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From advanced fighter jets to unmanned aerial systems (UAS), Aero India 2025 will showcase India's ability to compete on a global scale while fostering innovation and industrial growth

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DEFENCE MINISTER RAJNATH SINGH ADDRESSING THE AERO INDIA 2025 AMBASSADORS' ROUND-TABLE, IN NEW DELHI ON JANUARY 10, 2025

AYUSHEE CHAUDHARY

As the aerospace and defence industry gears up for India's most significant aviation events, Aero India 2025 is set to take flight from February 10 to 14, 2025, at Yelahanka Air Force Station, Bengaluru, Karnataka. Organised by the Defence Exhibition Organisation, Department of Defence Production, Ministry of Defence, this biennial event will bring together leading aerospace manufacturers, military officials, investors, startups, and policymakers to showcase technological advancements and explore new partnerships.

Over the years, Aero India has cemented its position as a premier global aviation event, featuring cutting-edge aircraft, defence technologies, and aerospace innovations. With exhibitors from around the world, the event serves as a critical platform for business collaborations, technology transfers, and knowledge exchange. The first three days will be reserved for business engagements,

allowing B2B (Business-to-Business) and B2G (Business-to-Government) meetings, while the final two days will be open to the public, offering breathtaking aerial displays by the Indian Air Force (IAF) and global aerobatic teams.

AERO INDIA 2025: WHAT TO EXPECT?

Aero India 2023, continuing a legacy of excellence, saw over seven lakh visitors making it one of the most attended aviation events globally. With over 800 exhibitors, 50+ aircraft on display and 250+ MoUs and partnerships valued at over ₹75,000 crore, boosting investments in the defence and aerospace sector, the 14th edition of Aero India had set new benchmarks.

Now, building on the success of previous editions, Aero India 2025 is expected to be bigger, better, and more influential. The event will attract a global audience of aerospace manufacturers, investors, military leaders, and government representatives, offering an unmatched opportunity for networking, business expansion, and policy discussions.

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AERO INDIA 2025 AMBASSADORS' ROUND-TABLE, IN NEW DELHI ON JANUARY 10, 2025

WHY EXHIBIT AT AERO INDIA 2025?

As Asia's largest air show, Aero India offers unparalleled exposure and strategic advantages for industry participants. Exhibitors will benefit from:

- **Global Visibility:** Engage with delegates from leading aerospace nations, including defence ministers, air chiefs, and policymakers.
- **Innovation Hub:** Showcase next-generation aircraft, UAVs, drones, space technologies, and avionics to a diverse audience.
- **Business Expansion:** Participate in B2B and B2G meetings, fostering international partnerships and government collaborations.
- **Extensive Media Coverage:** The event draws widespread media attention, ensuring global recognition for participants and exhibitors.
- **Competitor Insights:** Stay ahead in the industry by engaging with new technologies, trends, and market strategies.

THEMATIC DISCUSSIONS AND SEMINARS

Aero India 2025 will feature high-profile seminars and expert discussions covering key topics such as:

- Aircraft, UAVs, and drone warfare strategies
- Mission DefSpace and India's growing role in space-based defence
- Investment opportunities in Karnataka's aerospace ecosystem
- Manned-unmanned teaming in aerial warfare: From concept to targeting
- DRDO-industry synergy and indigenous defence innovation
- Atmanirbhar Bharat in Indian Naval Aviation: Roadmap to 2047
- Aligning defence technologies to future conflicts and threats
- Encouraging design, intellectual property, and import substitution

These discussions will provide deep insights into emerging technologies, self-reliance initiatives, and global defence trends, shaping the future of aerospace and military aviation.

Apart from spectacular flying displays, Aero India 2025 will host key high-level events, including:

- **Defence Ministers' Conclave:** A gathering of global leaders to discuss strategic defence cooperation.
- **CEOs' Roundtable:** Bringing together top executives to shape the future of aerospace and defence.
- **iDEX Startup Event:** Showcasing groundbreaking innovations from India's defence startup ecosystem.
- **India Pavilion and Trade Fair:** Featuring products and services from leading aerospace companies worldwide.

SHOWCASING INDIA'S AEROSPACE ADVANCEMENTS

Aero India 2025 will spotlight India's emergence as

a hub for military aviation, defence technology, and next-generation aircraft. Key highlights expected at the show include advanced platforms alongside cutting-edge defence solutions.

A major attraction is likely to be Russia's Su-57 fifth-generation stealth fighter, marking its debut in India, while the US F-35's participation remains uncertain. This comes amid shifting regional air power dynamics, with China unveiling new stealth fighters and Pakistan fast-tracking J-35 procurements.

With India facing fighter fleet shortages and delays in indigenous programs like AMCA and LCA Mk-2, Aero India 2025 will serve as a key platform for future defence collaborations and technological advancements in military aviation.

INDIA'S GROWING AEROSPACE AND DEFENCE CAPABILITIES

Aero India 2025 will position India as a key player in global aerospace and defence manufacturing. The event will underscore India's progress in developing military aircraft, helicopters, avionics, and next-generation space technologies, aligning with its goal of achieving self-reliance in defence production.

From advanced fighter jets to unmanned aerial systems (UAS), Aero India will showcase India's ability to compete on a global scale while fostering innovation and industrial growth. The emphasis on indigenous manufacturing, technology transfers, and defence exports will further establish India as a major defence supplier to friendly nations.

With an impressive lineup of exhibitors, cutting-edge aerospace technology, high-level discussions, and thrilling aerial displays, Aero India 2025 promises to be a landmark event for the aerospace and defence industry. Whether you are an investor, defence manufacturer, aviation enthusiast, or industry professional, Aero India offers an unparalleled opportunity to witness the future of aerospace innovation and defence technology.

As India continues its journey towards self-reliance and technological leadership, Aero India 2025 will serve as a gateway to global collaborations, strategic partnerships, and groundbreaking advancements in aviation.

BENGALURU AIRSPACE ADVISORY: PLAN YOUR TRAVEL

To accommodate Aero India 2025, Kempegowda International Airport (KIA) has announced airspace restrictions from February 5 to 14. Passengers are advised to check with airlines for flight updates and plan their travel accordingly. As Bengaluru hosts thousands of international delegates and business visitors, early planning will help minimise disruptions and ensure smooth participation in the event. ●

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SANJEEV KUMAR

“Will Continue the Policy for Defence Reforms to Boost Manufacturing”

Furthering the country's defence production target of ₹ three lakh crore by 2029 and leading such initiatives is **Sanjeev Kumar**, Secretary, Department of Defence Production, Ministry of Defence. In an exclusive interaction, Consulting and Contributing Editor **Manish Kumar Jha** speaks with the Secretary, on his roadmap and policies for spurring defence manufacturing in India, for both – public and private sectors.

A technocrat with Electronics & Communication Engineering from IIT, Kanpur, he is poised, and well-placed to understand the complexities of military technology and ever-changing dynamics of production in the wake of AI, ML and hybrid/autonomous modern assembly lines. Further, his leadership in designing and launching various national policies and initiatives including the PMAY is highly encouraging that he would be rallying for reforms and efficiency in India's quest for self-reliance not only in the higher scale of defence manufacturing but put his thrust on new emerging and critical technologies.

In this special conversation, Sanjeev Kumar outlines the policies for defence competitiveness globally for Indian industry—private and public, thrust on advanced technology such as engine, propulsion systems and materials and what are the incentives or policy direction to excite R&D in defence industry?

Manish Kumar Jha (Manish Jha): India's defence production reached a record high of approximately ₹1.27 lakh crore. The country's defence production is aimed to reach a target of ₹ three lakh crore by 2029. Could you give the roadmap?
Sanjeev Kumar: The story of India's Defence production in right earnest, started in the year 2014-15 with government focus on 'Make in India' and Atmanirbhar Bharat. The domestic defence production has grown from ₹43,746 crores in 2013-14 to more than ₹1,27,000 crores in 2023-24.

Clarion call given by the Prime Minister for Atmanirbhar Bharat got reflected in the policies of Defence Procurement by reserving 75 per cent of Capital procurement through domestic route under DAP-2020. Support, guidance and acceptance by Indian Armed forces and the response of Indian industries to the products developed by DRDO have resulted in the fruitful realisation of the Atmanirbhar policy.

Further announcement of Positive indigenization list of more than 5,000 items, simplification of defence industry licenses, relaxation of FDI, launch of Innovations for Defence Excellence (iDEX) etc, strengthened the initiative for Atmanirbhar Bharat.

