फरवरी
February
2025

खंड/Vol. : 50 अंक/Issue : 31

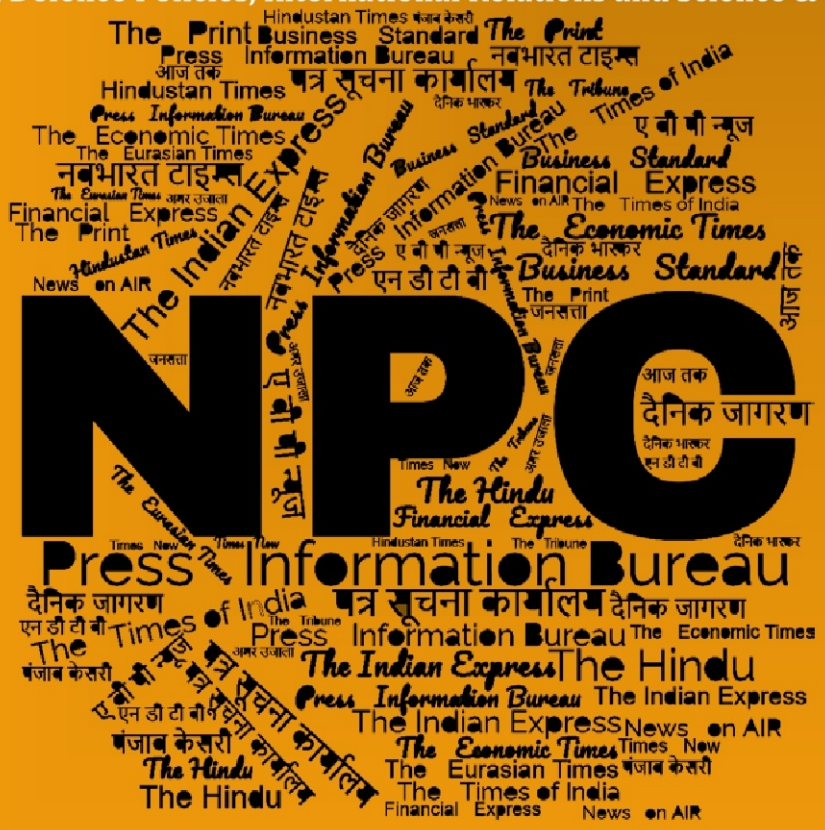
13/02/2025

समाचार पत्रों से चयनित अंश

Newspapers Clippings

डीआरडीओ समुदाय को डीआरडीओ प्रौद्योगिकियों, रक्षा प्रौद्योगिकियों, रक्षा नीतियों, अंतर्राष्ट्रीय संबंधों और विज्ञान एवं प्रौद्योगिकी की नूतन जानकारी से अवगत कराने हेतु दैनिक सेवा

A Daily service to keep DRDO Fraternity abreast with DRDO Technologies, Defence Technologies, Defence Policies, International Relations and Science & Technology



रक्षा विज्ञान पुस्तकालय
Defence Science Library
रक्षा वैज्ञानिक सूचना एवं प्रलेखन केंद्र
Defence Scientific Information & Documentation Centre
मेटकॉफ हाउस, दिल्ली - 110 054
Metcalfe House, Delhi - 110 054

CONTENTS

DRDO News

India offers DRDO-developed Pinaka multi-barrel rocket launcher to France

Source: Hindustan Times, Dt. 12 Feb 2025,
URL: https://www.hindustantimes.com/india-news/india-offers-drdo-developed-pinaka-multi-barrel-rocket-launcher-to-france-101739375919716.html

India has offered the indigenously developed Pinaka multi-barrel rocket launcher system to France as Prime Minister Narendra Modi and President Emmanuel Macron discussed the expansion of defence and security cooperation between the two sides.

The Pinaka system, developed by the Defence Research and Development Organisation (DRDO) for the Indian Army, found its first foreign customer in 2023 when Armenia signed a $245-million deal for it. Several other countries, including Indonesia and Nigeria, have expressed interest in the weapon system.

Modi “invited the French Army to take a closer look at the Pinaka MBRL, emphasising that an acquisition of this system by France would be another milestone in Indo-French defence ties”, said a joint statement issued on Wednesday.

France is one of India’s closest strategic partners in Europe and defence and security cooperation is among the strongest pillars of the bilateral relationship. Over the years, France has supplied a range of combat jets and submarines to India, and the two sides are in negotiations for New Delhi to acquire 26 Rafale-M combat jets and three Scorpene submarines for the Indian Navy.

The joint statement said the two leaders reviewed the collaboration for constructing the Scorpene submarines in India, including indigenisation of components, the work to fit an air independent propulsion (AIP) system developed by DRDO in the P75-Scorpene submarines and analyses for the “possible integration of the Integrated Combat System (ICS) into the future P75-AS submarines”.

India has so far acquired six submarines under the P75 Scorpene-class project, the last of which was commissioned into the navy on January 15. New Delhi now has plans for a follow-on order for three more submarines of the same class.

The two sides, the joint statement said, welcomed ongoing discussions on missiles, helicopter engines and jet engines. They welcomed the cooperation between entities in the Safran group and their Indian counterparts, which are working on the development of aero engines.

Macron also welcomed the decision to include India as an observer in the Eurodrone programme, managed by the Organisation for Joint Armament Cooperation (OCCAR), a European intergovernmental body that manages collaborative armament programmes involving Belgium, France, Germany, Italy, Spain and the UK. This, Macron said, is “another step forward in the growing strength of our partnership in defence equipment programmes”.

Besides regular military exercises and joint patrolling by maritime patrol aircraft, the two countries launched FRIND-X or France-India Defence Startup Excellence last December to foster defence innovation and partnerships. Modi and Macron stressed the early launch of a research and development framework for cooperation in defence technologies between DRDO and France's Directorate General of Armament (DGA).

Modi and Macron also condemned all forms of terrorism, including cross-border terrorism, and called for disruption of terror financing networks and safe havens. "They further agreed that no country should provide safe haven to those who finance, plan, support, or commit terrorist acts," the joint statement said.

Without directly naming Pakistan, the joint statement sought concerted action against all terrorists, including through designation of individuals affiliated with groups listed by the UN Security Council 1267 Sanctions Committee. Both sides reiterated their commitment to work together in the Financial Action Task Force (FATF), No Money For Terror (NMFT) and other multilateral platforms.

*

Prize distribution ceremony of Defence Innovation Challenge for Excellence 2024 held during Aero India 2025

Source: Press Information Bureau, Dt. 05 Feb 2025,
URL: https://pib.gov.in/PressReleaseIframePage.aspx?PRID=2102470

The grand finale and prize distribution ceremony of the Defence Innovation Challenge for Excellence (DICE-2024) was organised during Aero India 2025 in Bengaluru on February 12, 2025. The competition witnessed an overwhelming response, attracting applications from 47 cities across 17 states. After rigorous screening across three levels, 24 start-ups advanced to the grand finale, with winners selected across three categories: Revenue Stage, Pre-Revenue Stage, and Idea Stage. These are:

Revenue Stage

- **Winner**: Shravan Yadav, Auxobit Aerospace Private Limited, Chhatrapati Sambhajinagar
- **Runner-up**: Nikhil Rajput, NxtQube - Aerogravity Pvt. Ltd., Nashik

Pre-Revenue Stage

- **Winner**: A. Gyanesh Kumar Rao, Gyanadraksha Wydhumraketustra Subrahmkr Pvt. Ltd., Bhilai, Madhya Pradesh.
- **Runner-up**: Utkarsh Ahuja, Contriver Autonomous Systems Private Limited, Delhi

Idea Stage

- **Winner**: Vijay Mamtani, Prayogik, Bhopal
- **Runner-up**: Ryan Nadar, PLASMA BLADE PROPELLER, Mumbai
- **Special Jury Mention**: Sarthak Sudhir

The grand jury panel for the finale featured senior officials from the Armed Forces, Distinguished Academicians, and seasoned industry leaders. Winners were awarded a total cash prize of Rs 6.50 lakh, along with exclusive incubation and seed funding opportunities through MAGIC. DICE-2024 was launched in October 2024 to identify and support cutting-edge solutions for critical defence challenges while enabling start-ups to transform their research into commercially viable technologies.

Speaking on the occasion, Director General (Electronic and Communication Systems), DRDO Dr BK Das emphasised the crucial role of initiatives like DICE-2024 in strengthening India's defence innovation ecosystem. He said DRDO remains committed to supporting innovative start-ups that align with the Government's vision of Aatmanirbhar Bharat in defence. Challenges like DICE-2024 provide a crucial platform for breakthrough technologies, he added.

The event was organised by the Marathwada Accelerator for Growth and Incubation Council (MAGIC), and powered by Defence Research and Development Organisation (DRDO) and the 3D Engineering LLP, with support from Start-up India, the Office of the Scientific Advisor to the Government of India, iDEX, and the Maharashtra State Innovation Society.

*

Aero India 2025: DRDO unveils 155 mm guided projectile

Source: Janes, Dt. 12 Feb 2025,
URL: https://www.janes.com/osint-insights/defence-news/weapons/aero-india-2025-drdo-unveils-155-mm-guided-projectile

India's Defence Research and Development Organisation (DRDO) unveiled a prototype of a new 155 mm guided projectile for Bharat Forge Limited's (BFL's) 155 mm/52 calibre Advanced Towed Artillery Gun System (ATAGS) at the Aero India 2025 show in Bangalore.

The guided projectile is fin-stabilised and guided by GPS and inertial navigation system (INS). The munition is 1 m in length, weighs around 50 kg, and is expected to have a range of 40 to 50 km when fired from ATAGS. DRDO officials said the projectile is currently in the design and development phase.

ATAGS has been jointly developed by DRDO in collaboration with industry partners including BFL and its subsidiary Kalyani Strategic Systems Limited (KSSL) as well as Tata Advanced Systems Limited (TASL).

India's Chief of the Army Staff Lieutenant General Upendra Dwivedi announced in January in a press conference that a contract to procure ATAGS is expected to be finalised by March 2025. A DRDO spokesperson told Janes on 10 February that the Indian Army will receive 307 ATAGS units under this deal.

According to Janes Land Warfare Platforms: Artillery & Air Defence , ATAGS weighs 12 tonnes. It can fire six rounds in 30 seconds and five successive rounds in a short duration.

India's 155 mm guided munition

DRDO says on its website that ATAGS has the capability to fire future long-range guided munitions for “precision and deep strike” operations. It adds that the ATAGS is configured with an “all-electric drive that will ensure maintenance-free and reliable operation over longer periods of time”.

*

DRDO, Adani unveil advanced vehicle-mounted counter-drone system

Source: The Times of India, Dt. 12 Feb 2025,
URL: https://timesofindia.indiatimes.com/city/bengaluru/drdo-adani-unveil-advanced-vehicle-mounted-counter-drone-system/articleshow/118187411.cms

DRDO and Adani Defence & Aerospace jointly unveiled country's first vehicle-mounted counter-drone system at the airshow. The innovative system, developed through a public-private partnership, marks a milestone in India's indigenous defence technology development.

BK Das, director-general (electronics & communication system), DRDO, launched the platform, stressing its crucial role in strengthening India's defence preparedness against emerging aerial threats. This system integrates multiple counter-drone technologies into a highly mobile platform, ensuring rapid response and operational flexibility, Das said.

The platform features integrated SIGINT (signal intelligence), electro-optical sensors, and jammers. "The state-of-the-art system, mounted on a 4x4 vehicle, boasts comprehensive drone countermeasures, including a high-energy laser system, a 7.62 mm gun, and advanced radar capabilities. With an operational range of 10km, it provides automatic detection, classification, and neutralization of drone threats, making it a vital asset for protecting both military and civilian infrastructure," Adani Defence said in a statement.

