,500 piston Engines and 100K accessories were serviced till date. Highly sensitive testing equipment are employed during Repair/ Overhaul of system accessories. State of Art MRO facility for servicing of about 900 types of accessories of aircraft and helicopters has been established.

HAL is the only agency to undertake Major Servicing of Mirage 2000 aircraft other than OEM. HAL is also undertaking aircraft upgrade/ integration of new systems. Presently, upgrade of Jaguar aircraft to DARIN III standard and Mid Life upgrade of Mirage 2000 aircraft is under progress.

Also, facility is being established for Major Servicing of LCA and first aircraft is planned for induction in next one or two years.

**Could you talk about the Industrial & Marine Gas Turbine Division and its latest operations?**

IMGT Division of HAL is a Production, Maintenance, Repair & Overhaul Center for Industrial and Marine Gas Turbines under license from reputed OEMs. IMGT was formed in April 1998 in Bangalore to cater to the Marine Engine requirements of Defence customer for Indian Navy's Shipbuilding Programs and Industrial Engine requirements of civil customer's viz. ONGC and GAIL.

HAL under collaboration with General Electric, USA has assembled, tested and supplied LM2500 Gas Turbine (25 MW) for three major Naval Projects including India's First Indigenous Aircraft Carrier 'INS Vikrant' which was commissioned successfully during September 2022 and Stealth Frigate class ship.

HAL has acquired the required expertise in the field of marine propulsion systems. HAL is working towards becoming a complete solution provider for the Indian Navy for propulsion and power generation. HAL is also collaborating with leading gas turbine manufacturers who can provide propulsion systems with power range from 1.25 MW to 40 MW which would cover all classes of ships of Indian Navy.

Also, IMGT Division is an authorised Maintenance, Repair and Overhaul Center for repair and overhauling of 15 MW Industrial Avon and 3.9 MW Industrial 501K Gas Turbines.

**How does HAL support the private participation in defence and aerospace manufacturing? How much does private companies, MSMEs & start-ups contribute to HAL's activities?**

India is presently one of the biggest arms importer, however the push of the Union Government towards AATMANIRBHAR BHARAT, primarily

in Defence sector, has opened the wide range of opportunities for both public and private sector enterprises. During the production of LCA-Mk 1, HAL has developed a sturdy base of around 400 vendors and with the further Mk1A contract, this number will only go up. Apart from the major private players developed by HAL for structural modules, more than 200 Indian Companies are involved in Tooling, Ground Support and Handling Equipment supplies for the program.

Further, LCA-Tejas is a strong contender in foreign market for the export. The export orders will further give the vendors a huge quantum of work share in the Indian Defence Industry.

Further, HAL Aerospace Division encourages the private participation in manufacturing of detail components, sub-assemblies, assemblies, looms etc. Division has vendor base of 115+ suppliers who supports up to 30% of manufacturing activities. The participation of private industries is expected to reach up to 45% by FY25-26.

**How do you look at Aero India 2023 of which HAL is the main organizer? What all can we expect from HAL at the expo?**

HAL will display a unique "Aatmanirbhar Formation" flight of 15 helicopters consisting of all variants of ALH, LCH and LUH. The fixed wing front will witness LCA twin seater variant, Hawk-I, IJT and HTT-40 aircraft. HAL will showcase its full spectrum training capabilities and also display for the first time, the scale model of Hindustan Lead in Fighter Trainer (HLFT)-42. HAL will showcase its range of products/ technologies centered on the theme 'Innovate. Collaborate. Lead'.

HAL'S major attraction at its indoor pavilion will be the IMRH, HLFT-42 and models of LCA Mk2. Outdoor display will feature Rotary wing products LUH and ALH Medical Intensive Care Unit (MICU) variant.

Also, the central theme of the India Pavilion is fixed wing platform. An actual LCA-Tejas in FOC configuration will be the centrepiece along with various associated structural modules, simulators, systems (LRUs) etc. being produced by private partners. There will also be sections for Def space, new technologies and UAV which will give an insight about the growth of India in each sector.