The establishment of two industrial corridors in Uttar Pradesh and Tamil Nadu is also helping the cause immensely. Focus on rationalisation of the process for export authorisation and liberalisation of the list of Defence articles available for export is also creating a viable export market for Indian Defence Industries. This developing and vibrant ecosystem is expected to take us to the target of three lakh crores in Defence production by FY 2028-29. Needless to say, our Ministry and Department will continue to fine-tune various policy instruments available at the hands of the Government to promote Indian defence industries.

Manish Jha: Could you talk about the contribution of the private sector in defence production? Could you please talk about the new policy thrust to spur production?



SECRETARY, DEFENCE PRODUCTION VISITING INDIGENOUS DEFENCE MANUFACTURING FACILITIES TO ENCOURAGE THE DEVELOPMENT OF NEW DEFENCE TECHNOLOGIES



Sanjeev Kumar: Private sector industries are also playing a very important role in the defence production sector. Our defence production sector was opened to the private sector in 2001 but a major push for the private sector in the Indian defence Industry came in the year 2019 when licensing was relaxed. In the year 2022-23, 25 per cent of funds kept for domestic capital acquisition were earmarked for acquisition from the private sector. In 2024, the Indian private sector has contributed almost ₹27,000 crores in the year 2023-24 in defence production as against ₹14,000 crores in the year 2016-17. Policy measures like streamlining the procurement process, and schemes like iDEX, and ADITI are ensuring a

level playing field between the private and public sectors. DRDO is releasing technologies to the private sector. These factors have helped the growth of the private sector in Indian defence industries and their contribution is visible not only in their turnover but also in the number of equipment, systems and sub-systems which they are not now supplying to our armed forces and exporting to various countries. The private sector is very significantly contributing to the preparedness of all three services, that is, Army, Air Force and Navy by providing a wide spectrum of platforms or components used in various platforms. The private sector is spearheading our exports of defence products and their share is 62 per cent of total exports of ₹21,000 crores in the year 2023-24.

Manish Jha: While India's defence exports reached a record high of ₹21,083 crore in 2023-24, what are the policy directions to boost it further amid the highly competitive global market? What are the steps to increase the international footprint?

Sanjeev Kumar: India's Defence export has been a story of satisfaction for all of us. Prime Minister's emphasis on 'Make in India' not only for India but also for the world, has played a motivating and catalytic role. Many policies and administrative measures have been taken in the last decade to increase exports manifold. Push for indigenisation and resourcefulness of the private sector has played a major role. The contribution of the private sector to defence exports is much more significant. Simplification of export authorisation by the Department of Defence Production (DDP) and DGFT along with MHA has gone a long way in enabling exports. The entire authorisation process is online through a portal.

More and more products are allowed to be exported through open general export licenses. We are in the process of further simplifying and rationalising the SOP for export authorisation which shall happen this year in the "Year of Reform" as exhorted by the Defence Minister.

It is also to be noted that defence exports involve multiple stakeholders and importing countries prefer quality equipment trusted and used by our armed forces hence endorsement of our armed forces directly

“The government is encouraging R&D spend in defence by industries by encouraging procurement from domestic industries and operating various schemes for the design and development of new products, systems and sub-systems”

Continued on Page 17...

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AIR CHIEF MARSHAL V.R. CHAUDHARI (RETD)

We will fight with what we have" is an often-repeated phrase by military leaders trained in service to extract the best from available resources, develop newer tactics, and innovate in the usage of the equipment. Everyone charged with the responsibility of defending the nation understands that no country can afford to discard equipment because the technology is outdated. However, the question arises of how to keep pace with new technologies while still operating large numbers of vintage equipment. By the time one got comfortable with 386 processor based computers, the market was flooded with 486 computers and then soon with Pentium computers. Similarly, the military hardware that came with the latest generation of microprocessors soon required updates, consuming large chunks of the revenue budget.

SIGNIFICANCE OF EMERGING TECHNOLOGIES

Today, no article, speech or presentation on the future of armed forces is complete without mentioning Artificial Intelligence (AI). This term has crept into our lexicon in the last decade, while AI applications have been abundantly used for over a quarter of the century across the world. AI technologies have enabled computers to perform a wide variety of functions, including analysing data, translating texts and even making recommendations.

In addition to AI, other technologies are shaping the future of military operations. For example, advances in robotics are leading to the development of more sophisticated unmanned systems for air, land, and sea operations. Hypersonic weapons, capable of travelling at speeds exceeding Mach 5, require AI systems for precise targeting and manoeuvring. Meanwhile, quantum computing holds the potential to revolutionise encryption and decryption processes, offering unprecedented levels of security and computational power.

Space technologies are also becoming a critical component of military strategy. AI plays a key role in satellite management, space situational awareness, and the development of counter-space capabilities. As the militarisation of space becomes a reality, the integration of AI and advanced technologies will be essential to maintaining a strategic advantage.

This article will focus on the possibilities for the use of AI in different realms of military domains.

AI IMPETUS TO MULTI-DOMAIN OPERATIONS

Most of the computers in use in the armed forces are embedded within a weapon system, aircraft, or a ship. The exploitation of AI began with the networking of radars and radio equipment and the setting up of advanced C2 centres. Initially, AI was used for target recognition based on multiple parameters. For example, in an air defence (AD) system, the computer was 'taught' the correlation of height, speed, the likely type of aircraft and the direction of approach to warn the operator about the emerging threat and provide a basic form of decision support.

The rapid advancement of AI and other emerging technologies is reshaping the landscape of military operations and defence strategies worldwide. These technologies promise to enhance efficiency, precision, and decision-making capabilities while introducing new challenges that require careful navigation. As nations strive to maintain a strategic edge, AI and related innovations are becoming integral to modern military operations, impacting everything from logistics to combat scenarios.

If one were to list out the futuristic requirements of AI tools, they would be, in no particular order, as follows:

Psychological analysis of candidates seeking to join the armed forces, either as officers or even as Agniveers, could be carried out based on parameters like eye/retina movements and/or heart rate while facing mental ability tests or interviews. Such AI tools would save long hours spent evaluating candidates and help identify the correct temperaments.

As an aid to training, AI systems can bring about a revolution. From bringing in more realism in simulators to creating self-learning modules, the possibilities are endless. AI-driven virtual reality (VR) and augmented reality (AR) systems provide realistic training environments. While the same is being exploited in stand-alone systems, integrating multiple AR/VR based simulators can greatly enhance technical training, especially when limited time for training is available.

Assessment of flying skills based on analysis of flight data recorders can remove subjectivity in marking and grading pilot skills. Even in basic flying training, the objective should be to move away from "industrial age" training models with pre-set timetables and instruction plans to one that adapts to each trainee's learning pace.

With the impending introduction of fifth-generation aircraft and systems of into the Air Force, we will need novel training patterns. Today, a young pilot in a standard air superiority fighter doesn't have to think like a mission commander

until he acquires the expertise and progresses to become a mission leader. But in the next generation aircraft, due to their power to be able to 'see' across the visible and the electromagnetic spectrum, every cockpit will have large amounts of data being generated, and every pilot will have to be trained like a mission commander from day one. Pilots in fifth generation aircraft cockpits will be able to direct large formations and make decisions based on the big picture of the battle because they will see things that others cannot, and like edge computing, they will have to process large amounts of data. Normally, it takes years to train somebody to attain that kind of cognitive complexity to be



ARTIFICIAL INTELLIGENCE (AI) AND ELECTRONIC WARFARE (EW) ARE VITAL DOMAINS, AND SUPERIORITY OVER THEM WILL DETERMINE THE OUTCOME OF ANY CONFLICT

able to do multi-domain order of battle decision making, but thanks to available and emerging AI tools, the new generation of aircrew will be able to do it in much shorter periods.

War gaming and exercise planning during peacetime occupy a lot of mind space of the operational staff at training establishments. Simulations using AI can replicate battlefield scenarios, allowing personnel to train in diverse and adaptive conditions.

One of the biggest challenges in the maintenance of diverse equipment is the timely provisioning of spares. Predictions based on past consumption data and stock holdings often lead to overstocking or shortfalls. AI tools can be effectively used to plan for provisioning and storage of spares with minimal disruptions to the servicing schedules, thereby reducing the downtime of any weapon system or equipment. In addition, AI contributes to the optimisation of logistics and supply chain management. Predictive maintenance powered by AI increases the reliability and longevity of military assets. By predicting maintenance needs, planning efficient routes, and automating resource distribution, AI can ensure that military operations are supported effectively and with minimal delays. These efficiencies can significantly increase the success of missions, particularly in remote or contested areas, through efficient resource management and supply distribution by minimising costs and time in transportation and delivery.