The system's development happened under DRDO's Transfer of Technology (ToT) framework. Adani Defence & Aerospace CEO, Ashish Rajvanshi said, "This demonstrates the successful translation of DRDO's cutting-edge technology into an operationally ready solution that strengthens our armed forces' ability to counter evolving drone threats."

*

Defence News

Defence Strategic: National/International

Manthan, the flagship annual defence innovation event, held at Aero India 2025

Source: Press Information Bureau, Dt. 12 Feb 2025,
URL: https://pib.gov.in/PressReleasePage.aspx?PRID=2102448

Manthan 2025, the flagship annual defence innovation event, was held as part of Aero India 2025 in Bengaluru on February 12, 2025. Organised by the Innovations for Defence Excellence – Defence Innovation Organisation (iDEX-DIO) under the aegis of the Department of Defence Production, the event brought together stakeholders of the defence innovation ecosystem, including innovators, industry leaders, academia, incubators, investors, thought leaders, and senior government officials.

As part of the event, a Roundtable Conference was chaired by Secretary (Defence Production) Shri Sanjeev Kumar. He stressed on enhancing India’s combat readiness through the adoption of futuristic technologies to secure a strategic advantage in defence. He emphasised that by integrating latest innovations into the defence strategy, the country can modernise its Armed Forces, strengthen its readiness for future combat scenarios, and maintain a technological edge over potential adversaries.

Secretary, Department for Promotion of Industry and Internal Trade, Chairman IN-SPACe, Axilor Ventures, SKEGEN Management Advisors, CMDs of major DPSUs, CEO Bharat Forge Defence & Aerospace and President, Society of Indian Defence Manufacturers, ideaFORGE, Sagar

Defence, NewSpace Research & Technologies Pvt Ltd and major Incubators including IITs and IIMs attended the roundtable.

The conference deliberated on emerging challenges and opportunities in the sector, with a focus on supporting defence start-ups & MSMEs, enhancing innovation capabilities and fostering strategic collaborations within the defence ecosystem. This was particularly relevant as iDEX-DIO has collaborated with leading investors and banks to accelerate defence innovation and enable ease of doing innovation.

Manthan 2025 stood as a testament to the scale and speed of iDEX, showcasing the rapid strides made in defence innovation and the pivotal role of startups in transforming India's defence capabilities. It contributed to driving the self-reliance mission of the Ministry of Defence as the nation progresses towards *Viksit Bharat* by 2047.

*

Raksha Mantri holds bilateral meetings with Defence Ministers of Zimbabwe, Yemen, Ethiopia, Gambia & Gabon on Day 3 of Aero India 2025

Source: Press Information Bureau, Dt. 12 Feb 2025,
URL: https://pib.gov.in/PressReleasePage.aspx?PRID=2102275

On the margins of Aero India 2025, Raksha Mantri Shri Rajnath Singh held bilateral meetings with Minister of Defence, Zimbabwe Mrs Oppah Muchinguri Kashiri; Minister of Defense, Yemen Lt Gen Mohsen Mohammed Hussein Al Daeri; Minister of Defense, Ethiopia Mrs Aisha Mohammed (Eng.); Minister of Defence, Gambia Mr Sering Modou Njie and Minister of National Defence, Gabon Ms Brigitte Onkanowa in Bengaluru on February 12, 2025.

During the meeting with the Defence Minister of Zimbabwe, both sides reviewed existing bilateral defence cooperation and agreed to cooperate in areas of training, military courses and capacity building of the Armed Forces of Zimbabwe. Both leaders signed an MoU on defence cooperation and expressed confidence that this would lead to further deepening of ties. They underscored the importance of regular engagements between the Defence Ministers to effectively implement the MoU. Both countries affirmed their commitment to deepen collaboration between the defence industries for production and maintenance of assets. Cooperation in the fields of Military Medicine was also discussed.

During the meeting with the Ethiopian Defence Minister, both leaders expressed satisfaction at the growing bilateral defence ties. Acknowledging the importance of close and active engagement, both Ministers signed an MoU cooperation in the field of defence for institutionalising the ongoing ties. Both sides considered collaboration in various areas including military training, courses, peacekeeping and capacity building of the Armed Forces of Ethiopia. Discussions to further strengthen defence industry cooperation were also held and India’s emerging private sector was highlighted.

In the meeting with the Defence Minister of Yemen, both leaders took note of enhancing engagements in the field of defence. To take this a step further, both leaders held discussions for partnership in the field of military training, courses and capacity building of the Armed Forces of Yemen. The meeting gave an additional impetus and guidance to the deepening of the defence cooperation between India and Yemen.

During the meeting with the Gambian Defence Minister, both leaders reiterated their commitment to working together in defence domain. The two leaders reaffirmed their desire to enhance cooperation for capacity building, capability enhancement and sharing of best practices for the mutual benefits of both sides. Both sides also highlighted the huge potential for defence industry cooperation.

Raksha Mantri's meetings with the Defence Minister of Gabon provided both sides with an opportunity to discuss the matters related to bilateral defence cooperation. Both leaders pledged to continue to deepen cooperation and focused their discussions on key issues related to training and capability enhancement of the Armed Forces. Both sides also explored the possibility to collaborate in the area of defence industry.

*

Defence Secretary meets multiple defence delegations at Aero India 2025

Source: Press Information Bureau, Dt. 12 Feb 2025,
URL: https://pib.gov.in/PressReleasePage.aspx?PRID=2102070

Defence Secretary Shri Rajesh Kumar Singh held a number of bilateral meetings on the sidelines of Aero India 2025 in Bengaluru on February 11, 2025. He held discussions with the Mozambican Defence Secretary Mr Casimiro Augusto Mueio; Secretary, Ministry of Defence of Sri Lanka Air Vice Marshal (Retd) Sampath Thuyacontha; Permanent Secretary of Defence, Suriname Mr Jayantkumar Bidesie; State Secretary of Mongolia Brigadier General Gankhayug Degvadorj; Secretary, Ministry of Defence, Nepal Mr Rameshwor Dangal; Permanent Secretary, Mauritius Mr Devendre Gopaul and Permanent Secretary, Democratic Republic of Congo Major General Lukwikila Metikwiza Marcel.

The meetings focused on reviewing the ongoing defence cooperation and exploring ways to enhance the ties. In particular, the discussions centred on enhancing defence industrial cooperation. Later, the Defence Secretary also met Director of the International Directorate of the Directorate General of Armament, France Lt Gen Gael Diaz de Tuesta to discuss various joint projects and defence industrial cooperation.

*

India moving towards becoming a global leader in defence innovation & aerospace technology: Raksha Mantri Shri Rajnath Singh at Valedictory event of Aero India 2025

Source: Press Information Bureau, Dt. 12 Feb 2025,
URL: https://pib.gov.in/PressReleasePage.aspx?PRID=2102439

"India is going through a revolutionary phase of transformation and is moving towards becoming a global leader in defence innovation & aerospace technology," said Raksha Mantri Shri Rajnath Singh while addressing the Valedictory event of 15th Aero India in Bengaluru, Karnataka on February 12, 2025. Raksha Mantri stated that, at the beginning, holistic national empowerment was the underlying philosophy of the mantra of self-reliance given by the Prime Minister Shri Narendra Modi. "This philosophy gradually turned into our national spirit and now it is rapidly moving ahead to becoming a national resolution and national revolution," he said.

Shri Rajnath Singh acknowledged the energy and enthusiasm being witnessed at Aero India 2025, stating that the growing participation of domestic & global exhibitors at the event and the breath-taking aerobatic performances by the Indian Air Force have made the 15th edition of Asia's biggest aerospace and defence exhibition an unparalleled & historic event. He expressed optimism towards deeper and meaningful engagements amongst participating defence and aerospace companies.

Elaborating on the drastic change being witnessed in the field of defence manufacturing in the country, Raksha Mantri expressed appreciation over the fact that while 65-70% of defence equipment was imported a decade ago, today almost the same percentage of weapons/platforms are being manufactured on the Indian soil. "Today, we are at a juncture where many defence products, including fighter jets, missile systems & naval vessels, are not only protecting our borders, but also catching the attention of the world. From small artillery to large platforms like Brahmos and Akash missile system, we are exporting a variety of products to many countries. We have forged new partnerships at the global level, which has resulted in increased defence exports," he added.

Shri Rajnath Singh asserted that India possesses a strong defence industrial complex, comprising 16 Defence Public Sector Undertakings (DPSUs), 430 licensed companies & about 16,000 MSMEs. He underlined that, with its current share of 21% in total defence production, the private sector is playing an active role in achieving the goal of self-reliance. He listed out the policies being constantly rolled out by the Government for the progress of both public and private sectors, including the revision of Defence Acquisition Procedure and the launch of initiatives/schemes such as Innovations for Defence Excellence (iDEX), Acing Development of Innovative Technologies with iDEX (ADITI) and Technology Development Fund (TDF). The time has come for the private industry to take a lead in the defence manufacturing sector in India, he said.

Raksha Mantri stressed on the fact that, in addition to the public & private sectors, the Armed Forces play the biggest role in the country's pursuit of self-reliance. "National security is of utmost importance and there is no scope for any compromise. Nothing less than the best can be allowed when it comes to national security. Be it the equipment for our soldiers or provision of proper amenities for them & their families, providing them the best in everything is our national

responsibility. I am happy to say that today our forces are not only being equipped with the 'best' weapons/technologies, they possess the platforms manufactured in India," he said.

Shri Rajnath Singh appreciated the Armed Forces for their full trust in indigenously-manufactured defence products. "The military has wholeheartedly adopted weapons and equipment manufactured in the country. Only with the complete satisfaction of our Armed Forces can we move ahead to achieve self-reliance at a faster pace. The huge Defence Industrial Complex being built in India is based on the trust and faith of all our forces," he said.

Raksha Mantri reiterated the Government's commitment to constantly increase defence preparedness, keeping in mind the dimensions of warfare emerging today. He said Aero India 2025 has shown the potential that the future of Indian defence and aerospace sector is not just limited to the skies, but beyond it. He expressed gratitude to everyone for participating in the 15th Aero India, and hoped that it sows seeds of many collaborative, mutually beneficial and successful ventures & alliances amongst the participants. Earlier, Shri Rajnath Singh graced 'Samarthya' indigenisation event, which was first-of-its-kind at Aero India. It showcased India's indigenous ingenuity in defence manufacturing through 33 major items including 24 of DPSUs, DRDO & Indian Navy and nine successful innovation projects of Innovations for Defence Excellence (iDEX).

The items included ELECTRO BLOCK of Anti-Aircraft Machine Gun, Electric Mobile Part for submarine, Torsion Bar Suspension of HMV 6x6, Extruded Al alloy for components of LCA MK-I/II, LCH, Indian High temperature alloy (IHTA) Forged, Solution Annealed & Machined Billet, VPX-135 Single Board Computer, Muzzle Bore Sight of Tank T-90, RudraM II MISSILE, Naval Anti-Ship Missile–Short Range, C4ISR System, DIFM R118 Electronic Warfare Systems, Automatic Dependent Surveillance Broadcast Receiver, Next-Generation Electric Ferry, Computerised Pilot Selection System, Counter measures for illegal drones (RF Jammer Guns), 4G/LTE TAC-LAN, Generation of Quantum Secure Keys between two nodes connected directly over 200 Kms) QKD – Armos, Abhed1 Secure Hardware based offline Encryption, Advanced autonomous systems for the armed forces, Attack surface monitoring tool, AI/ Ml Based Analytical and Decision Support Platforms (DeepDarshak), Smart Compressed Breathing Apparatus, Fire Wire for IFDSS, Portable RCS measuring device, Penetrator Assy for 125mm FSAPDS, Pilot Parachute PSU-36 for SU-30MKI, Knock out Engine (KOE) Charge for Konkurs-M missile, Diffusion Technology based Drivers Night Sight for BMP II and 30mm Six Barrel AO-18 Gun for AK630M Naval Gun.