# Innovate, Collaborate, Lead आविष्कार, सहयोग, नेतृत्व



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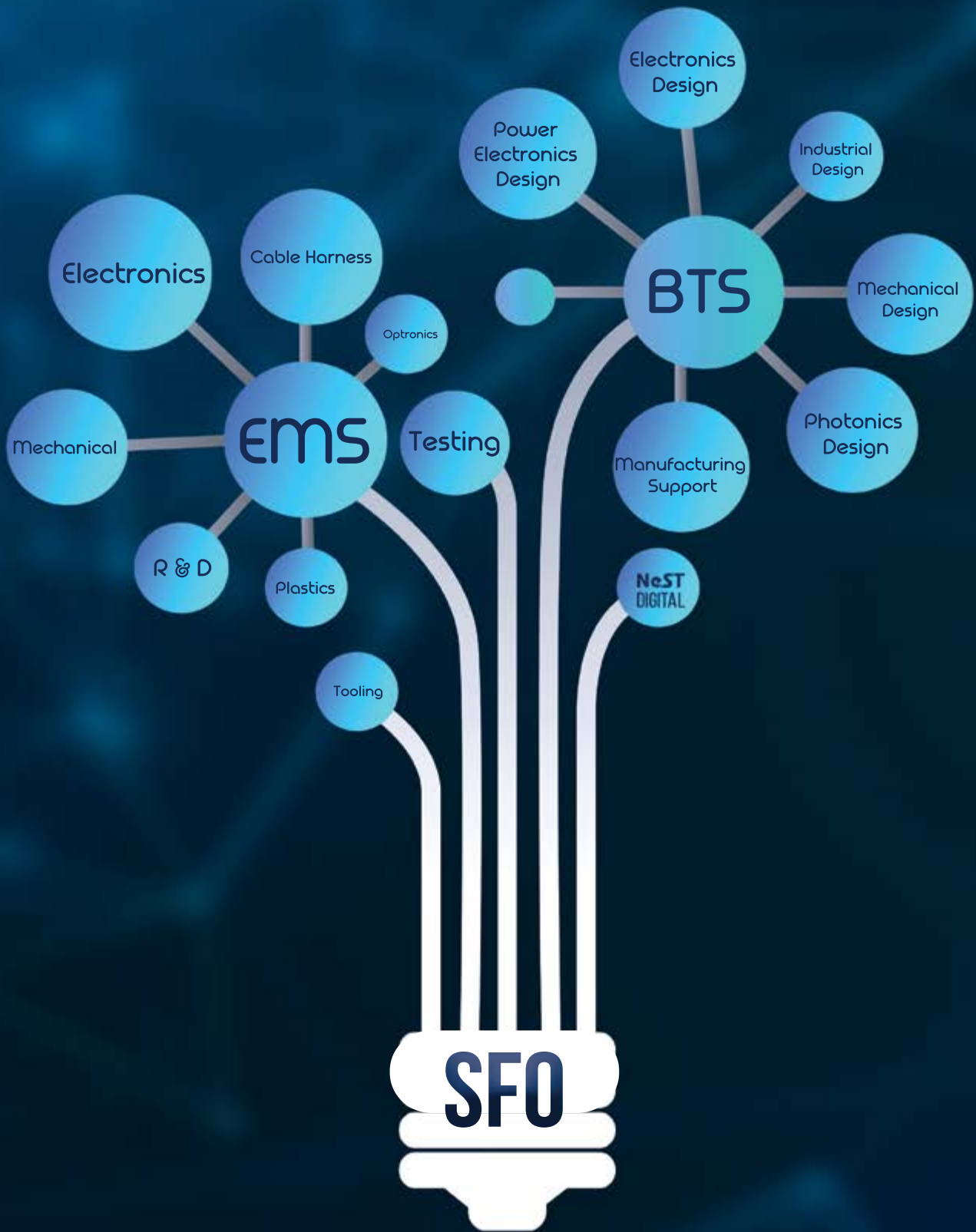
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## IDEX: Nir-Or to present its AI-integrated Video Management System

**N**ir-Or, a subsidiary of IMCO Industries Ltd. (Tel Aviv Stock Exchange TASE: IMCO), designs, develops, manufactures, and integrates innovative electro-optic and power management systems for a vast range of military applications that maximize force real-time reconnaissance and survivability at land, air, and sea. At the IDEX exhibition, IMCO Group's Nir-Or will present its innovative Video Management System which incorporates AI capabilities, automatic target recognition (ATR), auto-tracking of multiple targets and smart scanning, all to enhance force's real-time situational awareness.

