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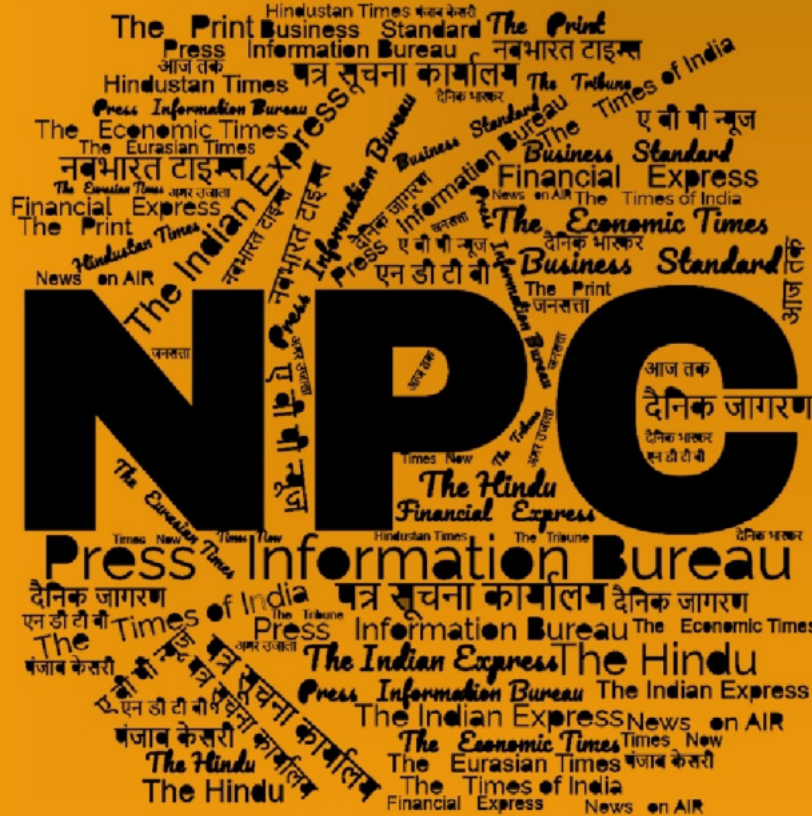
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डीआरडीओ समुदाय को डीआरडीओ प्रौद्योगिकियों, रक्षा प्रौद्योगिकियों, रक्षा नीतियों, अंतर्राष्ट्रीय संबंधों और विज्ञान एवं प्रौद्योगिकी की नूतन जानकारी से अवगत कराने हेतु दैनिक सेवा

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CONTENTS

S. No.	Title	Source	Page No.
DRDO News			1-7
1	T.N. collaborating with DRDO on advancing AI and emerging technologies	<i>The Hindu</i>	1
2	DRDO, MIDHANI sign MoU for special grade steel for aeronautical applications	<i>The Hindu</i> <i>BusinessLine</i>	1
3	Aero India 2025: DRDO showcases 4D-capable Virupaksha radar	<i>Janes</i>	2
4	Aero India 2025: DRDO develops new Pinaka rocket variant	<i>Janes</i>	3
5	Aero India 2025: DRDO progresses development of new 'compact' electromagnetic railgun	<i>Janes</i>	4
6	क्या है DRDO की हर्डल टेक्नोलॉजी जो डिब्बाबंद और डिहाइड्रेटेड फलों के लिए है बेस्ट	<i>TV9 Bharatvarsh</i>	5
Defence News			7-38
Defence Strategic: National/International			
7	CDS Gen Anil Chauhan concludes a significant visit to Aero India 2025, boosting India's strategic defence partnerships and capability development	<i>Press Information Bureau</i>	7
8	Launch Of Eighth Missile Cum Ammunition (MCA) Barge, LSAM 11 (Yard 79)	<i>Press Information Bureau</i>	8
9	HQIDS bolsters global defence partnerships during Aero India 2025	<i>Press Information Bureau</i>	9
10	Indian Navy's First Training Squadron Arrives At Sihanoukville, Cambodia	<i>Press Information Bureau</i>	10
11	Indian Navy Platforms Arrive In Indonesia To Participate In The International Fleet Review 25, And The Multilateral Naval Exercise Komodo	<i>Press Information Bureau</i>	11
12	Au revoir, Aero India: Bengaluru bids goodbye to its biennial aero show	<i>The Economic Times</i>	12
13	A nuanced deal to boost defence, tech ties	<i>A Hindustan Times</i>	14
14	ITAR review gives India a chance to align with US allies	<i>The Economic Times</i>	17
15	Army Chief lauds '10-year plan' for India-US defence deals, says will boost defence production	<i>The Economic Times</i>	18
16	India may take Rafale route to buy US' F35 fighter jets: Govt likely to opt for limited numbers; may require special monitoring clauses	<i>The Economic Times</i>	19
17	India seen seeking global bids this year for 114 fighters	<i>The Economic Times</i>	20
18	India reaffirms long-held policy to rule out third party	<i>The Economic Times</i>	22