During the event, three booklets – Coffee Table Booklet 'Samarthya' on Indigenisation; Compendium of Problem Definition Statement (CPDS) i.e. 2025 and Booklet of HQ IDS - were released by Raksha Mantri. The Coffee Table Booklet provides an overview of the indigenisation journey led by the Department of Defence Production. The Booklet of HQ IDS offers insights into conducting multi-domain operations in a data-centric environment, in the backdrop of emergence of new & transformative technology.

The CPDS aims to bridge the gap between the operational challenges of the Indian Army and the innovative solutions offered by academia, industry start-ups and research institutions. It contains 82 Problem Statements across 11 functional domains of warfare, including AI, communications, electronic warfare, situational awareness, survivability, mobility, armament, unmanned systems,

cyber, logistical challenges etc. It also includes problem statements for Indigenisation/ import substitution to reduce our import dependency for certain components or assemblies of legacy equipment.

The CPDS is a structured approach where the Army identifies and documents critical operational challenges and provides a platform for the Indian defence ecosystem to engage directly while accelerating the research and deployment of cutting-edge technologies tailored to the Army's needs. The detailed guidelines elaborating on the procedure for submitting responses and evaluation criteria have been included in the Compendium available for download in the Army Design Bureau webpage of Indian Army website.

During the event, employees and associated industry partners of the DPSUs, DRDO, Services, who have contributed immensely in the indigenisation of the displayed items were felicitated during the event. Raksha Rajya Mantri Shri Sanjay Seth; Chief of Defence Staff General Anil Chauhan; Chief of the Naval Staff Admiral Dinesh K Tripathi; Chief of the Army Staff General Upendra Dwivedi; Chief of the Air Staff Air Chief Marshal AP Singh; Defence Secretary Shri Rajesh Kumar Singh; Secretary (Defence Production) Shri Sanjeev Kumar were among those who attended the event.

*

Raksha Rajya Mantri addresses Indian Navy Seminar at Aero India 2025

Source: Press Information Bureau, Dt. 12 Feb 2025,
URL: https://pib.gov.in/PressReleasePage.aspx?PRID=2102455

"India is strategically poised to play a pivotal role due to the geostrategic position in the Indian Ocean for which indigenous capability was essential for peaceful coexistence and security in the region," stated Raksha Rajya Mantri Shri Sanjay Seth during a seminar organised by Indian Navy on February 12, 2025 at Aero India 2025, Bengaluru. With the theme 'Transition to Aatmanirbhar Indian Naval Aviation – 2047 and its Associated Ecosystem', a vision document, 'Indian Naval Aviation –Technological Roadmap 2047' was unveiled by the Raksha Rajya Mantri with Chief of the Naval Staff Admiral Dinesh K Tripathi present during the seminar.

Shri Sanjay Seth stated that recent world conflicts have demonstrated that a credible defence force supported by a robust industrial base was key to a strong and vibrant nation. He urged all the stakeholders to remain steadfast and resolute in their efforts to provide innovative, indigenous and long-lasting solutions to complex problems through a productive & collaborative approach. He commended the Indian Navy's efforts in formulating the technology road map 2047 towards becoming an 'Aatmanirbhar', agile, responsive and future ready force.

Raksha Rajya Mantri highlighted the fact that the technology roadmap being unveiled was not merely a book but a credible document towards realising the vision of 'Aatmanirbhar Bharat' enunciated by the Prime Minister Shri Narendra Modi. The document would serve as a guiding beacon to indigenous defence R&D, DPSUs, Industry partners, MSMEs, Startups and academia

and various stakeholders. He called for the necessity to reduce timeframes in design, development and deployment of systems.

Throwing light upon the power of Indian Navy, Shri Sanjay Seth stated that the last decade had witnessed the emergence of India as a reckonable economic power with the Indian Navy ranking among the top advanced navies of the world. He mentioned that the Indian Navy with over 60 warships under construction in various Indian Shipyards and over 39 indigenous ships & submarines having been commissioned in the last couple of years was a true ambassador of 'Aatmanirbharta'. He exhorted the Indian Navy for their nation first attitude and commended the dedication and unrelenting efforts towards self-reliance.

Admiral Dinesh K Tripathi in his address stated that the ever-evolving nature of war fighting particularly in the air domain called for continual efforts and adoption of niche technologies in the aviation sector. He further highlighted that Aero India had been aptly themed as a runway to a billion opportunities as it offers a common platform to all stakeholders, R&D establishments, Industry, MSMEs, Startup and academia to exchange ideas; provide access to examine, evaluate & gain first-hand experience of advanced systems, technologies and equipment.

Chief of the Naval Staff bolstered the fact that the Indian Navy aviation was leapfrogging from traditional Intelligence Surveillance and Reconnaissance (ISR) roles to technology intensive tasks such as communication relay, jamming platforms, scientific research and SAR roles. He further stated that the futuristic design and development of fighters, helicopters, airborne systems, avionics and weapon equipment were all testimony to the relentless efforts and unwavering commitment of the Indian Navy to mission Aatmanirbharta and 100% self-reliance by 2047.

'Aatmanirbhar Indian Naval Aviation – 2047' seminar highlighted the priorities and objectives that will guide naval aviation in its growth over the next two decades by unshackling innovation, creating a conducive ecosystem to enable capability development by being a catalyst in the indigenous aviation technology revolution.

*

Induction Of Third 25t Bollard Pull Tug Ashva (Yard 337) At Naval Dockyard, Visakhapatnam

Source: Press Information Bureau, Dt. 12 Feb 2025,
URL: https://pib.gov.in/PressReleasePage.aspx?PRID=2102454

Induction ceremony for third 25T Bollard Pull (BP) Tug Ashva was held on 12 Feb 25 at Naval Dockyard, Visakhapatnam in presence of Rear Admiral K Srinivas, ASD(V) as the Chief Guest.

These Tugs are a part of the contract for construction of six (06) 25T BP Tugs concluded with M/s Titagarh Rail Systems Limited (TRSL), Kolkata on 12 Nov 21. These Tugs have been indigenously designed and built in accordance with relevant Naval Rules and Regulation of Indian Register of Shipping (IRS). The Shipyard had successfully delivered two of these Tugs which are utilised by Indian Navy to provide assistance to Naval ships and submarines during berthing, un-berthing and manoeuvring in confined waters. The Tugs will also provide afloat fire fighting

support to ships alongside or at anchorage and will also have the capability to conduct limited Search and Rescue Operations.

These Tugs are proud flag bearers of Make in India and Aatmanirbhar Bharat initiatives of Government of India.

*

From F-16 to Airbus: the foreign fighter jets and other aircraft participating in Aero India 2025

Source: The Indian Express, Dt. 12 Feb 2025,
URL: https://indianexpress.com/article/cities/bangalore/foreign-fighter-jets-aircraft-aero-india-2025-9832352/

Aero India 2025 in Bengaluru has witnessed several firsts. While US and Russian aircraft are displaying their skills on the same platform for the first time, there are many other fighter jets that are drawing the attention of aviation enthusiasts. Aircraft from Sweden, Germany, and Brazil, besides those from the US and Russia, are being displayed at the biennial show.

Here is a list of aircraft from abroad participating in Aero India 2025.

The largest aircraft stationed at Aero India 2025 is Airbus A400M Atlas, a tactical and strategic military transport aircraft operated by the German air force (Luftwaffe)

F-16

The F-16 Fighting Falcon is a multi-role fighter developed by Lockheed Martin for the US air force. It is known for its agility, speed, and advanced avionics.

This is one of the most widely exported fighter jet with more than 25 countries. It has the abilities to carry air-to-air and air-to-ground missiles, bombs, and a 20mm cannon. It was part of several operations including the Gulf War and Afghanistan invasion. The US also supplied F -16s to Ukraine to strengthen its air defence.

F-35

This fifth-generation fighter is considered to be the backbone of the US air force. Developed by Lockheed Martin, it is known for its air superiority, ground attack, intelligence, and electronic warfare. It is one of the most advanced fighter jets in the world.

Artificial intelligence-assisted targeting and network centric warfare capabilities have made the F-35 stand out from other aircraft. The software and hardware upgrades of this aircraft including AI-powered combat systems have been a game changer. For the first time in Aero India 2025, the F-35 hit the skies displaying its manoeuvring skills.

Sukhoi 57E

The Sukhoi 57E is a fifth-generation stealth fighter developed by Russian Sukhoi. It is considered to be the rival of the F-22 Raptor and the F-35 Lightning II of the US.

Known for its speed and range, the Su 57E has a range over 3,500 km. With AI-assisted combat systems, sensor fusion, and electronic warfare capabilities, Russia is aiming to produce more such aircraft. It has also shown interest in exporting these products to India and China.

The Su 57E stands out as a statement of Russian modernisation of defence products.

The Su 57E stands out as a statement of Russian modernisation of defence products. The Su 57E has also played limited roles in the recent Russia-Ukraine wars. The Su 57E may see unmanned versions in the days to come. For the first time, the Su 57E participated in Aero India displaying its capabilities. The aircraft is codenamed “Felon” by Nato.

Embraer C-390 Millennium

The Embraer C-390 Millennium is a modern, multi-mission military transport aircraft developed by Embraer Defense & Security in Brazil. Designed to replace older turboprop transporters like the C-130 Hercules, it offers higher speed, greater payload capacity, and advanced avionics.

The Embraer C-390 Millennium is often compared with theC-130J Super Hercules of Lockheed Martin

The Embraer C-390 Millennium is often compared with theC-130J Super Hercules of Lockheed Martin. It has a range of Rs 8,500 km and is used for troop and cargo transport, air-to-air refuelling, medical evacuation, and humanitarian missions.

It is operated by the Brazilian air force and has orders from Portugal, Hungary and Netherlands.

JAS 39 Gripen

Handsome when stationed but devastating in its action, the Saab JAS 39 Gripen is a fourth-generation multi-role fighter developed by Sweden's Saab Group.

Gripen has been displayed at Aero India 2025, where the public can taste the experience of its cockpit but only on invitation

With a speed of 2,400 km per hour and range of 3,200 km, it has the ability to take off and land on short runways and highways. It is considered to be the competitor of the Rafale, F-16 and Eurofighter Typhoon in global defence markets. Designed for air superiority, ground attack, and reconnaissance, it is known for its agility, advanced avionics, and cost-effectiveness.

It is presently used by the Swedish air force and exported to countries like Brazil, Hungary, Czech Republic, Thailand, and South Africa. Gripen has been displayed at Aero India 2025, where the public can taste the experience of its cockpit but only on invitation.

Airbus A330 MRTT

Known as "critical force multiplier", the Airbus A330 MRTT (multi-role tanker transport) is a strategic air-to-air refuelling and transport aircraft developed by Airbus Defence and Space.

The fuel capacity of this aircraft is a whopping 1.1 lakh kg and can carry troops, tankers, and massive materials. It is also used by over 15 air forces, including those of the UK, Australia, Germany and France. It can act as a supporter for fighter jets and bombers due to its vast operational ability.

Based on the Airbus A330 commercial aircraft, it provides extended-range refuelling capabilities and strategic airlift for military operations

Based on the Airbus A330 commercial aircraft, it provides extended-range refuelling capabilities and strategic airlift for military operations. It can also be used in humanitarian aid and medical evacuations.

Airbus A 440 M

The largest aircraft stationed at Aero India 2025 is Airbus A400M Atlas, a tactical and strategic military transport aircraft operated by the German air force (Luftwaffe). With a payload capacity of 37 tonnes, the A 400 M is faster than the traditional transport aircraft. It is used for troop deployment, equipment transport, and disaster relief. It has been used for Afghanistan, Mali and Ukraine operations. It can carry even helicopters and armoured vehicles including tankers and even land and take off from unprepared runways.