Nir-Or is the main supplier of these advanced Video Management Systems to the IDF's Namer and Eitan (8X8) Armored fighting vehicles (AFVs). Integrating real-time AI analytics, Nir-Or's Video Management System offers a full video management suit for the vehicle, including a display with an intuitive control interface. Nir-Or's solution presents all the needed information for the commander, driver, and gunner, allowing them to manage the mission smartly and effectively while sharing a joint situational awareness picture.

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## Eaton showcases its advanced sustainable aerospace technologies at Aero India

**P**ower management company Eaton participates in the 14th edition of Aero India. With a footprint spread across 41 global facilities, Eaton's Aerospace Group manufactures hydraulic, fuel, oxygen, air conveyance, electrical, motion control, and engine solutions; and serves the leading OEMs in the industry.

Commenting on Eaton's presence in India, Desmond Goh, Managing Director - Asia Pacific, Aerospace Group, Eaton, says, "Eaton has been in the Indian skies for decades. Eaton's Aerospace Group takes pride in being a distinct contributor to the growth of both military and commercial aviation sectors, along with the platforms being introduced to these markets by global OEMs. Eaton in India is uniquely positioned to serve as a strategic location to enhance Eaton's global competitiveness."

During the 5-day expo, Eaton will showcase a diverse range of its advanced sustainable aerospace



technologies and products, which include conveyance, electromechanical actuators, engine solutions, hydraulic pumps and motors, and fuel systems.

Nikhil Joshi, Country Manager, Aerospace Group, Eaton, India, adds, "Aero India Expo is one of the largest congregations for players in the aerospace industry. Platforms like these are instrumental in

enabling businesses to explore the latest product and technology trends in the industry. Our participation exhibits Eaton's commitment to delivering safe, reliable, and efficient solutions for the Aero segment."

Eaton's aerospace footprint in India includes two manufacturing plants in Coimbatore and Bangalore, three sales offices in Coimbatore, Bangalore, and Delhi, and engineering support from Pune. In the aerospace industry, Eaton's portfolio includes hydraulic, fuel, oxygen, air conveyance, electrical, motion control, and engine solutions, as well as aftermarket service and support. Eaton serves commercial and military aerospace, marine, and defense markets worldwide.

Founded in 1911, 2023 marks Eaton's 100th anniversary of being listed on the New York Stock Exchange. We reported revenues of \$20.8 billion in 2022 and serve customers in more than 170 countries.

# Civil Aviation Minister Visits Collins Aerospace Center



India's Union Minister of Civil Aviation, Jyotiraditya M. Scindia visited Collins India Operations Center (CIOC) at KIADB Aerospace Park, Bangalore. During his visit, the Minister met with the Collins' leadership team and toured the Industry 4.0 designed manufacturing facility. The CIOC - KIADB Aerospace Park site was inaugurated in Dec 2022 together with Collins' Global Engineering and Technology Center (GETC) in Bangalore as part of a long-term growth strategy for Raytheon Technologies in India and globally to maximize collaboration and innovation providing cutting edge solutions for customers and provide additional STEM-

based opportunities in the country.

The new CIOC site spans 26 acres across the Hitech Defense and Aerospace Park and will help Collins bring operational synergy and economies of scale, as well as support future growth opportunities and customer requirements. Its Building Management System (BMS) is a connected ecosystem which helps monitor and control air, water, temperature and humidity at critical process points to help maintain product quality with quick issue resolution. The site has also received USGBC Silver and IGBC Gold building certification. The campus is energy efficient with best practices

in line with BEE-India and Global Best Management Practices. Collins Aerospace recently commemorated its 25th anniversary of operations in India.

"It was a pleasure to be at Collins India, a wonderful facility that is in many ways pushing forward on the new paradigm of aerospace manufacturing in India. In its 25 years of journey, Collins Aerospace is amalgamated across multiple verticals of aerospace manufacturing. It is indeed an honor to be here with the Collins team. I wish Collins all the very best in its endeavor to grow and also contribute to India's growth in the area of aerospace manufacturing." said Jyotiraditya M. Scindia for Collins Aerospace. ■

## Defence Secretary meets delegations from Saudi, USA and Oman

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

Defence Secretary met Engr Turki Saad, General Manager Industrial Relations, Kingdom of Saudi Arabia, and discussed a number of bilateral defence cooperation issues.