AI is driving significant changes across various military domains, particularly in automation, data analysis, and decision support systems. Autonomous systems, such as drones and unmanned vehicles, exemplify this transformation. These systems can carry out reconnaissance, surveillance, and even combat missions in hazardous environments, reducing the risk to human personnel. AI's ability to process data in real time also enhances intelligence, surveillance, and reconnaissance (ISR) capabilities by identifying patterns and anomalies that may signal potential threats. AI-powered decision support systems are revolutionising command and

control operations. These systems can process vast amounts of data from sensors, satellites, and human inputs to provide actionable intelligence. Predictive analytics allow military leaders to anticipate enemy movements, evaluate tactical options, and simulate potential outcomes. AI-driven systems assist commanders by analysing complex scenarios and providing data-driven recommendations.

Such capabilities not only improve situational awareness but also reduce the time required to make critical decisions, while predictive models help commanders anticipate enemy actions and plan operations.

AI BUILDING COMMUNICATION SHIELD

Electronic warfare (EW) is a vital domain of warfare, and superiority over it will determine the outcome of any conflict. AI tools and AI-supported EW equipment can jam or spoof enemy communications while protecting friendly systems with little human intervention. Machine learning helps analyse and counter radar or signal threats in electronic warfare scenarios. Collation, analysis and dissemination of electronic intelligence (ELINT) data can be efficiently handled by AI based systems and can be integrated across the users of the spectrum.

Similarly, ISR, the key element of military planning, requires analysing vast amounts of data from sensors, satellites, and cameras to detect patterns, predict threats, and provide actionable intelligence. AI enhances ISR capabilities by integrating elements such as advanced computer vision that enable real-time identification of objects, personnel, or activities of interest with the EW database.

In the realm of cyber security, AI is proving indispensable. Military systems are prime targets for cyberattacks, and machine learning algorithms help detect and mitigate threats by analysing network activity for irregularities. AI can also automate responses to cyber breaches, ensuring swift and efficient countermeasures.

For human resource (HR) management, AI applications can sift through large volumes of appraisal reports to identify the right person for the right job. Career planning based on multiple inputs can be made easier. Predictive analysis of the outcome of any HR policy change helps the leadership to make well-informed, data-driven decisions that would stand the test of legal scrutiny.

Among the factors that motivate personnel to dedicate themselves to the service of the nation, the most important are decent housing and schooling. AI modules can help the administrators determine their availability across the country for better planning of accommodation, maintenance and allotment, especially in a joint service environment.

ETHICAL DIMENSIONS

Despite the numerous benefits, the integration of AI and new technologies into the military will always raise significant ethical and strategic concerns. One of the most debated issues is the use of autonomous weapon systems capable of lethal action without human intervention. Critics argue that delegating life-and-death decisions to machines poses moral and legal challenges, particularly in ensuring accountability.

Another concern is the reliability and bias of AI systems. Errors in data or algorithmic design could lead to unintended consequences, especially when the security of the nation is involved. Adversaries could also exploit vulnerabilities in AI systems and this will require robust countermeasures and continuous innovation.

The global nature of technological development further complicates matters. As nations compete to develop and deploy these technologies, there will be a need to establish regulatory frameworks and reliable means to mitigate the risks of adversarial AI.

WAY AHEAD

The future of AI and new technologies in the military holds immense promise and profound implications. Human-AI collaboration is expected to be a key focus, ensuring that technological advancements augment rather than replace human decision-making. The development of AI-enabled swarming drones, where large

numbers of autonomous systems operate in coordination and often in conjunction with manned systems, is likely to redefine battlefield strategies. Similarly, advancements in AI-driven simulations and training tools will prepare military personnel for increasingly complex operational environments. The future lies in planning and procuring open architecture systems that give the users the freedom to add on or plugin newer hardware or change the software without going back to the original equipment manufacturer (OEM). Open architecture in mission computers of fighter aircraft will give the flexibility to integrate new weapons and EW systems. Similarly, open architecture servers in AD systems will allow the expansion of the AD coverage zone by simply plugging in a new radar or missile system.

CONCLUSION

Indian Air Force (IAF) has remained abreast of technological developments and has capitalised on the prowess of AI, incorporating it in HR management, meteorological services, maintenance planning and many operational planning tools. The focus should now shift towards setting up joint AI application development centres and combining the capacities of Defence Research and Development Organisation (DRDO) labs with those of the services so that common applications are available to all users simultaneously.

As these technologies continue to evolve, it is imperative for policymakers and military leaders to address the associated challenges responsibly. By balancing innovation with ethical and practical considerations, we can harness the transformative potential of AI and new technologies to enhance security and stability in an increasingly uncertain world. ●

The author retired as Chief of the Air Staff, Indian Air Force on September 30, 2024.

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SALIL GUPTA

“Boeing is India’s Largest Foreign Aerospace OEM”

Salil Gupte, President, Boeing India and South Asia in conversation with SP’s ShowNews

SP’s ShowNews (SP’s): How does Boeing’s 80-year history in India shape its current role as the leading foreign OEM in its aerospace and defence sector?

Salil Gupte (Gupte): Boeing’s unwavering commitment to India’s aerospace and defence sector over the past eight decades has laid the foundation for its leadership today. From delivering advanced aircraft to building a robust aerospace and defence ecosystem, our journey reflects a deep and evolving partnership with India. Over the decades, we have transitioned from delivering advanced aircraft to contributing to India’s entire aerospace and defence ecosystem. As a steadfast partner, Boeing has played a vital role in supporting the mission readiness and modernisation of India’s defence forces while also being a key contributor to the growth of its commercial aviation sector. Today, Boeing is India’s largest foreign aerospace OEM, with significant manufacturing, engineering, and skill development investments. We are strategically aligned and positioned to support the growth of India’s civil and defence aviation requirements by providing efficient airplanes, world-class services, and innovative solutions aligned with the Government’s “Aatmanirbhar Bharat” vision. We continue investing in India, creating local partnerships and jobs to strengthen the manufacturing sector and fostering an ecosystem that nurtures the talent needed to serve global and local aerospace and defence markets.

SP’s: What distinguishes Boeing’s partnerships and collaborations with Indian organisations from other foreign OEMs?

Gupte: Boeing’s partnerships in India are deeply collaborative and designed to drive long-term growth for both our global operations and India’s aerospace ecosystem. With over \$1.25 billion in annual sourcing, 70 per cent of this sourced from manufacturing, and collaborations with 300+ supplier partners, including over 25 per cent being Micro, Small & Medium Enterprises (MSMEs), Boeing stands out for its commitment to integrating local expertise into our global supply chain. We also have a dedicated and fast-growing supply chain team based in India that focuses on developing new suppliers, including MSMEs. This effort has been pivotal in the growth of our network, which is propelled by significant advancements in quality and capability along the value curve. Our suppliers are transitioning from simple assemblies to more complex ones, including advanced materials like composites and thermoplastics, and employing technologies such as full-size determinant assembly (FSDA) and robotics.

SP’s: How is Boeing’s commitment to initiatives like “Make in India” and “Aatmanirbhar Bharat” driving indigenous aerospace and defence manufacturing?

Gupte: Boeing’s steadfast commitment to “Make in India” and “Aatmanirbhar Bharat” is evident in our strategic investments, partnerships, and innovations that help grow India’s aerospace and defence ecosystem. Our approach goes beyond transactions—we collaborate to co-develop advanced solutions, drive innovation, and foster indigenous manufacturing and skill development.

An example that stands out is Tata Boeing Aerospace Limited (TBAL) in Hyderabad, a state-of-the-art facility that integrates cutting-edge technology with indigenous manufacturing. TBAL produces aero-structures for Boeing’s AH-64 Apache helicopter, including fuselages, secondary structures, and vertical spar boxes. With now over 300 fuselages delivered globally, including to the US Army, more than 90 per cent of the fuselage parts are manufactured in India, sourced from network of over 100 MSME suppliers. TBAL also has a more recent production line that manufactures vertical fin structures for 737.

Our supplier ecosystem in India has consistently achieved global recognition, with partners such as Cyient, Tata, Rossell, and Dynamatic Technologies Limited receiving Boeing’s prestigious “Supplier of the Year” award among a competitive network of over 11,000 suppliers worldwide. This highlights the exceptional

quality and capabilities of Indian suppliers, reinforcing their growing role in global aerospace manufacturing. Through initiatives like these, Boeing continues to drive India’s indigenous aerospace ambitions, strengthening local manufacturing capabilities and advancing the country’s vision of self-reliance in the sector.

SP’s: With over \$1.25 billion in annual sourcing from India, what factors have contributed to the growth and success of this relationship?