*

HAL and Safran strengthen partnership with long-term LEAP engine deal

Source: The Economic Times, Dt. 12 Feb 2025,
URL: https://economictimes.indiatimes.com/news/defence/hal-and-safran-strengthen-partnership-with-long-term-leap-engine-deal/articleshow/118180913.cms

Hindustan Aeronautics Limited (HAL) has entered into a long-term contract with Safran Aircraft Engines for the production of critical turbine forged parts for the LEAP engine programme. The

agreement, signed during Aero India 2025, marks a key step in HAL's growing role in global aviation manufacturing.

The contract follows a Memorandum of Understanding (MoU) inked between the two companies in October 2023, aiming to strengthen industrial cooperation in commercial aircraft engine manufacturing. This collaboration aligns with India's "Make in India" initiative, which encourages domestic production and self-reliance in strategic industries.

Under the agreement, HAL's Foundry & Forge Division in Bengaluru will manufacture the forged components at its advanced Ring Rolling facility. These parts will contribute to the increased production of the LEAP engine, which is widely used in commercial aviation.

A Longstanding CollaborationHAL and Safran share a decades-long relationship, having jointly developed the "Shakti" helicopter engine, which powers multiple Indian helicopters, including the Dhruv and Light Combat Helicopter (LCH). Their partnership also extends to the co-design and co-development of the Indian Multi-Role Helicopter (IMRH) engine.

"Safran and HAL are having a long-standing relationship enriched over the past few decades through the joint development of the 'Shakti' helicopter engine, which also paved the way for co-design and co-development of the IMRH engine. We are delighted to take this collaboration to the next level and support their LEAP engine production with critical Nickel Ring forgings," said Dr. D K Sunil, Chairman & Managing Director, HAL.

India's Role in the LEAP Engine Programme

India is a critical market for CFM International, the joint venture between Safran and GE Aerospace that produces the LEAP engine. Approximately 75% of India's commercial aircraft fleet is powered by CFM engines. Of the 500 aircraft in operation across seven Indian airlines with CFM engines, over 370 are equipped with LEAP engines. Additionally, more than 2,000 LEAP engines have been ordered by Indian airlines, reinforcing the country's growing reliance on these advanced powerplants.

"We are very enthusiastic about continuing this partnership with HAL," said Dominique Dupuy, Safran Aircraft Engines' Purchasing VP. "We are perfectly in line with the objectives set out in our 2023 agreement for the production of forged parts."

Safran is further strengthening its foothold in India with five operational production units and a sixth facility planned in Hyderabad, dedicated to LEAP engine maintenance.

Safran Expands Electronics and Defence Capabilities in India

Beyond engine manufacturing, Safran Electronics & Defense is deepening its engagement in India with a new production facility in Bengaluru. This site will manufacture electronic cards and aeronautics and defence calculators, catering to both domestic and international markets.

The company is also establishing a research and development (R&D) centre at Kalyani Tech Park, Bengaluru, to enhance capabilities in defence, space, and avionics electronics.

“This double investment, a significant step in the development of Safran Electronics & Defense’s industrial and R&D activities in India, aims to enhance the competitiveness and local integration of industrial and technological activities,” said Franck Saudo, CEO of Safran Electronics & Defense.

“Our project, which aligns with the government’s ‘Make in India’ programme, demonstrates Safran’s commitment to leveraging the skills and talents of the Indian industry,” he added.

The Bengaluru production facility is expected to commence operations in the first half of 2026, employing around 400 people and manufacturing approximately 30,000 pieces of equipment annually.

Boosting India’s Aerospace and Defence CapabilitiesWith these strategic developments, HAL and Safran are reinforcing India’s position as a key player in the global aerospace and defence industry. The expansion of manufacturing and R&D in Bengaluru will not only support India’s aviation sector but also contribute to the nation’s broader self-reliance goals in defence technology.

*

Aero India 2025: Army officer's Kamikaze UGVs to be inducted under emergency procurement

Source: The Economic Times, Dt. 12 Feb 2025,
URL: https://economictimes.indiatimes.com/news/defence/aero-india-2025-army-officers-kamikaze-ugvs-to-be-inducted-under-emergency-procurement/articleshow/118170226.cms

Two innovations developed by Major Rajprasad RS of the Indian Army including the "Xploder - Kamikaze and IED Disposal remotely operated vehicles" and- Mobile Reactive Munition System" were unveiled at Aero India 2025 in Bengaluru.

The innovations have been developed in-house by the officer from the 7 Engineer Regiment and have been showcased at India Pavilion to Defence Minister Rajnath Singh, in the presence of Army Chief General Upendra Dwivedi.

Giving details of the Xploder unmanned ground vehicle, an Army officer said, "The Xploder UGV is an all-terrain platform capable of multifarious role in combat operations like unmanned recce and surveillance, delivery of explosive payloads, remote disposal of IEDs and can be used in kamikaze role during hideout clearance."

The Xploder is also effective for disaster relief operations.The equipment is already being progressed for mass procurement and induction. General Upendra Dwivedi launched the innovation for induction into the Indian Army recently in December 2024.

The Mobile Reactive Munition System (MRMS) is seen as an advancement in the domain of mine warfare, designed for remote deployment via aerial platforms such as Unmanned Aerial Vehicles (UAVs) or Vehicle-Based Mine Delivery Systems (VBMS).

"Upon deployment, the MRMS employs advanced targeting algorithms to detect enemy assets and mimics the mobility of a spider, allowing it to stealthily navigate toward its target. This mobile

anti-tank mine is engineered to manoeuvre beneath armoured vehicles, ensuring effective engagement upon contact, and thereby enhancing the tactical landscape of contemporary warfare. Economic Explosives Ltd (EEL) shall be the explosive partner for the munition," the officer said.

Within a span of just six months, three innovations developed by Major Rajprasad including "Vidyut Rakshak- IoT enabled Generator Monitoring Protection & Control System", "Agniastra- Multi Target Portable Remote Detonation System", and "Xploder- Kamikaze & IED Disposal RoV" have been launched for induction in the Indian Army.

Previously, another innovation named WEDC- Wireless Electronic Detonation System developed by the officer has been inducted.

*

Tata Elxsi partners with Garuda Aerospace to set up drone design, certification centre

Source: The Economic Times, Dt. 12 Feb 2025,
URL: https://economictimes.indiatimes.com/news/defence/tata-elxsi-partners-with-garuda-aerospace-to-set-up-drone-design-certification-centre/articleshow/118168647.cms

Design and technology service provider Tata Elxsi has partnered with drone maker Garuda Aerospace for setting up a design, engineering, and certification centre to develop indigenous drone technologies. The technology to developed at the proposed centre for which the two companies have signed a memorandum of understanding at the ongoing defence and aerospace show, Aero India 2025, in Bengaluru will specifically have Indian defence applications, along with agriculture, and smart cities, supporting the 'Make in India' initiative, Tata Elxsi said on Wednesday.

Tata Elxsi and Garuda Aerospace are showcasing prototypes, designs, and operational UAVs at Aero India 2025. In addition, a demonstration of indigenised UAV components highlights India's advancements in autonomous UAV technologies.

Under the collaboration, Tata Elxsi will lead the design, development, testing, and certification of UAV subsystems, leveraging its expertise in avionics, miniaturisation, ground control systems, secured communication, and energy optimisation.

Garuda Aerospace, as an original equipment maker, which has a strong presence in the defence sector, will lead business acquisition and delivery, it said.

The drones developed under this initiative will cater to multiple applications such as payload management, goods delivery, precision agriculture, and ISR (intelligence, surveillance, and reconnaissance) missions, addressing critical operational needs across industries, the company said.

"Our partnership with Garuda Aerospace marks a major milestone in India's aerospace ambitions. By driving AI-powered UAV advancements, we are strengthening India's defence ecosystem and

reinforcing the country's self-reliance in aerospace technologies," said Jayaraj Rajapandian, Head of Aerospace, Rail & Off-highway, Tata Elxsi.

The company said the Indian defence forces and Border Security Force are expected to be key beneficiaries of this collaboration, gaining access to cutting-edge UAV capabilities.Additionally, this initiative will create new employment opportunities and contribute to workforce development in the aerospace sector, it said.

"This strategic collaboration with Tata Elxsi reinforces our commitment to indigenous innovation. Over the next three to five years, we will focus on fully indigenised production and supply of airborne and ground systems, strengthening India's leadership in UAV technology," said Agnishwar Jayaprakash, Founder & CEO of Garuda Aerospace.

*

CDS Anil Chauhan dismisses hype over China's 6th-Gen fighters: 'Far from operational'

Source: The Economic Times, Dt. 12 Feb 2025,
URL: https://economictimes.indiatimes.com/news/defence/cds-anil-chauhan-dismisses-hype-over-chinas-6th-gen-fighters-far-from-operational/articleshow/118182790.cms

Chief of Defence Staff (CDS) General Anil Chauhan has cast doubt over China's claim of possessing a sixth-generation fighter aircraft, stating that such advanced platforms are still under development worldwide. Speaking to news agency ANI, he said that while multiple nations, including China, are working on these programmes, none have reached completion yet.

Limited Evidence Raises QuestionsGeneral Chauhan argued that assessing the authenticity of China's claim based on brief video clips is unreliable.

"It's very difficult to see these kinds of platforms with six-generation capability. What we are talking about is by external viewing of an aircraft and that too with a few seconds clip which will not give you an idea that this is a six-generation aircraft. In fact, a large number of countries are pursuing a six-generation program and that's my personal belief that all of them are some distance away," he stated.

China's Previous Developments and Tactical Efforts

The CDS referenced China's advancements in fighter jet engines, such as the WS-10 and WS-15, which are used in its fifth-generation aircraft. While these developments indicate progress, they do not necessarily confirm operational sixth-generation aircraft.

He also pointed to China's reported recruitment of former American and British Air Force pilots to refine their aerial combat tactics.

"Sometime back, we had also heard about Chinese hiring a number of ex-pilots of the American and the British Air Force. They wanted to refine their drills and their systems, so they just show

that they’re still in that kind of a development stage. Not only as far as technology is concerned, but also tactics is concerned. So we are there," he said.

The Elusive Definition of a Sixth-Generation Fighter

General Chauhan highlighted that there is no universally agreed definition of what constitutes a sixth-generation fighter aircraft. However, he described it as a platform that can operate both manned and unmanned, functioning as an aerial command centre that directs multiple assets.

"My understanding of a sixth-generation aircraft is that there is no proper globally accepted definition of what a sixth-generation aircraft is. Basically, a sixth-generation aircraft is a platform which can perform both manned and unmanned teaming. It is kind of an aerial command post which can take control of 2-3 similar kinds of assets, maybe UAVs, maybe drones which are sound drones and then put a combat in a different kind of a manner," he explained.

The Role of AI and Future Technologies

According to General Chauhan, these next-generation aircraft will integrate advanced networks, data analytics, and artificial intelligence (AI) to improve combat effectiveness. AI will play a crucial role in decision-making, allowing pilots to process real-time information quickly.

"So that’s the kind of concept of six-generation and it involves number of technologies. It will involve networks, data analytics which will provide that kind of situation awareness to that pilot over there and also command and control of all the assets. He should be able to network himself or spar passage of information through terrestrial or say aerial networks. It will also use artificial intelligence to give him that better decision making ability during combat. It also will have maybe long range smart air-to-air missiles, weapon systems and apart from that stealth technology with self-healing kind of capabilities," he added.

China’s Alleged Sixth-Generation Fighter JetIn December 2024, unverified images surfaced on social media showing what was claimed to be China’s sixth-generation fighter aircraft. While the images suggested an advanced design, defence analysts noted that there was insufficient detail to draw definitive conclusions. Reuters reported that China's defence ministry did not respond to queries regarding the images, while the US Department of Defense acknowledged the reports but declined to provide additional comments beyond its annual review of China’s military advancements.