A US delegation led by Jedijah P. Royal,

Principal Deputy Assistant Secretary of Defence for Indo-Pacific Security Affairs, and accompanied by Ambassador Elizabeth Jones, Charge D'Affairs US Embassy and Maj Gen Julian Cheator, US Air Force, met the Defence Secretary.

A wide range of ongoing and future defence cooperation issues were discussed. US is participating in Aero India with a number of officials, companies and

aircrafts.

Later, Defence Secretary met a delegation from Oman led by HE Dr Mohammed Nasser Al Zaabi, Secretary General, Ministry of Defence. The ongoing defence cooperation was reviewed and possible opportunities for increasing the depth and scope of engagements was discussed. ■

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## HAL to provide MRO support for Engines of MQ-9B



**H**industan Aeronautics Limited (HAL) and General Atomics Aeronautical Systems Incorporated (GA-ASI) have jointly announced that turbo-propeller engines which power the state-of-art MQ-9B Guardian High Altitude Long Endurance (HALE) Remotely Piloted Aircraft System (RPAS) will be supported by the HAL Engine Division at Bengaluru for the Indian market.

"HAL has been manufacturing and providing MRO support for TPE 331-5 engines for the last 40 years. We are also establishing facilities for manufacturing TPE 331-12B engines for HTT-40 project. The engine used on the MQ-9B RPAS belongs to the same family of engines with upgraded configuration to adapt to the RPAS technology. I am glad, that

HAL Engine Division, Bangalore would be providing MRO support to the engine for MQ-9B RPAS, one of the most sophisticated equipment in the world" said C.B. Ananthakrishnan, Chairman and Managing Director, HAL.

"GA-ASI is proud to collaborate with HAL on this prestigious project", said Dr. Vivek Lall, Chief Executive, General Atomics Global Corporation. "HAL is the foremost Indian public sector Aerospace and Defence agency, and its vast experience in the domain of aero-engine technology makes it our natural partner in India." Though the turboprop engine fitted onboard the MQ-9B HALE RPAS looks similar to other commercial engines in its category, it is unique in its configuration and operation,

requiring special training and equipment to maintain, repair and overhaul.

The Expression of Interest was exchanged between Dr. Vivek Lall, Chief Executive, General Atomics Global Corporation & B.Krishna Kumar, Executive Director (Engines & IMGT) in the presence of Mihir Kanti Mishra, CEO (Bangalore Complex),.

GA-ASI and HAL eagerly look forward to formulate a comprehensive engine MRO program for upcoming HALE RPAS projects. This joint collaboration echoes India's clarion call for 'Atmanirbharta' or 'Self-Reliance', while underscoring the deep industrial connection between US and Indian Aerospace Companies.

## Thales and BDL to join hands for 70mm laser guided rocket solution

**T**hales and Bharat Dynamics Limited (BDL), a Government of India enterprise, will be signing a Memorandum of Understanding for setting up manufacturing facilities in India for precision-strike 70mm laser guided rockets (FZ275 LGR).

Through the agreement, BDL will become a part of the FZ275 LGR global supply chain, providing the opportunity for export of Indian manufactured components to existing and future 70mm laser guided rockets customers.

This agreement will also provide the opportunity for BDL to offer a 'Make in India' 70mm laser guided rocket solution for existing helicopter fleet of Advanced Light Helicopters (WSI) and Light Combat Helicopters of the Indian Government.

BDL was established in Hyderabad in 1970 as a manufacturing base for guided missiles and allied defence equipment. The company is uniquely positioned, with dedicated facilities and knowledge in the field of precision guided ammunition to address such an industrial and technology transfer.

Thales is the original equipment manufacturer of FZ275 LGR, the lightest, shortest and most versatile 70mm laser guided rocket on the market with high level of accuracy.. It can be deployed in day and night operations at ranges between 1.5m up to 7km (on helicopter).

Speaking on this collaboration, Cmde Siddharth Mishra, Chairman and Managing Director, BDL, stated, "We are pleased to partner once again with Thales, this time for

precision-strike 70mm laser guided rockets. Leveraging our long experience in building precision guided ammunition and our diverse industrial expertise, we look forward to reaching new heights of excellence with this partnership and contributing to the prestigious 'Make in India' initiative."