	role in its border row with China		
19	Swan Defence and Heavy Industries completes refit of offshore patrol vessel SAJAG ahead of schedule	<i>The Economic Times</i>	23
20	Army & IAF intensify hunt for advanced anti-drone system	<i>The Times of India</i>	24
21	India, U.S. identify underwater domain awareness technologies for co-production in India	<i>The Hindu</i>	25
22	India needs to weigh pros & cons of F-35 pitch	<i>The Times of India</i>	27
23	Global defence spending rose to \$2.46 trillion in 2024 amid security challenges, shows IISS report	<i>The Print</i>	28
24	Military exercise 'Jal-Thal-Raksha 2025' organised at Bet Dwarka to secure islands, combat illegal encroachment	<i>ANI News</i>	29
25	International Defence Conference 2025 kicks off tomorrow	<i>ANI News</i>	31
26	Aero India 2025: Indian Army displays AI-based weapon system	<i>Janes</i>	32
27	Aero India 2025: ideaForge unveils UAV platforms	<i>Janes</i>	33
28	Aero India 2025: BDL, Javelin Joint Venture sign production agreement	<i>Janes</i>	34
29	Aero India 2025: NewSpace unveils collaborative combat aircraft concept	<i>Janes</i>	35
30	Aero India 2025: Tonbo unveils microwave-based DEW	<i>Janes</i>	36
31	Aero India 2025: Rosoboronexport discloses sensor capabilities of Pantsir-S1M system	<i>Janes</i>	37

Science & Technology News

38-45

32	CSIR-NIScPR Hosts One-Day Workshop on the Need and Significance of Communicating Science in India	<i>Press Information Bureau</i>	38
33	ISRO unveils 10-tonne vertical mixer to boost solid propellant production	<i>Hindustan Times</i>	40
34	What's really inside a black hole? Quantum computing sheds new light	<i>The Times of India</i>	40
35	Indian researchers discover new exoplanet TOI-6038A b. Here's all about it	<i>The Economic Times</i>	42
36	Adani-backed firm among three finalists in India's small satellite launch rocket privatisation	<i>The Economic Times</i>	43
37	क्या है प्लेनेट्री डिफेंस फोर्स, जिसमें भर्ती कर रहा चीन, ISRO ने भी बनाया प्लान	<i>TV9 Bharatvarsh</i>	44

DRDO News

T.N. collaborating with DRDO on advancing AI and emerging technologies

Source: The Hindu, Dt. 16 Feb 2025,

URL: <https://www.thehindu.com/news/national/tamil-nadu/tn-collaborating-with-drdo-on-advancing-ai-and-emerging-technologies/article69226581.ece>

Tamil Nadu's Minister for Information Technology and Digital Services Palanivel Thiaga Rajan chaired a meeting with senior officials of the Defence Research and Development Organisation (DRDO) on advancing Artificial Intelligence (AI) and emerging technologies in collaboration with Tamil Nadu's thriving innovation ecosystem.

"Given Tamil Nadu's strategic position in the Defence Corridor, we explored opportunities to strengthen collaborations, drive advanced R&D, and enhance technological capabilities in the IT sector. Looking forward to building on these discussions for meaningful impact," Mr. Rajan said in a social media post on Sunday.

Director General of DRDO's Micro Electronic Devices, Computational Systems & Cyber Systems (MED & CoS) Suma Varughese and former DRDO chairman S. Christopher were among those who participated in the meeting.

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DRDO, MIDHANI sign MoU for special grade steel for aeronautical applications

Source: The Hindu BusinessLine, Dt. 16 Feb 2025,

URL: <https://www.thehindubusinessline.com/news/drdo-midhani-sign-mou-for-special-grade-steel-for-aeronautical-applications/article69226820.ece>

Aeronautical Development Agency (ADA), a leading lab of Defence Research and Development Organisation, and public sector undertaking MIDHANI have entered into an MoU for indigenous development of high strength high toughness special grade steel "MDN100" for aeronautical applications including in the development 5th generation Advanced Medium Combat Aircraft (AMCA).

The steel has good forgeability and could be used for highly stressed aircraft parts for weight saving benefits, the DRDO said on Sunday after inking the MoU in the just held Aero India 2025.

The development project would help in further achieving atmanirbhar Bharat.

Defence PSU has been aiding DRDO and Hindustan Aeronautics Ltd (HAL) in providing critical materials for aeronautical purposes. At the Aero India, MIDHANI had exhibited SuperNi 41 plates - a nickel-chromium based superalloy which can withstand very temperature in aero engines.

ADA, the nodal organisation for combat aircraft development in the country - is developing AMCA.