Gupte: Today, India’s aerospace and defence sector is experiencing a burgeoning growth that is attracting diverse talent. The country’s traditional strengths in engineering, extending beyond software to encompass broader engineering disciplines, have converged with a substantial improvement in manufacturing quality over the past decade. This combination of engineering excellence and enhanced manufacturing capabilities presents a remarkable opportunity for industrial companies to invest in India. Additionally,

initiatives like “Make in India,” financial incentives, and infrastructure development, have created a conducive environment for growth. With over eight decades of presence in India, Boeing’s investments over time, reflect our confidence in the country’s potential. Boeing will continue to invest in local manufacturing, co-production, co-development, skill enhancement, and innovation initiatives to support the growth of the overall aerospace, defence and commercial aviation ecosystem.

SP’s: How does Boeing’s investment in the new 43-acre Bengaluru campus enhance its in-country presence and capabilities?

Gupte: The Boeing India Engineering & Technology Center (BIETC) campus in Bengaluru represents Boeing’s

largest investment outside the United States. The center employs over 6,500 engineers and innovators across Bengaluru and Chennai, driving advancements in aerospace and supporting growth in the sector. These technologists are engaged in advanced, high-quality aerospace work, contributing expertise to Boeing’s defence, space, and commercial divisions, including engineering design, manufacturing support, systems testing, and digital solutions for airline customers.

BIETC is at the forefront of cutting-edge research and development in traditional and emerging fields. Its focus areas include next-generation airplane health management, environmentally friendly coatings, advanced networks, and secure communications. The teams leverage modern technologies like Artificial Intelligence, Machine Learning, the Internet of Things, Cloud computing, Model-Based Engineering, and Additive Manufacturing to enhance quality, safety, and productivity.

With a significant portion of Boeing’s global talent pool based in India, BIETC offers a distinct advantage, particularly in digital solutions. BIETC develops solutions tailored to Indian customers while also creating Indian intellectual property. This also positions BIETC as a key resource to meet Boeing Defence India’s (BDI) future engineering needs, supporting general operations, service engineering, and development-focused initiatives, including co-development and indigenous programmes.

SP’s: What can we expect from Boeing at Aero India 2025?

Gupte: We are excited to be at Aero India 2025 and will continue to highlight Boeing’s investments in India to build an integrated aerospace ecosystem. Our focus will be on demonstrating how Boeing is fostering collaboration across civil aviation, defence, urban air mobility, and MRO sectors to drive innovation, optimise resources, and expand manufacturing capabilities. By strengthening these connections, we aim to position India as a global aerospace hub, addressing both military and civilian aviation needs with cutting-edge technologies and solutions. Through this integrated approach, we are committed to supporting India’s growth and competitiveness in the global aerospace market. ●



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Hindustan-228

Setting New Standards for Performance and Dependability

SP's ShowNews in conversation with **Martin Williamson**, Regional Managing Director, APAC, Collins Aerospace - Customer & Account Management

SP's ShowNews (SP's): Could you tell us more about RTX's presence on Indian Air Force's platforms?

Martin Williamson (Williamson): At Collins, we have a long history of supporting Indian Air Force (IAF) through products on platforms like the indigenous Light Combat Aircraft (LCA) Tejas Mk1, and on current platforms like C17, C295, C130J, P-8I, AH-64E, CH-47F and MH-60R. We also work closely with Hindustan Aeronautics Limited (HAL) on sustaining key legacy platforms like Jaguars and Hawks through provisioning of spares and repairs of systems to ensure their sustainment over the next several decades.

On the Pratt & Whitney side we are the propulsion partner for Indian Air Force's modern transport platforms. From the F117-powered Boeing C-17 Globemaster IIIs to IAF's latest transport acquisition, the Airbus C-295, which is powered by PW127G engines - Pratt & Whitney's advanced and reliable engines have been augmenting the IAF's mission readiness.

In total, over 7,000 Pratt & Whitney military engines are in service with 34 armed forces worldwide, setting new standards for performance and dependability. Collins Aerospace designs, develops and manufactures aircraft systems for majority of military & commercial aircraft worldwide.

SP's: India is looking at an accelerated development path for its fighter and helicopter platforms. Are you partnering with India on any of its future platforms?

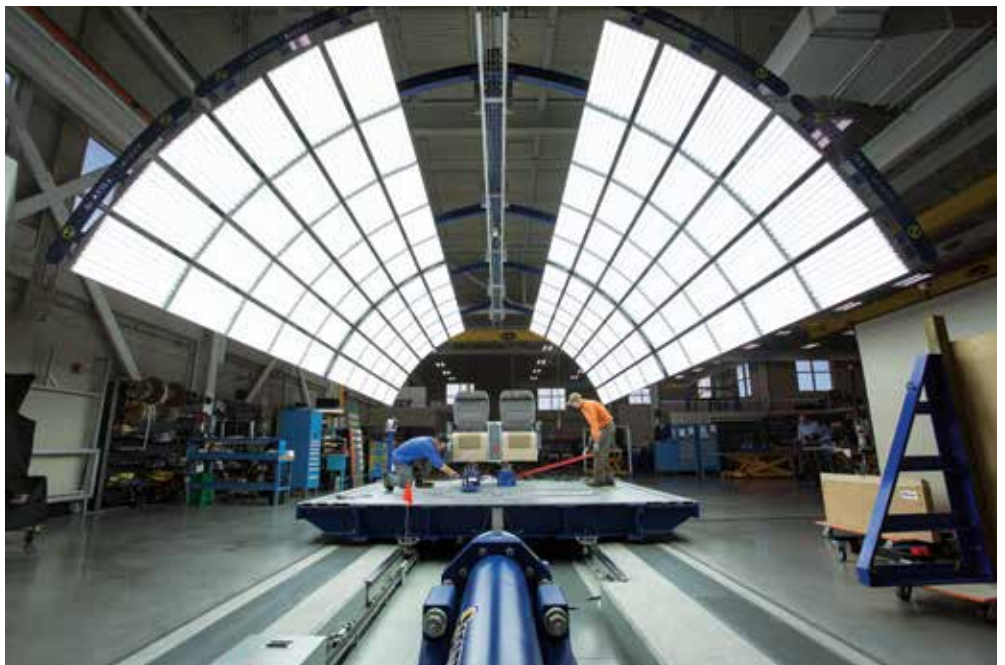
Williamson: A major focus of India's indigenization efforts in aerospace and defense has been its next-gen fighters and transport platforms. RTX is geared to deliver the advanced suite of systems the platforms need. Collins already has products on the LCA MK 1, including our highly reliable Electric Power Generation System (EPGS). So naturally, we are keen on working with HAL and the ADA on the LCA Mk2.

The Twin Engine Deck Based Fighter (TEDBF) and the Advanced Medium Combat Aircraft (AMCA) are the next key platforms where Collins' expertise can help India and the IAF achieve its future warfighter objectives. Our ACES® family of ejection seats, for example, have a decades-long track record of saving lives, and our landing and braking systems have best-in-class carbon technology that delivers long lifespans. While we are already significantly manufacturing in India, we also remain open to discussing co-development and Make-in-India on programmes like AMCA and TEDBF.

India is also looking at a Medium Transport Aircraft and some of the proposed contenders like the C390 and the C130J have Collins content. The C390 for example has significant RTX products, including Pratt & Whitney/IAE V2500 Engines and APS3000 series APUs; and Collins products ranging from avionics and actuators to nacelles, seating and cargo handling and the fusion system.

SP's: Could you elaborate on what Pratt & Whitney and Collins have done in India so far to build an ecosystem of industry, aftermarket and talent to support India's aerospace ambitions?

Williamson: Collins Aerospace is concentrating on bringing the manufacturing of advanced aerostructures, interiors, and avionics to India. As one of the largest exporters of aerospace products in India, Collins Aerospace, an RTX business, has helped the country become a major aerospace manufacturing hub with a thriving ecosystem.



(TOP) AIRSPACE MODERNIZATION SOLUTIONS; (ABOVE) AIRCRAFT INTERIORS SEAT TESTING.

Collins Aerospace is also working with nearly 600 suppliers in India and is looking to expand this further. On the Pratt & Whitney side, we have plans to increase our sourcing to nearly \$150 million annually by 2030.

Pratt & Whitney has invested over \$40 million in our Centers of Excellence focused on engineering, digital transformation, supply chain operations and customer service. Collins has invested an additional \$200 million in expanding its R&D and production facilities in India. In fact, for Collins, Bengaluru is the only site that works with all the six portfolios of our company including avionics, interiors, advanced structures and connected aviation solutions. ●

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MANOJ JAIN

Quality, Technology & Innovation

Manoj Jain, Chairman and Managing Director, BEL explains how a laser sharp focus on the customers gives them a competitive edge

SP's ShowNews (SP's): Can you tell us how BEL is helping the Government realise the dream of an Atmanirbhar Bharat?