Ashish Saraf, VP and Country Director, India - Thales said, "We are proud to strengthen our partnership with Bharat Dynamics Limited. In support of the Aatmanirbhar Bharat vision, this collaboration seeks to further develop in-country capability of producing advanced weapon systems such as 70mm laser guided rockets to cater to export markets besides assisting the Indian Armed Forces in their mission to effectively safeguard the nation."



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# The True Legacy of Indian Aerospace Industry



For over eight decades, Hindustan Aeronautics Limited (HAL) has been the flag-bearer of the aerospace industry in the country meeting the requirements of the defence services. HAL, over the years, has produced over 4,250 aircraft, 5,350 aero-engines and has carried out over 11,850 overhauls of aircraft and 35,350 overhauls of engines, besides manufacturing and overhauling of related accessories and avionics. HAL continues to aspire for more and more participation of private partners and build a healthy and robust ecosystem in India towards the mission of Atmanirbhar Bharat, said CB Ananthakrishnan, Chairman and Managing Director, HAL. Speaking to Aeromag, he talks about the latest operations of the aerospace behemoth.

**CB Ananthakrishnan**  
Chairman & Managing Director, HAL

## Hindustan Aeronautics Limited (HAL) has been the backbone of aeronautical industry in India for over 80 years. How does HAL plan to take forward its legacy and strengthen Indian aerospace industry?

It's a matter of pride for HAL to be the flag-bearer of the aerospace industry in the country. HAL has been meeting the requirements of the defence services, our prime customers for over 80 years, and the credit goes to entire team at HAL. HAL, since its inception in 1940, has evolved into a large aeronautics complex in South Asia. The company has built up comprehensive skills in design, development, upgrade, manufacture, and maintenance of fighters, trainers, helicopters, transport aircraft, engines, avionics systems and accessories.

HAL, over the years, has produced over 4,250 aircraft, 5,350 aero-engines and has carried out over 11,850 overhauls of aircraft and 35,350 overhauls of engines, besides manufacturing and overhauling of related accessories and avionics. These include 17 types of aircraft/ helicopters from indigenous R&D and 14 types of aircraft/ helicopters under Transfer of Technology from foreign OEMs. HAL's major supplies and services are to the Indian Defence Services – IAF, Army, Navy and Coast Guard. The company has also established a foothold in export in more

than 20 countries, having demonstrated its quality and price competitiveness.

HAL is a major partner for the Space Vehicle programmes of ISRO. It has also diversified into the Industrial & Marine Gas Turbine business. Over 90 percent of HAL's current sales are to the Indian Defence Services. HAL has 20 production divisions, 10 R&D Centres and one Facility Management Division. HAL is setting up a facility at Tumakuru near Bengaluru to manufacture helicopters. The platforms currently being manufactured by HAL are Light Combat Aircraft (LCA) -Tejas, Light Transport Aircraft Do-228, Advanced Light Helicopter (ALH), Light Combat Helicopter (LCH) and Light Utility Helicopter (LUH).

The major ongoing R&D programmes of the company are Hindustan Turboprop Trainer (HTT-40), LCA Tejas Mk 1A variant, Indian Multi Role Helicopter (IMRH), 25 KN turboprop engine HTFE-25, 1200 KW turboshaft engine HTSE 1200KW etc. HAL has developed an aerospace ecosystem to boost the growth of the industry in the country. Presently, HAL has a vendor base of over 7,250 vendors, which includes over 2,100 MSMEs.

On an average, HAL's annual domestic procurement from MSMEs is around 32%. HAL has also been instrumental in nurturing a competitive aerospace

ecosystem in India by way of collaborating with private industries as outsource partners even for several critical work packages. HAL believes in inclusive growth and collaborates with private players, government labs and academia to effectively address the strategic needs of Defence Forces through synergising. HAL aims to be a lead aerospace integrator, primarily through robust private partnerships. Some of the critical manufacturing work packages outsourced by HAL for major platforms include structural packages, Rudder, Flaperon, Air Intake, etc. of Su-30MKI aircraft, Centre Fuselage, Rear Fuselage, Wings, Front Fuselage, Air Intake assemblies, etc. of LCA and MGB Housing, Gears, Harness, etc. of ALH.