As global powers, including the United States and China, continue their race for air superiority, India remains focused on developing its own fifth-generation fighter jet, the Advanced Medium Combat Aircraft (AMCA). General Chauhan reaffirmed that India is making steady progress in its fighter jet development programme, ensuring its defence capabilities remain competitive on the global stage.

*

Sky's no limit! India's mightiest cargo drone, CargoMax 20KHC, debuts at Aero India 2025

Source: The Economic Times, Dt. 12 Feb 2025,
URL: https://economictimes.indiatimes.com/news/defence/skys-no-limit-indias-mightiest-cargo-drone-cargomax-20khc-debuts-at-aero-india-2025/articleshow/118182941.cms

At the Aero India 2025 air show in Bengaluru, Bengaluru-based drone manufacturer Scandron introduced the CargoMax 20KHC, India's most powerful cargo drone. With a payload capacity of 200kg, this autonomous aerial logistics platform is built to support the Indian armed forces, paramilitary units, and emergency response teams. To enhance accessibility for defence clients, Scandron has set up a manufacturing facility in Ladakh, where the drone will be produced.

Designed for Challenging Operations

The CargoMax 20KHC boasts an operational range of 15km and an altitude ceiling of 6,000 metres above sea level. It is engineered to operate in demanding environments, including high-altitude regions, deserts, and naval zones.

Arjun Naik, CEO and Founder of Scandron, elaborated on its capabilities: "The CargoMax 20KHC is designed to provide the Indian armed forces with a stable, reliable aerial logistics platform for last-mile deliveries. All our CargoMax drones have variants that enable them to offer superior logistics capability, whether it is for high-altitude operations, desert operations or naval operations."

The drone is fully autonomous, requiring no pilot intervention, and features a common command-and-control system with built-in redundancies for safety and reliability. It can execute pinpoint landings, including on moving naval platforms, making it suitable for maritime supply missions.Broad Applications Across SectorsScandron's CargoMax series is designed to meet the logistical needs of multiple industries, including:

- **Defence and High-Altitude Operations:** CargoMax drones facilitate last-mile deliveries at altitudes exceeding 5,500 metres, supporting army logistics in remote regions.
- **Naval and Island Supply Routes:** The drone can land precisely on moving ships and isolated locations, streamlining naval resupply missions.
- **Supply Chain Logistics:** It enhances mid-mile transport between warehouses, reducing delivery times and increasing efficiency.
- **Disaster Relief and Emergency Response:** Equipped for heavy-lifting operations, it can deliver emergency aid to disaster-stricken regions.

A Strategic Move Towards Self-Reliance

To better serve its customers and reduce logistical constraints, Scandron strategically established its manufacturing hub in Ladakh. "We wanted to have the manufacturing facility in Ladakh as we want to be closer to the defence customers. Also, the 200kg capacity drone will face challenges in

being transported to the customer from a single manufacturing facility in Bengaluru, so it is better to be close to our customers," said Naik.

Scandron's commitment to domestic manufacturing is evident in its emphasis on self-reliance. "We have completely developed this in India and do not procure products from anywhere abroad," he added.

Scandron, a subsidiary of Magellanic Cloud Limited, is India's first original equipment manufacturer (OEM) to receive DGCA type certification for logistics drones. The company specialises in a range of UAVs, including heavy-lift logistics drones (5–200kg), surveillance drones, and agricultural spraying drones.

At Aero India 2025, alongside the CargoMax 20KHC, Scandron showcased its SkyKrane 40 aerial crane and the ScanD surveillance drone suite.

Naik reinforced the company's commitment to innovation, stating, "Scandron is a customer-focused company, and we continuously innovate to design and develop disruptive drone solutions to help solve real-world problems and bring enhanced efficiency to our customers' operations. We focus on integrating our drones into mainstream operations to enhance efficiency and reduce costs without compromising safety and reliability."

Strengthening India's Drone Industry

Operating in both drone manufacturing and Drone-as-a-Service (DaaS), Scandron provides cutting-edge aerial solutions to the Indian armed forces, oil and gas sector, and power generation industries.

By investing in research and development, the company is reinforcing India's position in the global drone industry. As the country aims to bolster its self-reliant defence manufacturing, Scandron's advancements in drone technology mark a crucial step towards achieving that vision.

*

Modi, Macron discuss ways to deepen defence ties; welcome commissioning of submarine INS Vaghsheer

Source: The Economic Times, Dt. 12 Feb 2025,
URL: https://economictimes.indiatimes.com/news/defence/modi-macron-discuss-ways-to-deepen-defence-ties-welcome-commissioning-of-submarine-ins-vaghsheer/articleshow/118185106.cms

Emphasising on "deep and long-standing" defence cooperation, Prime Minister Narendra Modi and French President Emmanuel Macron on Wednesday commended the progress in collaboration in construction of Scorpene submarines in India as the two countries welcomed the ongoing discussions on missiles, helicopter engines and jet engines. Modi invited the French Army to "take a closer look" at the Pinaka Multi-Barrel Rocket Launch (MBRL) system, emphasising that "an acquisition of this system by France would be another milestone in Indo-French defence ties," according to a joint statement issued during Modi's just-concluded France visit.

The two leaders held bilateral discussions on the entire gamut of the "exceptionally strong and multifaceted" bilateral cooperation apart from global and regional matters." In order to deepen the research and development partnerships in defence, both the leaders stressed on the early launch of an R&D framework through a Technical Arrangement for cooperation in defence technologies between DGA and DRDO," it said.

The Direction Generale de l'Armement (DGA) coordinates the armament programmes with industry in France and the Defence Research and Development Organisation (DRDO) is the premier R&D organisation of India.

They also held extensive discussions on long-term global challenges and current international developments and agreed to intensify their global and regional engagement, including through multilateral initiatives and institutions. Both leaders had a "detailed conversation on international issues, including on the Middle East and the war in Ukraine."

The two leaders also underlined their common commitment to a "free, open, inclusive, secure and peaceful Indo-Pacific region," the statement said.

Both leaders commended progress in collaboration in construction of Scorpene submarines in India, including indigenisation, and in particular the work carried out with a view to the "integration of DRDO developed Air Independent Propulsion (AIP) into P75-Scorpene submarines and the analyses conducted regarding the possible integration of the Integrated Combat System (ICS) into the future P75-AS submarines," it added. The two leaders welcomed the commissioning of the sixth and final submarine of the P75 Scorpene-class project, INS Vaghsheer, on January 15.

"Both sides welcomed the ongoing discussions in missiles, helicopter engines and jet engines. They also welcomed the excellent cooperation between the relevant entities in the Safran group and their Indian counterparts," it added.

Briefing the media in France, Foreign Secretary Vikram Misri on Wednesday said they reviewed the bilateral cooperation in areas of defence, space and civil nuclear cooperation, health and people-to-people ties." In addition, President Macron welcomed the decision to include India as an observer to the Eurodrone MALE programme managed by OCCAR, which is another step forward in the growing strength of our partnership in defence equipment programmes," the statement said.

*

Indian Army's military diplomacy flourishes at Aero India: Gen Upendra Dwivedi engages with global military leaders

Source: The Economic Times, Dt. 12 Feb 2025,
URL: https://economictimes.indiatimes.com/news/defence/indian-armys-military-diplomacy-flourishes-at-aero-india-gen-upendra-dwivedi-engages-with-global-military-leaders/articleshow/118185188.cms

General Upendra Dwivedi, Chief of Army Staff (COAS), Indian Army, engaged in productive discussions with military leaders from Algeria, Tanzania, Maldives and Belarus on the sidelines of

Aero India 2025. This interaction highlights India's continued commitment to strengthening military diplomacy and fostering international defence cooperation.

During the event, General Dwivedi held constructive talks with the visiting military officials, focusing on enhancing bilateral ties, sharing defence expertise, and exploring new avenues for strategic partnerships. The discussions covered a wide range of defence and security-related issues, emphasising collaboration in training, technology, and joint military exercises.

Lt General NS Raja Subramani, Vice Chief of the Army Staff also held talks with military leaders from Nepal, the United Kingdom, and Israel.

Aero India has served as a pivotal platform for India's defence engagement with nations across the globe, reinforcing India's position as a proactive contributor to regional and global security. General Dwivedi's interactions underscore the Indian Army's outreach efforts to build strong defence relations with nations committed to peace and stability.

Through these engagements, India continues to establish itself as a key player in global military diplomacy, promoting collaboration and mutual understanding in defence matters, while also sharing India's rich experience in modernising its military capabilities.

The Indian Army remains dedicated to expanding its network of international partnerships, enhancing strategic alliances, and contributing to global peacekeeping efforts through active engagement and diplomatic channels.

Apart from this, General Upendra Dwivedi and Navy Chief Admiral D K Tripathi today visited the stalls of AdDefence and Aerospace at AeroIndia 2025. They were briefed by Ashish Rajvanshi, CEO of Adani Defence and Aerospace.

*

BEL delivers 7,000th transmit module to Thales for Rafale's RBE2 radar

Source: The Economic Times, Dt. 12 Feb 2025,
URL: https://economictimes.indiatimes.com/news/defence/bel-delivers-7000th-transmit-module-to-thales-for-rafales-rbe2-radar/articleshow/118187122.cms

In line with the 'Make in India' policy, Navratna Defence PSU Bharat Electronics Ltd (BEL) has manufactured its 7,000th transmit/receive (T/R) module for the RBE2 radar onboard the Dassault Aviation Rafale and delivered it to Thales, the company said on Wednesday. Headquartered in Noida, Thales has reinforced its commitment to the 'Make in India' policy through technology transfers and local production, the statement said.

"Thales is an active stakeholder in the Indian government's Make in India policy. In November 2020, the first RBE2 AESA (Active Electronic Scanning Array) radar with a front end manufactured by BEL in India was delivered by Thales to Dassault Aviation. Four years later, BEL is pleased to announce that the 7,000th transmit/receive module has been produced and delivered to Thales," the company said in a statement.

This is only an intermediate milestone in a long-term successful collaboration, the statement added.

According to BEL, its cooperation with Thales has expanded with the commencement of production of advanced microwave modules for Rafale's SPECTRA Electronic Warfare (EW) suite.

"The T/R (transmit/receive) modules are crucial to the RBE2 radar's active electronic scanning performance, enabling it to steer the radar beam at the speed of an electronic chip," it added.

*

Govt starts process of procuring surveillance helicopters for high altitude areas

Source: The Economic Times, Dt. 13 Feb 2025,
URL: https://economictimes.indiatimes.com/news/defence/govt-starts-process-of-procuring-surveillance-helicopters-for-high-altitude-areas/articleshow/118189468.cms

The government has begun the process to procure nearly 1,000 surveillance helicopters with accessories capable of operating up to an altitude of 5,500 metres above sea level and both during day and night time, as a Request for Information (RFI) was issued on Wednesday. The RFI says the surveillance helicopters, along with the accessories, are planned to be procured in the spirit of the 'Make in India' and 'Atmanirbhar Bharat' programmes.

"The preferred categorisation for the project as per provisions of Chapter-II of DAP-2020 may be indicated by the vendors with due justification," it adds.

The defence ministry intends to procure an "approximate quantity of 1,000 surveillance copters (high altitude area) with accessories", according to the RFI document.

This RFI is being issued to "finalise SQRs (Service Qualitative Requirements), decide procurement category and identify probable Indian vendors who are capable to supply surveillance copter (HAA) along with accessories".

The first part of the RFI incorporates the intended use of the equipment and the operational requirement that should be met by the surveillance copter with accessories.

The RFI also mentions the terrain conditions under which the "surveillance copters" will be employed primarily in high altitude (up to 5,500 metres), mountainous terrain in India.The surveillance copters with accessories should be operational by day and night and in commonly encountered weather conditions in all kinds of terrains in the country, the RFI says.