CMD, BEL (CMD): BEL, since inception, has been working towards achieving self-reliance. Responding to the clarion call by the Prime Minister of India, BEL has recalibrated its efforts and is strongly promoting the Government's 'Make in India' initiative by laying strong thrust on in-house R&D and indigenisation, Public-Private Partnerships, Joint Ventures, capacity expansion and modernisation.

The Akash Air Defence Weapon System of BEL is a great success story and shining example of BEL's indigenous design, development and manufacturing drive. The Coastal Surveillance System developed by BEL for the Indian Coast Guard is now being offered to other friendly countries as well as for generating export business. The Weapon Locating Radar, developed indigenously by BEL and DRDO lab LRDE, and its lighter version designed for surveillance in mountainous and high-altitude terrains are proving to be game-changers for India's military.

To ensure that we stay at the forefront of innovation, we invested 6.24 per cent of our turnover in R&D last year and, as a result, achieved 77 per cent of our turnover in FY 2023-24 from indigenous products. Increasing the level of indigenisation of its products and systems has not only given BEL long-term competitive advantage but also helped in aligning itself with the country's dream of achieving Atmanirbharta (self-reliance) in Defence.

SP's: How do you see BEL making an impact in the domestic Defence and non-defence markets in coming years and what are your strategies to retain leadership position in these sectors?

CMD: BEL has maintained a decent mix of Defence and Non-Defence business in its overall business portfolio. In the Indian Defence Electronics segment, we continue to hold a significant market share based on our deep understanding of customer's needs and our ability to fulfil it. As the technology landscape continues to evolve in Defence sector, our concerted efforts in building state-of-the-art, innovative products and solutions have helped us in being the preferred partner of our armed forces.

BEL is actively participating in the MoD's Make-I, Make-II and Make-III projects involving indigenous solution development with emphasis on Sub-Systems, Systems and Services for which capabilities and competencies already exist. Further, BEL is also actively investing to develop new capabilities as needed. Opportunities are being explored to build long-term relationships with defence industry participants.

Diversification across products, segments, customers, industries and geographies remains an important focus area to unlock new opportunities and scale growth. This includes growing the Non-Defence business where we see significant prospects, especially in metro, civil aviation and cyber security areas. We will continue to build on our existing competencies and diversify to newer areas. Additionally, we are pursuing opportunities to expand our customer base in the existing and new geographies.

Though competition continues to intensify in our major business segments, our laser sharp focus in delivering our brand promise of Quality, Technology & Innovation to our customers gives us a distinct competitive advantage. This will continue to remain our guiding business mantra for retaining leadership in our core business segments.

SP's: Please tell us about your company's financial performance, turnover, order book position, etc...

CMD: BEL has always been a profit-making PSU despite various challenges including stiff competition. FY 2023-24 saw the company achieve a record turnover of ₹19,819.93 crore as against ₹17,333.37 crore in FY 2022-23, thereby registering a growth of 14.35 per cent. The growth was driven by strong performances across all segments. Defence contributed to 81 per cent of revenue in FY 2023-24 with the balance 19 per cent coming from the Non-Defence segment. Profit after Tax grew by 33.7 per cent to ₹4,020 crore in FY 2023-24 as against ₹3,007 crore in FY 2022-23.

BEL also continued the momentum in order acquisition by booking highest ever annual order inflow of ₹35,046 crore during FY 2023-24. Headed into FY 2024-25, we expect order acquisition in the range of ₹25,000 crores. The company's order book position as on January 1, 2025, stands at around ₹71,000 crore, giving it stable revenue visibility. While we participate in new orders, we will be sharply focussed on the timely execution of the existing order book. Our near-term aim is to get an entry into the Maharatna club of PSUs. Towards this, we are targeting a healthy revenue growth of double digits driven by the expansion of both Defence and Non-Defence businesses.

BEL won many noteworthy awards and recognitions for its multidimensional excellence, including the prestigious 'CII EXIM Bank Award for Business Excellence (2023)' for Hyderabad Unit, 'Karnataka State Export Excellence Award', Economic Times 'Iconic Brand of the Year Award - 2023', 'Employee Excellence Award' from Times Group, Institution of Engineers (India) 'Industry Excellence (Gold) Award for Business Excellence', 'Project of the Year - Large Category (Runner Up) Award' from Project Management Institute, Indian Chamber of Commerce 'PSE Excellence Awards', Governance Now PSU Awards, National Export Excellence Award, etc.

SP's: What is your vision for taking BEL on a fast-track growth path in coming years?

CMD: It's well acknowledged that fast track growth is basically the outcome of super synchronised functioning of various key business functions including R&D, Marketing, Operations, HR, Finance, etc. Our concerted focus has been towards streamlining each of these business functions to set a strong foundation for BEL to deliver fast track growth. Alongside our existing business segments, various high growth areas (like Arms & Ammunitions, AI, Cyber Security, Unmanned Systems, Rail & Metro) have been identified and a resilient business model is being worked upon to deliver sustained growth in these emerging segments.

Innovation has been the cornerstone of our success and our customers can rest assured that BEL will continue to develop innovative and quality products for them through collaborations with DRDO labs, research & premier academic institutions, and niche technology players. We will continue to build on our existing competencies and diversify into newer areas. Opportunities abound, we also remain watchful of the challenges brought by geopolitical situations, emerging technologies, regulatory changes and evolving customer expectations. We will remain agile to effectively navigate them and ensure steady growth path.

Roadmaps have been created for the development of future products and technologies, creation of IPRs and acquisition of key technologies. This will enable us to stay at the cutting-edge of technology and meet our customer's evolving requirements with cost-effective and innovative solutions. ●



BEL SUCCESS STORY EXAMPLES:
(TOP) AKASH AIR DEFENCE WEAPON SYSTEM;
(ABOVE) WEAPONS LOCATING RADAR.



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A Global Trailblazer and Visionary

Recently described as "Unstoppable", Dr Vivek Lall, Chief Executive, General Atomics Global Corporation, is one of the Best CEOs around the World!



DR VIVEK LALL, CHIEF EXECUTIVE, GENERAL ATOMICS GLOBAL CORPORATION WITH PRESIDENT OF UNITED STATES OF AMERICA DONALD TRUMP

Dr Vivek Lall is Chief Executive of General Atomics Global Corporation (GA) based in San Diego, California and recognised as one of the foremost leaders globally in the space of Aerospace and Defence. GA and affiliated companies operate on five continents. The company produces a series of unmanned aircraft (Predator/Reaper/Guardian) and provides electro-optical, radar, signals intelligence, and automated airborne surveillance systems. GA produces electro-magnetic aircraft launch and recovery systems, satellite surveillance, electro-magnetic rail gun, high power laser, hypervelocity projectile, and power conversion systems. GA is the principal private sector participant in thermonuclear fusion research through its internationally recognised DIII-D and inertial confinement programs. GA is a leader in development of next-generation nuclear fission and high-temperature materials technologies.

Dr Vivek Lall is a renowned authority in aerospace, defence, and latest technologies. His influence within the US military and defence landscape goes far beyond corporate leadership. As a pivotal figure in advancing US-India military trade relations, Lall has played a crucial role in fostering stronger defence ties between the two nations, particularly in technology transfer and strategic cooperation. Recognising his global impact, in 2025, Forbes featured him on its cover for his significant contributions.

In 2024, Lall was appointed as a Distinguished Visiting Fellow at the prestigious Hoover Institution, Stanford University. Lall has also been appointed on the Business Advisory Board of the Geneva based World Association of Investment Promotion Agencies (WAIPA) which is the single largest Investment platform with a membership of the National IPA's of over 105 countries. In addition, he has been appointed to the Advisory Board of the QUAD Investors Network announced by The White House in 2023. He has also been appointed through the Pentagon as a United States Technical Team member to the NATO STO (Science and Technology Organization). He is on the Industry Advisory Board of the American Society of Mechanical Engineers (ASME). Lall serves on the International Advisory Group of the US Chamber of Commerce as well as Board of Directors of US-Japan Business Council and the Global Board of Directors of the US-India Business Council in Washington DC. He also serves as Senior Advisor to the Center for Commerce and Diplomacy at the University of California San Diego as well as on the Board of the Center for Advancing Global Business at San Diego State University. In 2018, he was appointed by the United States Government in a key advisory role to the US Cabinet Secretary

Dr Vivek Lall is a renowned authority in aerospace, defence, and latest technologies. His influence within the US military and defence landscape goes far beyond corporate leadership and has played a crucial role in fostering stronger defence ties between India and the US, particularly in technology transfer and strategic cooperation.

heading Department of Transportation (encompassing entities like the Federal Aviation Administration) in Washington DC which affects US and global aviation policies and technologies.