HAL has also been engaging private organisations (including MSMEs) in the design and development of products and technologies. Some of these major design partnership initiatives include Smart Cockpit Display System, Control & Display Unit, Data Interface Unit, and Multi-Function Display for LCH, and Solid State Flight Data Recorder for Su-30 MKI, etc. The Indian defence industry partners are expected to contribute significantly towards the LCA MK1A orders. Further, the Indian defence industry will also see opportunities to contribute towards other HAL programmes such as LUH, LCH, and

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HTT-40. Thus, HAL continues to aspire for more and more participation of private partners and build a healthy and robust ecosystem in India towards the mission of Atmanirbhar Bharat.

### How do you look at the Narendra Modi government's decision to review all foreign procurement programmes in favour of indigenous systems?

The government's decision to review all foreign procurement programmes in favour of indigenous systems is a good move as it builds self-reliance, improves import substitution, generates employment opportunities within the country and creates opportunities for Indian Industry including MSMEs and startups. HAL has proven experience and expertise in concept to product and beyond for rotary-wing platforms and is keen on participating in the Naval Utility Helicopters (NUH) programme offering a proven indigenous platform to suit the specific requirements of naval customers.

The Request for Information (RFI) was released by MoD (Navy) for participation in the acquisition scheme for 111 NUH, simulators and associated equipment for the Indian Navy (IN) through the



"Strategic Partnership Model" in August 2017. A suo moto proposal for NUH was submitted by HAL to Navy in November 2018 offering a derivative of its indigenously designed, developed and manufactured Advanced Light Helicopter (ALH) Mk-III Fixed Wheel variant in a similar weight category with suitable upgrade/ adaptations/ modifications to meet the Naval Utility Helicopter RFI.

HAL submitted the RFI response to Navy in December 2018, proposing a five-ton variant of indigenously developed ALH for shore and ship-based operations of Navy. Subsequently, during October 2021, a joint team of IN and HAL formulated a draft Preliminary Staff Qualitative Requirements (PSQR) towards design, development, modification and

marinisation of the existing ALH Mk-III to increase the power margins of ALH for deck-based operations and named the helicopter as Utility Helicopter-Maritime. The design studies towards the same are under progress at HAL.

### Could you share the latest updates of LCA MK-1A, with specific enhancements, that will take flight by middle of this year?

LCA Tejas Mk1A is an improved version of Mk1 with AESA Radar, EW suite, BVR missile capabilities and various maintenance improvements. The contract for 83 LCA Mk1A was signed in February 2021. Currently, Design & Development activities of Mk1A version is under progress. There are reports that LCA Mk-2

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will roll out by year end or early 2023.

### What are HAL's plans to increase the production of LCA Tejas?

Capacity augmentation from eight to 16 aircraft per annum is under progress at HAL. HAL has established an additional production line at HAL, Aircraft Division. An additional facility (LCA Plant II) spread across 35 acres, with a built-up area of over 34,000 Sqm is being established to cater to aircraft assembly, allied production activities like heat treatment, process shop, stores, machine shop, sheet metal shop etc. and to meet the 83 LCA Mk1A delivery schedule. This facility will also cater to the export orders expected in the future. Further, HAL has developed various supply chain partners within the Indian industrial ecosystem mainly in three categories – detail part manufacturing, equipment (LRU) manufacturing and major structural modules manufacturing to support the ramped-up rate of production.

For manufacturing and supply of major structural modules, HAL has developed production partners like Dynamatic Technologies Ltd for the front fuselage, VEM Technologies for centre fuselage, Alpha Tocol for rear fuselage, Larsen & Toubro for wings, and TAML for Rudder & fin assembly



of LCA Tejas aircraft. In addition, HAL has partnered with numerous Indian OEMs for the development, manufacture and upgradation of LRUs/ rotables for complex sub-systems of LCA-Tejas. These activities are aimed to resolve supply chain issues, self-reliance and ensure an enhanced production rate for LCA Tejas.

### Could you talk more about the project LCA Mk-2 and the aircraft specifications?

All system-level Critical Design Reviews (CDRs) followed by Aircraft level CDR of LCA Mk-2 are completed. At present, detailed design for all individual systems, design and CAD model updation etc. are under progress. LCA Mk-2 has a tail-less compound delta-wing configuration with a single vertical stabiliser and closed coupled canards for static instability, short take-off and landing capabilities and high manoeuvrability. LCA Mk-2 is designed

for improved maintainability aspects and fatigue life. It has air superiority and ground attack as its primary role and it possesses reconnaissance capability as a secondary role. It offers improved range, endurance and lethality to provide IAF an ideal platform to replace Mirage 2000, Jaguar and the MiG-29.