"Surveillance Copter (High Altitude Area) be modular in design, thereby lending itself to future upgrades through simple modifications, not leading to design or structural change. It should also facilitate integration and installation, without impacting the performance of any system/sub-system," it added.

The Indian Army is also planning to procure 50 "heavy crawler rock drill" with the government on Wednesday issuing a draft RFI.

"The RFI intends to achieve aim and objectives as per Paragraphs 2 to 4 of Chapter II of DAP 2020," it said.

The Indian Army deployment in Northern, Eastern and Central Commands comprises inaccessible areas with some of the most difficult and treacherous terrain, the document reads."

Creating sustainable infrastructure in these areas in the shortest time frame is an inescapable operational necessity. Quick development of suitable lines of communication (L of C) is the most critical element of this aspect," it said.

"A self-propelled heavy-duty crawler-based rock drill with an on-board compressor shall be used extensively for moving and positioning the drill machine to the initial formation site for drilling and road cutting in hard rock strata, powering pneumatic/ hydraulic motors fitted on the rock drill.

"It shall be used for quarry operations and initial road formation cutting by drilling bench holes, toe holes for charging and blasting in mountains," it said.

*

Adani Group to double ammunition production capacity amid strong global demand

Source: The Economic Times, Dt. 13 Feb 2025,
URL: https://economictimes.indiatimes.com/news/defence/adani-group-to-double-ammunition-production-capacity-amid-strong-global-demand/articleshow/118189549.cms

Fueled by strong global demand, Adani Group's big investment in ammunition is yielding results. The company has secured multi-year export orders and is now gearing up to significantly expand production capacity. The company, currently producing 150 m rounds of small arms ammunition annually, plans to double capacity to 300 m rounds by year-end. It has already secured advance export bookings for the next two years.

Larger export bookings have been secured for 155 mm artillery shells that the company will commence producing this year. The large caliber plant is currently being set up and will initially produce 150,000 rounds of 155 mm ammunition per year. Ashish Rajvanshi, Chief Executive Officer of Adani Defence & Aerospace told ET that export bookings have already been secured for the next five years, with more inquiries coming in regularly.

Given the Russia-Ukraine conflict and instability in several other regions, there has been a strong demand for artillery shells, with most countries running low on reserves and desperately placing orders to secure supplies at the earliest.

While the Adani group has secured export bookings for the next five years for this ammunition, it is reserving 33 percent of its production capacity in anticipation of requirements arising from within the country.

*

Want to make India hub, keen to co-develop missiles: Thales

Source: The Economic Times, Dt. 13 Feb 2025,
URL: https://economictimes.indiatimes.com/news/defence/want-to-make-india-hub-keen-to-co-develop-missiles-thales/articleshow/118189418.cms

European defence major Thales wants to leverage its presence in India to create an export hub that can serve third countries and is keen on co-developing new generation missiles with technology transfer, a top company executive told ET.

Speaking at AeroIndia, India's flagship defence aviation show, Thales International President and CEO Pascale Sourisse said there are prospects to develop missiles with public sector unit Bharat Dynamics Limited (BDL) for orders that can potentially be in the thousands to meet the requirements of the armed forces.

The company has an ongoing collaboration with BDL to supply STARStreak Laser Beam Riding MANPADs (LBRM) to the Indian Army. Sourisse said this could be expanded to include more missiles as well, including the Light Multirole Missile (LMM) and future co-development of a new generation of missiles.

"The prospects are in terms of 1000s of missiles. It would make a lot of sense for us to use the capabilities established in India to not only serve the needs of the Indian Army, but also export from India," the senior executive said.

The French company is also setting up a new Maintenance Repair and Overhaul (MRO) facility in Gurgaon that will cater to Indian needs. Sourisse said the company is also looking to expand it for export of MRO services from India as well.

"When we install support capability, it involves spare parts, it involves test benches and it involves people. We first of all want to make sure that this is serving the needs of our domestic customers, but we always ask ourselves, how can we use these hubs to potentially serve other customers," the senior executive said.

*

India, France Advance Defence Ties With R&D Framework Agreement

Source: The Economic Times, Dt. 13 Feb 2025,
URL: https://economictimes.indiatimes.com/news/defence/india-france-advance-defence-ties-with-rd-framework-agreement/articleshow/118189341.cms

India and France Wednesday elevated their defence ties with Prime Minister Narendra Modi and President Emmanuel Macron agreeing for early launch of an R&D framework for cooperation in defence technologies between French state agency DGA and India's DRDO.

In addition, both leaders welcomed ongoing talks between France's L'Office National d'Etudes et de Recherches Aerospatiales (ONERA) and Defence Research and Development Organisation

(DRDO) to identify technologies for R&D partnerships, according to a joint statement issued after Modi-Macron Summit in Marseilles during the PM's third day of his visit to France.

Modi promotes pinaka

Modi also invited the French army to take a closer look at the Pinaka multi-barrel rocket launcher system (MBLR), emphasising that an acquisition of the system by France would be another milestone in bilateral defence ties.

The two sides announced 10 declarations and MoUs including Declaration of Intent on establishment of partnership on Advanced Modular Reactors and Small Modular Reactors, Joint Declaration of Intent on Triangular Development Cooperation for the Indo-Pacific region and India-France Declaration on Artificial Intelligence (AI).

Both nations will seek to ensure that norms and standards governing the use of AI reflects democratic values and harness its potential for human development and common good, according to bilateral document on AI. Modi and Macron also discussed ways to strengthen collaboration in the fields of technology and innovation.

Recalling the deep and longstanding defence ties between France and India as part of their Strategic Partnership, the two leaders welcomed continued cooperation in air and maritime assets in line with the ambitious defence industrial roadmap agreed in 2024, according to the statement.

Both commended progress in construction of French-designed P75-Scorpene submarines in India, including indigenisation, particularly the integration of DRDO-developed Air Independent Propulsion (AIP) into these submarines.

*

Drones take centre stage at Aero India

Source: The Tribune, Dt. 13 Feb 2025,
URL: https://www.tribuneindia.com/news/india/drones-take-centre-stage-at-aero-india/

With the nature of warfare evolving rapidly, Aero India is abuzz with Indian and foreign military leaders exploring the latest advancements in drones and counter-drone systems.

In the field of drones, armed variants — though not on display here — represent the pinnacle of technological innovation. India is acquiring the MQ-9B, also known as the Predator, from the US-based General Atomics. This drone can remain airborne for over 30 hours, track targets and fire missiles.

Vivek Lall, Chief Executive of General Atomics Global Corporation, told The Tribune about the capabilities of the MQ-9B: “We are in an era where persistent surveillance is crucial. We need cutting-edge technology to achieve that.”

At Aero India, Adani Defence and Aerospace, in collaboration with the Defence Research and Development Organisation (DRDO), unveiled India’s first public-private partnership-based counter-drone system. Mounted on a vehicle, the system features a high-energy laser, a 7.62-mm

gun, advanced radar, electro-optical sensors and jammers for real-time target neutralisation within a 10-km range.

In the past couple of years, over 200 small drones have been detected crossing the border from Pakistan. The new counter-drone system is designed to tackle such threats. Ashish Rajvanshi, CEO of Adani Defence and Aerospace, said, “We are proud to translate DRDO’s cutting-edge technology into an operationally ready solution for the armed forces.”

Chief of Defence Staff General Anil Chauhan witnessed the unveiling of another anti-drone system by Zen Technologies.

Another key category of drones includes tactical drones, loitering drones and logistics drones, which the Indian Army and Air Force require in large numbers for various operations. Several Indian startups are showcasing their innovations at the event.

Indian company ideaForge, which has successfully supplied drones to the armed forces, unveiled two new platforms —‘Netra-5’ and ‘Switch V2’. Netra-5 is designed for real-time intelligence gathering and surveillance. Ankit Mehta, CEO of ideaForge, said, “We innovate with purpose, creating UAVs that address the unique challenges faced by defence forces. The Netra-5 can carry a 2-kg payload of ammunition that can be dropped on designated targets.”

Meanwhile, Bengaluru-based Scandron, which won the Army’s high-altitude drone competition in September last year, has set up a unit in Ladakh to manufacture logistics drones. Its CEO, Arjun Naik, said, “We will manufacture in Ladakh — we already have a unit there.”

Logistics drones, essential for delivering supplies to remote border outposts cut off by snow during winter, were also in focus at the event. Scandron unveiled a logistics drone capable of carrying a 200-kg payload in the plains.

Last year, under emergency procurement, the Ministry of Defence approved the purchase of loitering ammunition for the Army. These drones can remain airborne for a set duration, conduct target surveillance and strike when commanded from the ground. Multiple companies showcased such ammunition at Aero India.

Meanwhile, Tata Elxsi and Garuda Aerospace signed an MoU to establish a Centre of Excellence for indigenous UAV design and development.

*

4 more countries show interest in BrahMos missile

Source: The Tribune, Dt. 13 Feb 2025,
URL: https://www.tribuneindia.com/news/india/4-more-countries-show-interest-in-brahmos-missile/

India is looking to sell the BrahMos to four more countries which have shown interest in it. The UAE, Saudi Arabia, Egypt and Vietnam had shown an interest in getting the supersonic missile, sources said.

The missile has already been sold to the Philippines and negotiations have started with Indonesia. A high-level military delegation from Indonesia is expected to come to India in a few weeks to start a formal dialogue on the use of missile in their country.

Largely, the countries are seeking a land version of the BrahMos. India last year started the delivery of the BrahMos to the Philippines, which sought a shore-based variant that can be an anti-ship cruise missile, with a range of 290 km. The Philippines is one of the six countries locked in a maritime territorial dispute with China in the South China Sea. India has the land, sea and air version of the BrahMos missiles.

Meanwhile, BrahMos Director General JR Joshi, while talking to The Tribune at the Aero India, spoke about the improvement in the missile, saying the trials of the 'Brahmos NG' have started.

The trials would be complete by 2026. The NG version is to be mated with the Sukhoi 30MKI fighter jet. The Sukhoi can carry a version of the BrahMos under its belly. It will be installed under the wings of the jet.

On being asked if India could extend the BrahMos beyond its 300 km range, Joshi said: "It all depends on the government. We will be able to do it. We have the capability to enhance the range."

The BrahMos is a joint venture between Defence Research and Development Organisation (DRDO) and Russia’s NPO Mashinostroyeniya in 1998. The missile has a maximum speed of 2.8 Mach (around 3,450 kmh).

*

'India's fifth-generation AMCA will be equipped with sixth-generation technologies'

Source: The Week, Dt. 12 Feb 2025,
URL: https://www.theweek.in/news/defence/2025/02/12/indias-fifth-generation-amca-will-be-equipped-with-sixth-generation-technologies.html

Jitendra Jadhav, Director General of the Aeronautical Development Agency (ADA), claimed that the fifth-generation Advanced Medium Combat Aircraft (AMCA) of India will have sixth-generation technology embedded into it.

Speaking to noted defence and aerospace journalist Anantha Krishnan M. on the sidelines of the ongoing Aero India show in Bengaluru, where a full-scale model of the aircraft is on display, Jadhav said artificial intelligence (AI) will be a key factor in India's fifth-generation fighter jet.

The DRDO, for the first time, is showcasing a full-scale model of India’s first AMCA equipped with cutting-edge features at the India Pavilion. Conceptualised as a single-engine fighter, AMCA is expected to have a Mach 2 plus at top speed and a combat range of more than 1,600 km with a 6,500 kg fuel capacity. It will also have better situational awareness and ability to penetrate Integrated Air Defence Systems.

“This is powered by an electronic pilot of artificial intelligence. So this electronic pilot not only does a multi-sensor data fusion, but it also gives a pilot decision support, automatic target tracking,

and automatic areal target tracking. A lot of algorithms has been put into the artificial intelligence and this makes AMCA one of the contemporary aircraft among all the fifth-generation aircraft, with the sixth-generation technology embedded in it," Jadhav said.