Earlier, Dr Vivek Lall served as Vice President of Aeronautics Strategy and Business Development at Lockheed Martin, the world's largest defence company. Prior to that he has served as Chief Executive of US and International Strategic Development at General Atomics Electromagnetic Systems. From 1996-2011, Vivek held numerous marketing and engineering leadership roles with The Boeing Company, the world's largest aerospace company, including the Airplane Performance and Propulsion Group in Seattle. He was appointed as Vice President and India Country Head, Boeing Defense Space & Security in May 2007. He also worked as an adjunct faculty member at Embry-Riddle, McConnell Air Force Base. He also served as the founding Co-Chair of the US - India Aviation Cooperation Program launched in 2005. Prior to Boeing, he worked for Raytheon and conducted research with NASA Ames Research Center in various multidisciplinary engineering fields. Lall was also a special advisor to the United Nations in New York, a role in which he steered the multi-nation body frame policy and its implementation in the area of broadband and associated cyber security issues.

Dr Lall earned a Bachelor of Mechanical Engineering degree from Carleton University in Canada and a Masters of Aeronautical Engineering degree from Embry-Riddle Aeronautical University in Florida. He also has his Ph.D. in Aerospace Engineering from Wichita State University in Kansas and his MBA from City University in Seattle. He has also completed management and executive courses at the American Management Association in Washington DC.

Lall was conferred the President's Lifetime Achievement Award by the President of the United States of America in September 2022. He has been conferred the "World Leader Award" by the House of Lords in the United Kingdom in 2023. He is also an Ambassador of the State of Arkansas as well as a Kentucky Colonel which is the most well-known US colonelcies conferred to several past US Presidents. He was also granted the Grand Cross by His highness Mahmoud Salah Al Din Assaf, Cambridge (UK) has listed him as one of only 2,000 Outstanding Scientists of the Twentieth Century. He was President of the Mathematical Association of America. He has authored over hundred articles in various journals. He was also trained as a private pilot at the Phoenix International Flight Training Center in Florida. ●

Embraer to Participate with Multi-mission Transport Aircraft KC-390 Millennium

Embraer, the world's third-largest aircraft manufacturer headquartered in Brazil, will showcase its KC-390 Millennium tactical air transport aircraft and solutions spanning its defence portfolio at the Aero India 2025 in Bengaluru from February 10 to 14, 2025. Along with the KC-390 Millennium military multi-mission aircraft, Embraer will offer visitors a closer look at Embraer's comprehensive Defense & Security portfolio and innovative solutions at its booth (Hall J:JR2.3).

"Embraer is excited to be back at Aero India as we showcase the KC-390 Millennium and our broad portfolio of defense and security solutions to the industry," said Bosco da Costa Junior, President & CEO, Embraer Defense & Security. "It is an aircraft that is growing its global operator base and impressing the industry with its modern capabilities and reflects the versatility and reliability that our aircraft are known for. The Embraer team and its partners will be at Aero India in full force, in support of India's aviation and defense aims".

Embraer will showcase the exceptional versatility and performance of the KC-390. The aircraft has proven its capability, reliability, and performance across a variety of missions. By carrying more payload (26 tonnes) compared to other medium-sized military transport aircraft at a faster speed (470 knots) and over a longer distance, the KC-390, which is configured with air-to-air refueling equipment, supports a wide range of critical missions including transporting and dropping cargo and troops, medical evacuation, search and rescue, firefighting, and humanitarian missions, operating on temporary or unpaved runways such as packed earth, soil, and gravel. It has proven its aerial refueling capacity both as a tanker and as a receiver, in this case by receiving fuel from another KC-390 using pods installed under the wings.

Since entering service with the Brazilian Air Force in 2019, the Portuguese Air Force in 2023, and the Hungarian Air Force in 2024, the aircraft has shown 93 per cent mission capability, mission completion rate above 99 per cent and has clocked in more than 16,300 flight hours demonstrating exceptional productivity



EMBRAER WILL SHOWCASE THE EXCEPTIONAL VERSATILITY AND PERFORMANCE OF THE KC-390 AT AERO INDIA 2025

in its category. In addition to Brazil, Portugal, and Hungary, the Netherlands announced its choice for the Millennium in 2022. In 2023, Austria, the Czech Republic and the Republic of Korea also selected the KC-390, confirming the success of this game-changer platform. In 2024, Sweden, Slovakia and an Undisclosed Customer have also opted for the KC-390. ●



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Defence Budget 2025-26

A record over ₹6.81 lakh crore allocated in Union Budget 2025-26 for MoD, an increase of 9.53 per cent from current financial year, with a 12 per cent hike for Defence R&D Budget

SP'S SPECIAL CORRESPONDENT

In pursuance of technologically-advanced and 'Aatmanirbhar' Armed Forces, Union Budget of India has made a provision of ₹6,81,210.27 crore for Financial Year (FY) 2025-26 for the Ministry of Defence (MoD). This allocation is 9.53 per cent more than the Budgetary Estimate of FY 2024-25 and stands at 13.45 per cent of Union Budget, which is highest among the Ministries.

Out of this, ₹1,80,000 crore i.e. 26.43 per cent of total allocation will be spent on Capital Outlay on Defence Services. On Revenue Head, allocation for the Armed Forces stands at ₹3,11,732.30 crore which is 45.76 per cent of total allocation. Defence Pension receives a share of ₹1,60,795 crore i.e. 23.60 per cent and balance ₹28,682.97 crore i.e. 4.21 per cent is for civil organisations under MoD. The Ministry has taken a decision to observe 2025-26 as 'Year of Reforms' which will further strengthen the resolve of the Government for modernisation of Armed Forces and is aimed for simplification in the Defence Procurement Procedure to ensure optimum utilisation of the allocation.

CAPITAL OUTLAY

In the current geopolitical scenario where the world is witnessing a changing paradigm of modern warfare, Indian Armed Forces need to be equipped with state-of-the-art weapons and have to be transformed into a technologically-advanced combat-ready force. Keeping this in view, ₹1,80,000 crore has been allocated on Capital Outlay of the Defence Forces. This allocation is 4.65 per cent higher than the Budgetary Estimate (BE) of FY 2024-25.

Out of this, ₹1,48,722.80 crore is planned to be spent on Capital Acquisition, termed as modernisation budget of the Armed Forces and remaining ₹31,277.20 crore is for capital expenditure on Research & Development and creation of infrastructural assets across the country.

During FY 2020-21, MoD took a decision to strengthen the domestic industries and to make the forces self-reliant. Since then, a substantial share of modernisation budget is being earmarked for the capital procurement from domestic industries. In order to encourage the private sector for manufacturing and technological development in the defence sector, a notable percentage of domestic share is further earmarked for acquisition from domestic private industries. Accordingly, for FY 2025-26, ₹1,11,544.83 crore i.e. 75 per cent of modernisation budget has been earmarked for procurement through domestic sources and 25 per cent of domestic share i.e. ₹27,886.21 crore has been provisioned for procurement through domestic private industries.

This allocation will take care of major acquisitions planned in the ensuing FY and bolster jointness & integration initiatives. This allocation of funds will further facilitate MoD's plan to venture in new domains such as Cyber & Space and emerging technologies such as Artificial Intelligence (AI), Machine Learning and Robotics etc. Some major acquisitions planned in the next year such as Long Endurance Remotely Piloted Aircraft of High and Medium altitude, stage payment of Deck-based Aircraft, next generation submarines/ships/platforms will be funded out of this allocation. The capital investment in defence manufacturing sector has a cascading and multiplier effect in the National Economy which will boost the GDP and provide greater job opportunities to the youth of this country.

OPERATIONAL AND SUSTENANCE BUDGET OF ARMED FORCES

Revenue expenditure is to take care of Pay & Allowances of the Armed Forces Personnel and for sustenance & operational preparedness. Accordingly, ₹3,11,732.30 crore has been allocated for this purpose which is 10.24 per cent higher than budgetary allocation of FY 2024-25. Out of this, ₹1,14,415.50 crore has been allocated on account of non-salary expenditure which will facilitate procurement of Ration, Fuel, Ordnance Stores and maintenance/repair of equipment etc.

Government has been continuously allocating higher amount for sustenance and operational preparedness of the Armed Forces since mid-year review during FY 2022-23 and accordingly has given significant jump of 24.25 per cent in the next FY in comparison to the budgetary estimate of current FY. This allocation will

address the requirement due to additional deployment of the forces in the border areas, hiring of vessels, increase in expenditure on longer sea deployment of ships and increase in flying hours for the aircraft. Under the Salary Head of revenue expenditure, ₹1,97,317.30 crore has been allocated to take care of Pay & Allowances of the three services and any further requirement will be addressed during mid-year review.