### How does the project Intermediate Jet Trainer (IJT), designed and developed by HAL, go on?

HAL has undertaken major modifications on the aircraft to bring its spin characteristics to an acceptable level. Post modifications, flight testing has resumed and in January 2022, HJT-36 demonstrated its ability to carry out six turn spins to both sides. We have plans to complete the remaining activities to achieve the certification at the earliest. The aircraft may require another two years of testing after which it will be ready for induction,

With this, the HAL would have the entire range of trainer aircraft — HTT-40 Basic Trainer Aircraft (BTA), the IJT, Hawk Advanced Jet Trainer (AJT) and the Lead-in Fighter Trainer (LIFT) being conceptualised based on the Light Combat Aircraft (LCA) Tejas twin seat trainer aircraft. ■



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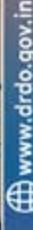
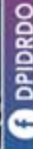
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# 'Manufacturing Cutting-Edge Products Need of the Hour'



**D**efence Minister Rajnath Singh has called upon Indian and global industry leaders to support the Government's endeavour to design, develop and manufacture cutting-edge products, using critical technologies, within the country to attain complete 'Aatmanirbharta' in defence, with the overall objective of achieving shared global peace and prosperity. He was addressing over 70 CEOs of local and global Original Equipment Manufacturers (OEMs) during a Round Table organised as part of Aero India 2023 in Bengaluru on Monday.

The CEOs Round Table was organised on the theme 'Sky is not the limit: opportunities beyond boundaries'. The participating companies included Boeing, Lockheed Martin, Israel Aerospace Industries, General Atomics, Liebherr Group, Raytheon Technologies, Safran, General Authority of Military Industries, Hindustan Aeronautics Limited, Bharat Electronics Limited, Bharat Dynamics Limited, BEML Limited, Mishra Dhatu Nigam Limited, Larsen & Toubro, Bharat Forge, Dynamic Technologies and BrahMos Aerospace.

Many foreign OEMs made announcements regarding their plans for investments and collaborations including

Safran, Boeing, Collins Aerospace, Pratt & Whitney and Thales in defence and aerospace sector. General Atomics and Bharat Forge announced to deepen their collaboration in aircraft components and parts. Hensoldt announced Design/TOT and IPR transfer of obstacle avoidance system for Indian Helicopters and co development of Advanced Multi Sensor Electro-optics Airborne Gimbals for Indian and world market.

Chief of Defence Staff General Anil Chauhan, Chief of the Air Staff Air Chief Marshal VR Chaudhari, Chief of the Naval Staff Admiral R Hari Kumar, Chief of the Army Staff General Manoj Pande and Defence Secretary Giridhar Aramane also attended the Round Table.

The platform was to forge partnerships between domestic and global Industries of the aerospace and defence sector to address the present and future global needs and discuss the importance of supply chain strategy and operations as the world deals with the aftermath of the pandemic and global disruptions. More than 75 companies, including 28 foreign OEMs from 15 countries and domestic companies & DPSUs participated in the discussion. There was official participation from Countries of

Sudan and Saudi Arabia. The significance of roundtable discussion as "dialogue between equals" was emphasised.

The Defence Minister asserted that India does not want to remain just an assembly workshop and is looking to engage with friendly countries in defence and security based on sharing expertise and capabilities under the 'Make in India, Make for the World' vision of Prime Minister Narendra Modi. He assured industry leaders that the government is open to new ideas and is committed to fully harness the energy, entrepreneurial spirit and capability of private sector partners in the area of defence production. He extended government's full support towards removing obstacles and facilitating businesses.

Singh voiced the government's resolve of nurturing a vibrant and world-class defence manufacturing industry, terming it as the key driver of Indian economy. He enumerated a number of far-reaching reforms undertaken by Ministry of Defence to create a business-friendly climate in the country. He said that these reforms will enable Indian defence products to compete with established global defence and aerospace companies.