He said AMCA was fully sanctioned by the government in April and it is currently in the design stage.

Responding to the claims put forward by some that by the time AMCA is ready, a lot of technologies may be obsolete, Jadhav said there is a scope for adaptation of the latest sensors because of the open architecture, avionics as well as the modular airframe used in the jets.

While the induction of the aircraft is expected by 2035, he claimed that the sixth-generation technologies that would be part of AMCA will make it contemporary to the sixth-gen fighters out there.

*

What is HAMMER, the French precision-guided air-to-ground weapon set to be produced in India?

Source: The Week, Dt. 12 Feb 2025,
URL: https://www.theweek.in/news/defence/2025/02/12/what-is-hammer-the-french-precision-guided-air-to-ground-weapon-set-to-be-produced-in-india.html

Bharat Electronics Limited (BEL) and Safran Electronics & Defense of France signed a memorandum of understanding (MoU) to create a joint venture for manufacturing, customising, sales and maintenance of HAMMER, a precision guided air-to-ground weapon, in India.

BEL & Safran Electronics & Defense, France, announced @ Aero India signing of a partnership to create a joint venture for manufacture, customisation, sale & maintenance of HAMMER (Highly Agile Modular Munition Extended Range) Smart Precision Guided Air-to-Ground Weapon in India.

— Bharat Electronics Limited (BEL) (@BEL_CorpCom) February 11, 2025

HAMMER (Highly Agile Modular Munition Extended Range) is a combat-proven weapon system known for its high accuracy and modular design, making it adaptable for multiple platforms including the Rafale and LCA Tejas.

"The proposed joint venture between BEL and Safran Electronics & Defense will be a major step toward strengthening India's capabilities in defense manufacturing and achieving self-reliance in advanced weapon systems. It will localise HAMMER production, enable development of future variants and support the Government of India's Atmanirbhar Bharat initiative by reducing import dependence," BEL CMD Manoj Jain said at the ongoing Aero India 2025 show in Bengaluru.

The French-developed, all-weather, smart air-to-surface stand-off weapon can be valuable in both close air support and deep strike missions. According to Safran, the weapon is is insensitive to jamming and is compatible with different standard bomb bodies (125, 250, 500 and 1000 kg). It can be launched from low altitude, over rough terrain.

“Interoperable and modular, AASM (Armement Air-Sol Modulaire) HAMMER covers all the tactical requirements of air forces thanks to different guidance kits: INS/GPS, INS/GPS/IR and INS/GPS/laser," the description of the weapon on Safran's website reads. There are three main variants of HAMMER, each with different guidance systems.

According to the company, the fire-and-forget HAMMER, which can even engage moving targets, has 99 per cent successful strikes in combat.

As part of this partnership, BEL and Safran Electronics & Defense also plan to establish a Center of Excellence aimed at enhancing India's Defence capabilities. Safran will bring its expertise by implementing a knowledge transfer programme, while the transfer of production will happen in a phased manner.

The collaboration is in sync with the Centre's vision of self-reliance in defence and setting up of state of-the-art production facility in India, making the country a key hub for advanced smart munitions.

*

Aero India 2025: Tata supplies RCWS to Indian Army

Source: Janes, Dt. 12 Feb 2025,
URL: https://www.janes.com/osint-insights/defence-news/land/aero-india-2025-tata-supplies-rcws-to-indian-army

Tata Advanced Systems Limited (TASL) has supplied its remote-controlled weapon stations (RCWSs) for the Indian Army's armoured vehicles.These RCWSs are equipped with the Russian NSV 12.7 mm heavy machine gun (HMG) used by the Indian Army, TASL officials told Janes at the Aero India 2025 show held in Bangalore from 10 to 14 February.

According to Janes Weapons: Infantry, the NSV 12.7 mm HMG is a gas-operated weapon with an air-cooled barrel, fed by 50-round linked belts carried in a magazine box. The gun can fire around 700–800 rds/min.

Janes understands that TASL completed delivery of around a 100 of these RCWSs to the Indian Army in late 2024. These RCWSs will be fitted onto Indian Army tanks including the T-72 main battle tank (MBT). According to company specifications, the RCWS is integrated with a day camera, a thermal camera, and a laser rangefinder (LRF) to enable day and night operations. It has an elevation of -10° to 78° and a target range of about 4 km.

The RCWS is also available in a smaller size, equipped with a 7.62 mm medium machine gun, TASL officials said. “This RCWS does not specifically have to be fitted on a heavy armoured vehicle. It can be mounted on a lighter platform such as any standard vehicle or even on an unmanned ground vehicle (UGV),” a TASL official said. According to TASL, the smaller-sized RCWS is integrated with a day camera and a thermal camera. It has an elevation of -7° to 60° and a target range of about 2 km.

*

Aero India 2025: Data Patterns showcases fire-control radar

Source: Janes, Dt. 12 Feb 2025,

URL: https://www.janes.com/osint-insights/defence-news/c4isr/aero-india-2025-data-patterns-showcases-fire-control-radar

The HAWK I 2700 multifunction fire-control radar displayed at Aero India 2025

Indian firm Data Patterns has unveiled its HAWK I 2700 multifunction fire control and tracking radar at the Aero India 2025 show in Bangalore.

A Data Patterns spokesperson told Janes on 11 February that the radar is being developed as part of a project to replace the ageing Russian N011 Bars radar system fitted onto the Indian Air Force's (IAF's) Sukhoi Su-30MKI fighter aircraft.

The spokesperson added that the HAWK I 2700 is being developed indigenously in line with New Delhi's ‘Make in India' policy.

The HAWK I 2700 radar operates in X-band frequency, between 8 GHz and 12 GHz. According to Data Patterns, the radar has search and tracking modes of operation. In search mode it can achieve a range of 250 km, and in tracking mode its range is 200 km, the company said.

The radar's wide field-of-view of up to 100° enables the HAWK I 2700 to detect and track multiple targets simultaneously, the company said. It added that its solid-state active phased-array architecture provides high-precision accuracy in both azimuth and elevation data of the targets.

Maximum throughput of the fire-control radar (FCR) is up to 9 kW and it can provide maximum surveillance across a range of 350 km. Gallium nitride (GaN)-based transmit/receive (T/R) modules used in the radar feature high-output power and enhanced range-detection capability. The radar's sidelobe suppression and frequency hopping methods are intended to enable the radar to operate in dense radio frequency environments.

The HAWK I 2700 radar also features electronic attack modules that can jam enemy radar emissions while operating in an electromagnetic-contested environment.

*

Science & Technology News

Dr. Jitendra Singh Calls for Competency Framework to Strengthen India's Scientific Workforce

Source: Press Information Bureau, Dt. 12 Feb 2025,
URL: https://pib.gov.in/PressReleasePage.aspx?PRID=2102421

In a high-level meeting with Secretaries of Scientific Ministries, Departments, and Organizations and other higher officials, Union Minister of State (Independent Charge) for Science and Technology; Earth Sciences and Minister of State for PMO, Department of Atomic Energy, Department of Space, Personnel, Public Grievances and Pensions, Dr. Jitendra Singh underscored the need for a structured competency framework for individuals working in scientific institutions. The Minister directed that the framework, developed in coordination with the Capacity Building Commission, should incorporate both functional and domain-specific competencies. Emphasizing the importance of outreach, he insisted that "how much is my outreach to the public stakeholders" be included as a key performance indicator (KPI), a facet often overlooked by science ministries.

Taking stock of the ambitious "Vigyan Shakti" initiative, the Minister reviewed its progress and reiterated its role as a unified repository aimed at catalysing scientific efforts into developmental outcomes. Built on pillars such as inter-agency collaboration, industry-academia interactions and leadership and governance, the initiative seeks to maximize returns on investment in science. As part of this, he assessed the India Science, Technology, and Innovation (ISTI) Portal, which is envisioned to consolidate the database of India's science and technology ecosystem and enhance accessibility to critical research resources.

Dr. Jitendra Singh also reviewed the status of the Common Fellowship Portal, designed as a one-stop platform for research grants India. According to the latest data, the portal has garnered over 5,000 registered users, with more than 1,500 having completed their profiles and being eligible to

apply for fellowships. The Minister expressed satisfaction at the growing participation and encouraged further awareness efforts to make research grants more accessible to young scientists.

In a push to bridge the gap between research and industry, Dr. Jitendra Singh proposed that all scientific labs under various ministries develop a dedicated calendar for industrial meets. He highlighted that a structured engagement with the private sector would not only accelerate the commercialization of scientific discoveries but also enhance their impact on public welfare. Such an Initiative, he stated, would ensure that technological breakthroughs reach the masses faster and more efficiently.

In a move to promote inclusivity in scientific research, Dr. Jitendra Singh urged all departments to explore opportunities for attaching tribal students to various scientific institutes for internships and exposure. He stressed that such initiatives would provide underprivileged students with valuable insights into research and innovation, fostering a more diverse and inclusive scientific community.

The meeting was attended by Dr. A.K. Sood, Principal Scientific Advisor to the Government of India, along with Prof. Abhay Karandikar, Secretary, DST; Dr. Rajesh Gokhale, Secretary, Biotechnology; Shri Ravi Chandran, Secretary, Earth Sciences; Dr. N. Kalaiselvi, DG, CSIR; Dr. V. Narayanan, Chairman, ISRO and Secretary, Department of Space and other senior officials.

The meeting marked a significant step towards institutionalizing structured scientific engagement, fostering innovation, and ensuring that the benefits of research extend beyond laboratories to public stakeholders.

*

ANRF Launches Call for Proposals Under J. C. Bose Grant (JBG)

Source: Press Information Bureau, Dt. 12 Feb 2025,
URL: https://pib.gov.in/PressReleasePage.aspx?PRID=2102312

The Anusandhan National Research Foundation (ANRF) has announced the launch of the J. C. Bose Grant (JBG), a new scheme, to recognize the outstanding performance and contributions of senior Indian scientists and engineers through this extra-mural funding opportunities to enhance their research in cutting-edge scientific and technological areas.

The ANRF, an apex body to provide high-level strategic direction of scientific research in the country as per recommendations of the National Education Policy (NEP) aims to seed, grow and promote research and development (R&D) and foster a culture of research and innovation. It will support capacity building at all levels to strengthen the research ecosystem of the country.

The J. C. Bose Grant is designed to support senior-level researchers who have demonstrated exceptional achievements, with evidence of excellence such as publications records and research outcomes, patents, technology transfers, awards, and grants etc. across various domains of science and technology (S&T) including agriculture, medicine, as well as humanities and social sciences at the interfaces of S&T.

Participants must be active, senior Indian scientists or researchers with a proven track record of excellence, holding at least a Professor-level position or equivalent at an Indian institution/university.

This grant provides an annual research funding of Rs. 25 lakhs for a duration of five years. Additionally, an annual overhead of Rs. 1.0 lakh will be provided to the implementing institution. If the Principal Investigator (PI) superannuates, during the term of the grants, it can be continued subject to the host institutions willingness to host the PI. The grant can be availed until the age of 68.

For more details on eligibility, funding guidelines, and application procedures, please visit the ANRF Portal at https://www.anrfonline.in/ANRF/jcbose_anrf .

*

How women in STEM are driving research, innovation & start-ups, breaking barriers along the way

Source: The Print, Dt. 12 Feb 2025,
URL: https://theprint.in/science/how-women-in-stem-are-driving-research-innovation-start-ups-breaking-barriers-along-the-way/2489684/

CA childhood fascination with science sparked Snahlata Singh's lifelong passion for research and innovation. As a cancer researcher and co-founder of Pune-based biotechnology firm BioMarkIQ, she now focuses on advancing healthcare, particularly through the development of cutting-edge tools for early lung cancer detection.

"Since childhood, I have been interested in science. What excites me about science is constantly coming up with new questions. Science is a career that can never become stagnant," Singh told ThePrint, highlighting the continuous intellectual stimulation that keeps her engaged in her work.