ENHANCED ALLOCATION FOR DRDO

The budgetary allocation to Defence Research and Development Organisation (DRDO) has been increased to ₹26,816.82 crore in FY 2025-26 from ₹23,855.61 crore in FY 2024-25 which is 12.41 per cent higher than the BE of 2024-25. Out of this, a major share of ₹14,923.82 crore has been allocated for capital expenditure and to fund the R&D projects. This will financially strengthen the DRDO in developing new technologies with special focus on fundamental research and hand-holding of the private parties through Development-cum-Production Partner. The increased allocation under Capital Head of DRDO will further provide adequate financial resources in funding the projects to be taken up in collaboration with private parties through flagship scheme of DRDO i.e. Technology Development Fund and will assist the development of Deep Technology in the defence sector.

For making the Armed Forces self-reliant in defence technology and encouraging innovation, it is imperative to engage the private players and strengthen the startup ecosystem in the country for technological development and innovation in the defence sector. For this purpose, ₹449.62 crore has been allocated to iDEX scheme, including its sub scheme Acing Development of Innovative Technologies with iDEX (ADITI) to be utilised for funding the projects to be taken up under this scheme. Allocation in this head shows a jump of almost three times in two years.

ENCOURAGING STARTUP ECOSYSTEM FOR INNOVATION IN DEFENCE

For making the Armed Forces self-reliant in defence technology and encouraging innovation, it is imperative to engage the private players and strengthen the startup ecosystem in the country for technological development and innovation in the defence sector. For this purpose, ₹449.62 crore has been allocated to iDEX scheme, including its sub scheme Acing Development of Innovative Technologies with iDEX (ADITI) to be utilised for funding the

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CAPITAL BUDGET OF INDIAN COAST GUARD

Indian Coast Guard (ICG) has been allotted ₹9,676.70 crore under Capital and Revenue Head which is 26.50 per cent more than the allocation for FY 2024-25 at BE stage. This increase is primarily in line with the focus of the Government on capability development of ICG and equipping them with modern equipment. ICG not only strengthens coastal security, but also provides assistance to neighbouring countries and commercial ships during emergency through faster response.

A jump of 43 per cent in Capital Budget i.e. from ₹3,500 crore for FY 2024-25 to ₹5,000 crore for FY 2025-26 will provide adequate financial space for acquisition of Advanced Light Helicopters (ALH), Dornier Aircraft, Fast Patrol Vessels (FPVs), Training Ships, Interceptor Boats etc. On revenue head, the allocation has been increased from ₹4,151.8 crore for FY 2024-25 to ₹4,676.70 crore for FY 2025-26 which shows an increase of 12.64 per cent. The increase will be utilised to fund the expenditure to be incurred on additional deployments of manpower and resources in addition to addressing the inflation.

STRENGTHENING BORDER INFRASTRUCTURE

In order to further improve the border Infrastructure and facilitate the movement of Armed Forces personnel through tough terrains, ₹7,146.50 crore has been allocated to Border Roads Organisation (BRO) under capital head which is 9.74 per cent higher than the BE of 2024-25. The financial provision made for the FY 2025-26 for BRO will not only promote the strategic interest of the nation in border areas by constructing tunnels, bridges and roads such as LGG-Damteng-Yangtse in Arunachal Pradesh, Asha-Cheema-Anita in J&K and Birdhwal-Puggal-Bajju in Rajasthan, but will also boost socio-economic development, provide employment opportunities and encourage tourism. BRO has created substantial employment opportunities by employing 70,000 local youths and has contributed to the local economies fostering long-term employability and skill development. ●



FINANCE MINISTER WITH TOP OFFICIALS ON HER WAY TO PRESENT THE UNION BUDGET FOR 2025-26

Exclusive Interview Secretary, Defence Production...Continued from Page 4

or indirectly plays a very critical role. Support of our armed forces has been commendable in this aspect.

India has the unique opportunity of manufacturing or maintaining the platforms/ technologies of both Western and Russian origin. This gives us unique opportunity to export our products or services to the countries using both type of technologies.

Manish Jha: How does the public procurement process boost domestic production for both private and DPSUs?

Sanjeev Kumar: Major role in promoting Indian defence domestic production has been played by procurement process adopted in the DAP 2020. Now 75 per cent of the capital procurement by armed forces is through Indian defence industries.

Further processes like IDDM, Make-I, Make-II, iDEX and Aditi have promoted indigenous development of prototypes and products. Positive Indigenisation Lists of DPSUs and Armed forces have created large assured market for our MSMEs giving them opportunities to be a part of Indian Defence Industry and rise in the value change in coming years.

Manish Jha: Recent reforms of Ordnance factories into DPSUs aim to bring efficiency and higher innovations. Could you talk about their growth in terms of production and revenues?

Sanjeev Kumar: The Ordnance Factory Board was corporatised in the year 2021 and converted into seven new Defence Public Sector Undertakings consisting of 41 factories. Ordnance Factories were supplying equipment and ammunition mostly to the Indian Armed Forces and within a short span of three years since their Corporatisation, these new DPSUs are competing in the market and are being reasonably successful in getting supply orders from the Armed Forces. New DPSUs are also working on improving their delivery schedule. They are also focusing now on the development of new products & improving existing products.

In terms of opportunities, the production of the new DPSUs in the year 2023-24 was ₹18,581 crores and their export is ₹1,977 crores it is clearly seen that their export has risen up significantly.

Manish Jha: Could you elaborate on the advanced technologies especially advanced materials, engine and propulsion systems for Indian defence?

Sanjeev Kumar: We have been focusing on the development of new defence technologies and products mainly through DRDO. Now industries, both in the private and public sectors, have also started giving attention to research and development. Gaps in our indigenous defence manufacturing capabilities are well recognised and efforts are being made to bridge those gaps. It is clear that advanced materials and engine propulsion systems are essential defence technologies. These technologies provide an edge to the countries that possess them in developing advanced weapon systems. It is not easy to get "transfer of such technologies" from other countries. The route for developing such technologies indigenously is long and arduous requiring patience and resources along with all-round efforts by all stakeholders including DRDO, other research and development organizations, academic institutions, industries and armed forces. All stakeholders are aware of the need and work has started in the field of many such technologies.

Manish Jha: R&D in production is the key. What are the incentives or policy direction to excite R&D in the defence industry?

Sanjeev Kumar: The government is encouraging R&D spend in defence by industries by encouraging procurement from domestic industries and operating various schemes for the design and development of new products, systems and sub-systems. Under the Make-1 scheme Government funding of up to 70 per cent is available for the design and development of defence equipment and system.

Make-II entails industry-funded R&D with government support in the form of guaranteed procurement. Under the iDEX Scheme, the Government has earmarked ₹498.78 crores, from 2021-22 to 2025-26, for providing financial support to Startups/MSMEs/individual Innovators for developing innovative technology/products. iDEX provides grants/funding up to ₹1.50 crore and other support to carry out R&D which has potential for future adoption for Indian Defence and Aerospace needs. Further, the ADITI (Acing Development of Innovative Technologies with iDEX) scheme with budgetary support of ₹750 crores was launched to provide support with grants of up to ₹25 crores, targeting the development of cutting-edge, critical and strategic technologies. Defence PSUs have also started investing more of their resources in the Design and Development of products and also R&D in niche technology. Private sectors are also increasing their R&D spending. ●

VEM Technologies – Ignited Minds

Contributing towards Nation's Atmanirbharta in Aerospace & Defence

Within a span of 37 years since being set up in 1988, Hyderabad based Aerospace and Defence company in the private sector, VEM Technologies, has grown in diversified technological fields to manufacture state of the art, highly reliable systems for aerospace and defence applications. The company is among the very few recognized as a design and production centre under Category 'A' by the Defence Ministry and thus authorised to make classified products.

The company's core strength is expertise and capability across the entire spectrum of product cycle spanning; Research, Design, Development, Manufacture, Assembly, Integrating and Testing of Equipment and Systems, thus truly living up to the credo of Atmanirbharta. This is achieved by a highly professional workforce comprising nearly 1400 personnel, of which more than are 50 % are into design and engineering. The design expertise of the company spreads across diverse verticals such as RF & MW, Electro Optics, Composites, Mechatronics, Avionics, Aero engines, Aero structures, Power Electronics & Systems and Hi-energetics.

In the Aerospace segment, VEM has worked very closely with Hindustan Aeronautical Limited (HAL), Aeronautical Development Agency (ADA) and Aeronautical Development Establishment (ADE) to develop and manufacture niche products. VEM has the distinction of being the first private sector unit to make the Central Fuselage for the indigenous Light Combat Aircraft (LCA) Tejas. In January 2025, VEM delivered a 1:1 model of the next generation Advanced Fighter Aircraft (AFA) to ADA, which is displayed in the ongoing Aero India 2025 exhibition. A notable aspect of this project is that all the modules from nose to tail made of composite and aluminum structures were manufactured, assembled and integrated in VEM facility. Regarding Aero engines, VEM has completed the design and development of 5 KW Generator with its controller unit which will be offered to LCA production programme soon. VEM is also in the development of 75 KVA generator and its controller unit for AFA. Capitalising on its expertise and long experience with actuators for missiles, VEM is developing the same for HAL.