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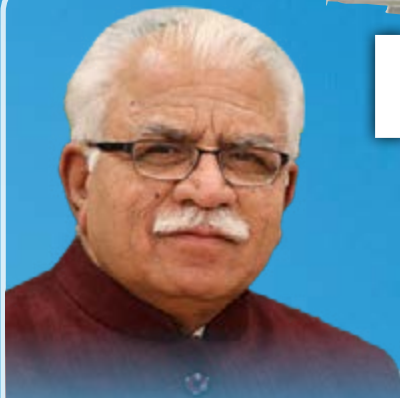
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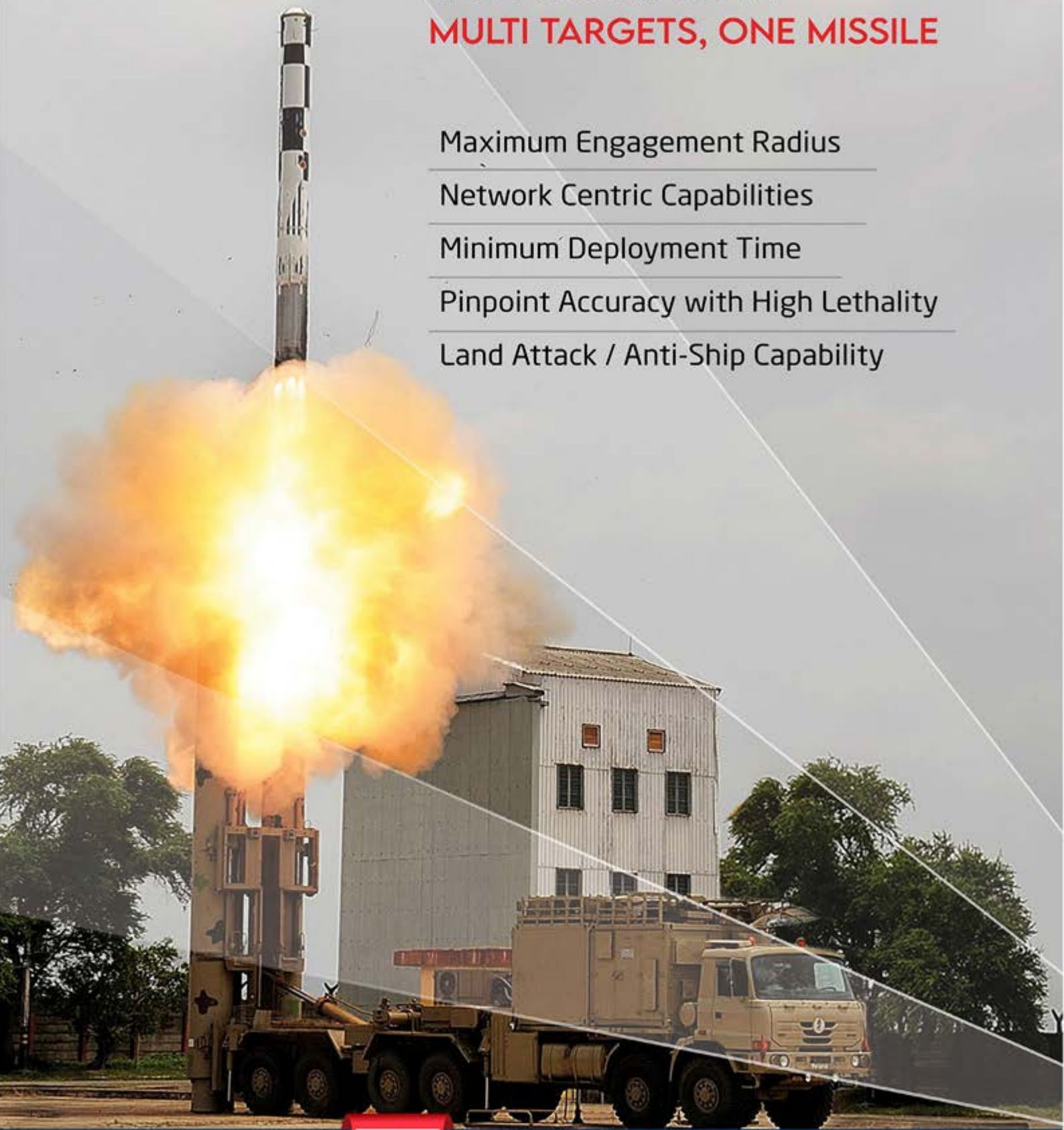
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