In 2015, the United Nations General Assembly (UNGA) declared 11 February as the International Day of Women and Girls in Science, aiming to promote gender equality in science, technology, engineering, and mathematics (STEM) fields. This year marks the 10th anniversary of the observance, with the theme being "Unpacking STEM Careers: Her Voice in Science".

ThePrint spoke to several women scientists to understand their journeys and the challenges they face in STEM.

Navigating the challenges of health-tech innovation

Discussing her journey in creating BioMarkIQ, Singh acknowledged the challenges of developing a health-tech product. "Comparatively, the health-tech space takes a lot of time to develop because there are requirements for clinical trials and regulatory approvals, which is very time-consuming," she explained.

Reflecting on the obstacles faced as a woman entrepreneur, she said, "You get judged at every step. We are told that we have multiple hats to wear."

For young girls considering STEM careers, Singh offers advice grounded in patience and perseverance. “Science is a career that takes time to develop, so be patient and stick to your ambition,” she said, urging them to stay focused and committed to their goals despite the challenges ahead.

Overcoming barriers in STEM

Pooja Agrawal, now programme director of biomedical research and innovation, Blockchain for Impact (BFI), reflects on her early days in the STEM field, where she was one of only four girls in a class full of boys during her Bachelor of Technology (B. Tech) programme in the 1990s. Over the years, Dr Agrawal has developed an extensive career in ageing, stem cell biology, genomics, and cancer research. “Research is challenging enough, and being a woman makes it even harder,” she told ThePrint, recalling the hurdles of her PhD journey at Brown University.

In India, where women make up over 43 percent of STEM graduates, the number drops significantly in STEM jobs, with only 14 percent holding such positions. Agrawal points out, “We are losing women in the middle. Biases—both conscious and subconscious—persist, and as women progress in their careers, many leave due to personal life pressures and societal expectations.” “Research is challenging enough, and being a woman makes it even harder,” she told ThePrint, recalling the hurdles of her PhD journey at Brown University.

In India, where women make up over 43 percent of STEM graduates, the number drops significantly in STEM jobs, with only 14 percent holding such positions. Agrawal points out, “We are losing women in the middle. Biases—both conscious and subconscious—persist, and as women progress in their careers, many leave due to personal life pressures and societal expectations.” She added, “I was fortunate to have a supportive family that allowed me to pursue my career abroad,” emphasising the importance of a strong support system for women in the field. “Women are a strong gender; we just need to be even stronger to succeed in the STEM field.”

Breaking barriers in healthcare innovation

Divyakshi Kaushik, founder and CEO of Pune-based wearable healthcare technology start-up Anatomech, shared her insights on the challenges women-led start-ups face in fundraising. “Largely, investors struggle to trust women entrepreneurs, particularly when it comes to execution, capability, and credibility, especially for start-ups that require longer gestation periods like healthcare ventures,” she told ThePrint.

*

A Sun on Earth? The world’s biggest fusion experiment has a big India connection

Source: News Nine, Dt. 12 Feb 2025,
URL: https://www.news9live.com/science/iter-fusion-science-project-explained-2819626

The world is trying to build a mini Sun on Earth, and India has a big role in it. Scientists from around the globe have joined forces in France to construct the International Thermonuclear Experimental Reactor (ITER)—the world's most advanced nuclear fusion experiment. This massive project aims to create limitless, clean energy by replicating the Sun's power generation process. And India is not just a participant but a key contributor.

This ambitious scientific collaboration has the potential to completely change how energy is produced. With fossil fuels causing climate change and renewable sources having limitations, fusion energy could be the answer to the world's growing electricity needs. However, making this futuristic energy source a reality is no easy feat.

What is ITER?

ITER is the world's largest fusion experiment, designed to harness nuclear fusion—the same process that powers the Sun. Unlike nuclear fission, which splits atoms and creates long-lasting radioactive waste, fusion combines hydrogen atoms to release huge amounts of energy with minimal waste. If successful, fusion could replace fossil fuels and become the ultimate source of clean energy.

This ambitious project is a collaboration between India, France, the US, Russia, China, Japan, South Korea, and the European Union. With a budget of over €22 billion (₹1.9 lakh crore), ITER is also the most expensive scientific experiment in human history. Scientists estimate that the first full test runs will happen by 2035.

India's big role in the 'mini Sun'

India has a 10% stake in ITER, both financially and technologically. It has committed ₹17,500 crore and is contributing major components, including the world's largest cryostat—a gigantic steel structure built in Gujarat by Larsen & Toubro. The cryostat is crucial as it keeps the reactor at extreme temperatures needed for fusion reactions.

India has also supplied critical components such as:

- Cryolines: Pipelines that transport supercooled fluids.
- Heating systems: Used to start and sustain the fusion reaction.
- Cooling water system: Prevents overheating of the reactor.
- Power supply units & diagnostics: Essential for monitoring and control.

However, there's a major concern—India has underutilized its human resource quota at ITER. While India is allowed to send up to 100 engineers and scientists, only 25 to 30 are currently working at the site. This lack of presence could mean missing out on valuable hands-on experience.

Why fusion energy matters

With climate change worsening, the need for clean, unlimited energy has never been greater. Fusion energy, if harnessed, could:

- End dependence on fossil fuels and reduce carbon emissions.
- Generate massive power with minimal environmental impact.
- Provide a sustainable energy source that does not produce long-lasting radioactive waste.

The challenges ahead

Building a working fusion reactor is extremely difficult. The Sun's core burns at 15 million°C, and replicating this on Earth requires temperatures even higher—about 150 million°C. The reactor's walls must withstand extreme heat while ensuring the plasma remains stable.

ITER is also a political and financial balancing act, with multiple countries funding and providing different components. Delays have already pushed the timeline further, with the first plasma test now set for 2039.

India's nuclear energy vision

India sees nuclear energy as a key part of its future energy strategy. The country plans to increase its nuclear power capacity from 8,180 MW to 22,480 MW by 2031-32 and 100 GW by 2047. It has also launched a Nuclear Energy Mission to develop Small Modular Reactors (SMRs).

But to truly benefit from ITER, India needs to increase its scientific participation, ensuring its engineers get hands-on experience at the site.

The road ahead

ITER is a historic experiment that could redefine how humanity produces energy. India's contributions, from financial backing to crucial engineering components, make it a vital partner. If all goes as planned, the world might finally see a working artificial Sun on Earth—one that could power our future without harming the planet.

*

AI can make drug-testing more precise, relevant to human biology Premium

Source: The Hindu, Dt. 12 Feb 2025,
URL: https://www.thehindu.com/sci-tech/science/ai-can-make-drug-testing-more-precise-relevant-to-human-biology/article69202262.ece

On January 6, the US Food and Drug Administration (FDA) proposed draft guidelines on the use of artificial intelligence (AI) to assess the safety and effectiveness of drugs.The influential body has said that in the last decade, the number of submissions from drugmakers that include an AI or machine-learning component has seen an exponential rise. There was only one such submission per year in 2016 and 2017 but in the next two years it tripled; in 2021, the FDA reported a remarkable 10-fold increase on the previous year alone with 132 submissions including an AI and/or machine-learning component.

Drug development pitfalls

It takes nearly 10 years and over a billion dollars to develop a drug using conventional (animal-based) processes, which also have a success rate of only 14%. Emerging technologies like AI provide opportunities for us to catalyse and improve the human-relevant drug-development pipeline.For example, rats can eliminate some drugs from their bodies much faster than humans can, which means that for the same dose level, humans would be exposed to the drug for a longer duration. As a result, the data for a compound obtained by testing with rats will have to be adjusted for this skew.

The responses of humans belonging to different populations around the world to drugs and diseases also vary according to age, sex, preexisting medical conditions, and genetic variabilities, among other factors. It's often difficult to predict this range of responses from a homogenous, lab-bred animal population.

Inputs to predictivity

Researchers today use AI across the breadth of the drug development cycle.In the discovery phase, researchers comb through databases with thousands of compounds to select a few hundred promising candidates for a particular use case. Then they test these compounds on animals during preclinical research. The data for compounds that produce encouraging results in animal models are submitted to drug regulators for permission to conduct human clinical trials.

The compounds found to be safe and effective in these clinical trials — conducted in three phases depending on the requirement — are thn released into the market following the Drug Controller-General's approval. In the post-marketing stage, the drug manufacturer monitors the drug's effects on the population, under an obligation to report adverse effects.

There are now AI tools that can digest data from a human adult about how their body absorbs, distributes, and eliminates a drug and based on that predict the response of vulnerable populations, such as children, whose participation in clinical trials raises thorny ethical and technical issues.

Another pain point in drug development that AI could surmount is predicting whether a drug could have unintended effects. In December 2024, researchers from the UK reported in the journal Toxicological Sciences a "safety toolbox" comprising a group of computational models that could predict the undesirable side effects of a chemical compound on the entire body or on specific organs the compound isn't designed to target.

This framework involves integrating multiple types of data, such as the level and manner of exposure to the substance (topical, oral, etc.), its structural properties, and any information about its chemical properties.

When AI changes the way we do science, will we understand the results?

Where do AI models fall short?

Despite the potential to overcome the barriers of conventional testing, AI comes with its own challenges. In particular, the reliability of data analysis performed by an AI tool depends on the quality of the data the model is trained with.

Participants at an FDA-sponsored workshop at Duke University in the US in 2022 used the adage "garbage in, garbage out" to describe this problem. The use of biased and/or under-representative data of a target population will also compromise the output.

Another challenge is transparency. The inner workings of most AI models in use are not open to independent scrutiny nor is the data used to train them easily accessible, so the models' performance can't be assessed as required.

FDA's draft guidelines

The FDA has been open to the idea of using AI and its draft guidelines present a stepwise framework to assess models' credibility. The text emphasises the importance of identifying questions of interest, the context for each question, how a model will help address it. This is because a model developed to identify the risk of one adverse reaction to one drug based on previous clinical trials may not be equally good at identifying the risk of other reactions and/or to other drugs.

The guidelines also stress the importance of assessing the risk AI models may pose. If a model concludes a patient is at low risk for an adverse reaction to a drug, an incorrect prediction could have life-threatening implications. Identifying the level of this risk is another parameter of importance. Axiomatically, improving the quality and quantity of data used to train the AI model and the identification of possible biases will strengthen the model's integrity and value.

AI models can be self-learning, their outputs can change based on new inputs, and they can constantly adapt without human intervention. In response, the FDA framework recognises a need to continuously monitor and provide detailed maintenance plans across the lifecycle of these models. Given the currently vigorous AI landscape, the draft guidelines encourage the industry to engage with the FDA to discuss and design appropriate ways to assess their AI models.

The guidelines focus on the use of AI in the preclinical stage in particular, where it is critical to understand if a compound of interest is safe enough to be approved for human clinical trials.

Regulators and the pharmaceutical industry have traditionally banked on animal models' response to the compounds for this assessment. But there is a growing body of work suggesting we need to improve the quality of data available at this stage as well as reduce animal suffering.

From guidelines to adoption

The European Medicines Agency and the International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use (a.k.a. ICH) have released similar documents on the use of AI in drug development processes. But the FDA guidelines are notable because they focus on the use of AI to support decisions regarding the safety and effectiveness of a drug before starting human clinical trials.

In 2023, India passed the New Drugs and Clinical Trials (Amendment) Rules 2023. It allowed data generated by advanced computational models to be used to assess the safety and efficacy of new drugs, freeing researchers from relying on animal trials alone.

This said, guidelines issued by regulators can help harmonise (i) government policy, (ii) manufacturers' expectations and compliance burden, (iii) researchers' strategy, and (iv) consumer safety.

In effect, the guidelines serve as a fixed point in the shifting AI space, an anchor where all stakeholders can pause to take stock together, before making the next decision.

*