V. VENKATA RAJU, CHAIRMAN AND MANAGING DIRECTOR

Besides these VEM is developing a host of other onboard import substituting high-tech systems for ALH, LCH and LUH.

VEM's capability in missiles extends from the nose to tail encompassing Seekers, Inertial Navigation Systems, Onboard Processor (OBP), Servo Systems, Actuators and Propulsion Motors etc. VEM has been associated with many strategic and tactical missile programmes and most of the missiles manufactured in the country fly with one or more VEM's system onboard. Decades of experience in this field was utilised to conceive and develop the Man Portable Anti-Tank Guided Missile AsiBal with fire and forget capability, which is undergoing field

trials. Vismai missile has been developed against Helicopters, UAVs and Drones, meeting user stipulated requirements. VEM is also developing a complete Air Defence System, Ajita which includes, sensors, mounting vehicle, missiles and their launchers for air defence. Vidhwams is a long range Guided Rocket System capable of destroying land targets. VEM is actively involved in Anti - Drone warfare offering hard and soft kill systems.

The company has a very strong portfolio in Surveillance Systems such as Radars, Electro-Optical Systems and networking software to integrate sensors which can be used in sensitive border area and can detect even human beings at extended distance. In the airborne category, VEM offerings include Infrared Imaging Search and Track System (IRST) and the Ravis series of EO systems. VEM has also developed a technologically intricate space antenna system.

As part of capacity and capability augmentation, VEM is coming out with an Integrated Defence Systems Facility near Hyderabad, aimed at delivering a range of weapon and aeronautical systems. According to the Chairman and Managing Director, V. Venkata Raju, this facility will also serve overseas customers thus contributing to India's ever-growing exports to the global defence and aeronautics segment.

VEM has grown to a complete systems provider indigenising many a technology with a state of art infrastructure to serve the Indian Armed Forces and international clientele. ●

Aero India 2025: A Showcase of Modern Power and Global Partnerships

Aero India represents India's ascent as a modern defence power—a nation that embraces cutting-edge technology, innovation, and international collaboration to safeguard its future

DR B.K. DAS, VIPIN KUMAR KAUSHIK, AMIT SHARMA / DRDO

Following the massive success of Aero India 2023, which saw participation from about 100 countries, 809 exhibitors, and a remarkable footfall of over seven lakh visitors, the 2025 edition promises even greater engagement. Key highlights include dynamic exhibitions, cutting-edge aircraft displays, the prestigious Bandhan ceremony, finalisation of 250+ MoUs/partnerships worth more than ₹75,000 crores and participation of 27 Countries in the Indian Ocean Region (IOR)+ Defence Ministers' Conclave.

The event features expansive exhibition halls depicting various solutions, outdoor displays of large-scale systems, and business chalets designed for high-level meetings. It also provides unparalleled opportunities for B2B and B2G interactions, enabling industries to secure vital partnerships and explore market growth avenues. Additionally, Aero India offers extensive media coverage, amplifying the visibility of participants and their innovations on a global stage.

Aero India 2025 is not just an airshow—it is a stage where the future of aerospace takes flight, positioning India at the forefront of technological and strategic advancements in this critical sector.

AERO INDIA'S STRATEGIC IMPORTANCE TO INDIA'S DEFENCE GOALS

Aero India has become a crucial platform for India to demonstrate its growing defence capabilities and to position itself as a key player in the global defence industry. Since its inception in 1996, the event has grown exponentially, both in terms of international participation and the technological sophistication of its exhibits. What began as a modest airshow has now become a vital stage for unveiling advanced fighter jets, drones, missile systems, and other military hardware.

Aero India acts as a catalyst for partnerships between Indian and international defence companies. The 2023 edition saw 250 B2B agreements with a combined value of ₹75,000 crore, demonstrating the potential of such collaborations to drive technology transfer and co-development initiatives.

The focus on startups and MSMEs, as seen in the exclusive iDEX Pavilion at Aero India 2023, highlights the importance of nurturing homegrown talent. The previous edition successfully pledged over ₹200 crore through the iDEX Investor Hub, emphasising India's commitment to fostering innovation in the defence sector.

Aero India 2025 plays a pivotal role in advancing India's defence objectives, aligning with the nation's vision for self-reliance and technological supremacy under the 'Make in India' initiative. In 2025, the event is expected to draw representatives from over 50 countries, including global defence contractors, aviation experts, and policymakers. By fostering joint ventures, promoting indigenous innovations, and facilitating global collaborations, the event strengthens India's defence ecosystem.

The strategic importance extends to the showcasing of India's airpower, with grand flypasts and static aircraft displays serving as a testament to the nation's growing aerospace capabilities. Aero India 2025 is poised to reinforce India's defence and aerospace goals, contributing to a robust, self-reliant, and globally competitive sector.



REINFORCING DRDO'S ROLE AS THE BACKBONE OF INDIA'S DEFENCE INNOVATION:

(TOP) AMCA 5TH GEN COMBAT AIRCRAFT;
(MIDDLE) INDIGENOUS FIGHTER LCA TEJAS;
(ABOVE) NETRA AEW&C ON EMBRAER PLATFORM.

DRDO AT AERO INDIA 2025

The Defence Research and Development Organisation (DRDO) will present a formidable display of over 330 state-of-the-art products, systems, and technologies at Aero India 2025 in indoor pavilion, reinforcing its role as the backbone of India's defence innovation. DRDO's participation will be structured around nine key themes such as "Airborne Surveillance Solutions", "Naval Warfare", "Next-Generation Missile Systems", "Supremacy in the Skies - ADA's 5th Gen Leap", "Unmanned Aerial Systems", "RadarScape: Mapping the Invisible", "Maritime Sentinel: A New Era of Surveillance & Safety", "Sensors Suite for Fighter Aircraft" and "Raksha Kavach". All themes are being supported by various operational scenario, salient features depicted in the form of video contents using immersive technologies like anamorphic display, LED walls, Digital standees, Holographic fans etc.

Additionally, with the mandate of DRDO focussing more on technologies, 14 advanced Technology Zones will highlight cutting-edge research which includes "Advanced Materials & Composites", "Surveillance & Reconnaissance Technology", "Antenna & Microwave Technology", "Soldier Support Systems", "Combat Aircraft Technology", "Corporate Directorates", "Micro Electronic Devices, Computational Systems, and Cyber Security", "Land Systems & Munitions", "Missile Technology", "Next-Gen Combat Vehicles & Tactical Mobility", "Photonics, Laser and Quantum Technology", "Electronic Warfare & Communication", "Simulation & Training Technology" and "Aero Propulsion Technology".

A major highlight of DRDO's presence will be its contribution to the prestigious India Pavilion, showcasing state-of-the-art Defence systems. This pavilion exemplifies the combined strength of India's private industries, Defence PSUs, startups, and DRDO, the premier defence research organisation under the Ministry of Defence. Among the 17 DRDO products on display will be the Advanced Medium Combat Aircraft (AMCA) with all its weapons & sensors, Dornier mid-life upgrade with DRDO designed systems, Advanced Lightweight Torpedo, Naval Anti-Ship Missile-Medium Range, Kaveri Derivative Aero Engine (without afterburner), Medium Range Maritime Reconnaissance (MRMR) Aircraft, Guided Pinaka, and Twin Engine Deck-Based Fighter (TEDBF).

DRDO's exhibits will be spread across indoor, outdoor, and live demonstration zones. The outdoor exhibits will feature QRSAM, AKASH NG Launcher system, Archer UAV, and VHF Radar, Advanced EW System Dharashakti etc, while the flying display will include the upgraded Dornier Aircraft with advanced mid-life modifications. Additionally, DRDO will organise a seminar titled "DRDO-Industry Synergy towards Viksit Bharat: Make in India, Make for World" to highlight its collaborative vision for self-reliance in defence technology.

With an expansive and technologically diverse exhibition, DRDO's participation at Aero India 2025 underscores India's growing strength in aerospace and defence, advancing Atmanirbhar Bharat and positioning the nation as a leader in global defence innovation.

As the world witnesses this extraordinary synthesis of tradition and modernity, Aero India 2025 reaffirms India's stature as a global powerhouse, embodying the spirit of unity, resilience, and innovation while paving the way for a secure and inclusive future for all. ●

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