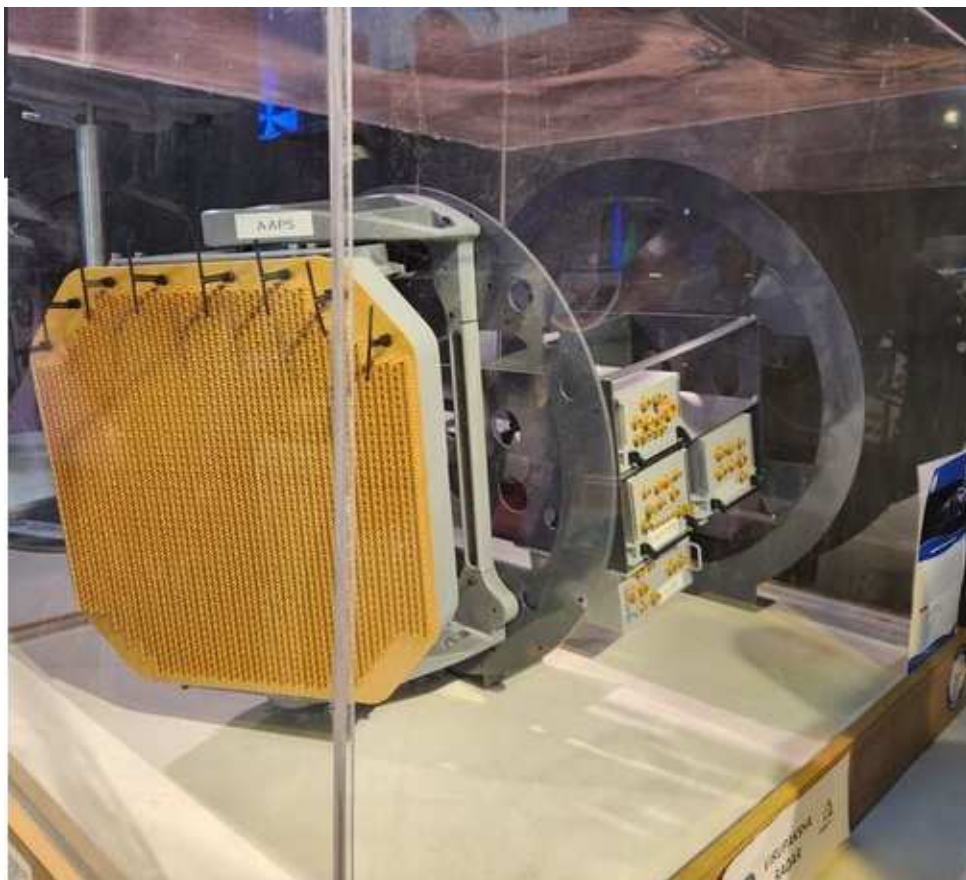
Ongoing Combat Aircraft Programme sbeing pursued by ADA are LCA Mk2, Advanced Medium Combat Aircraft (AMCA) and TwinEngine Deck Based Fighter (TEDBF).

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Aero India 2025: DRDO showcases 4D-capable Virupaksha radar

Source: Janes, Dt. 14 Feb 2025,

URL: <https://www.janes.com/osint-insights/defence-news/c4isr/aero-india-2025-drdo-showcases-4d-capable-virupaksha-radar>



The Virupaksha AESA radar is seen at Aero India 2025.

India's Defence Research and Development Organisation (DRDO) displayed its new multimode, multifunctional Virupaksha radar at Aero India 2025 in Bangalore.

A DRDO official told Janes that the Virupaksha active electronically scanned array (AESA) radar has been designed for the Indian Air Force's Su-30MKI upgrade programme.

The air intercept radar is 4D-capable and can simultaneously detect and measure the 4D parameters of the target, including its range, azimuth, elevation, and relative velocity. The radar utilises pulse Doppler technology to detect the moving targets.

DRDO said it has finalised the design architecture of the radar and it can operate in multiple modes – consisting of air-to-air, close combat, air-to-ground, air-to-sea, and 'navigation' – simultaneously.

The Virupaksha radar's antenna is 950 mm in diameter and is equipped with approximately 2,400 TR (transmit/receive) modules to achieve high resolution and enhance situational awareness and strike capability. Gallium nitride (GaN) TR modules used in the radar provide high output power and enhance signal reception while being operated.

Radar parameters, including operational frequency and range specifications, were not disclosed by the DRDO. However, officials said that the radar is integrated with advanced electronic counter-counter measures (ECCM) to enable effective operations in a complex electronic battlefield environment.

DRDO officials told Janes that the DRDO has not yet finalised a production partner for the radar. However, officials said that they expect a requirement for the production and sustainment of a large number of Virupaksha radars.

Janes previously reported that the Indian Air Force is aiming to upgrade 84 Su-30MKI fighter aircraft in an initial tranche. This upgrade project will include replacing the Su-30MKI's existing Russian-made N011 Bars radar with an indigenously developed AESA system.

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Aero India 2025: DRDO develops new Pinaka rocket variant

Source: Janes, Dt. 14 Feb 2025,

URL: <https://www.janes.com/osint-insights/defence-news/weapons/aero-india-2025-drdo-develops-new-pinaka-rocket-variant>

India's Defence Research and Development Organisation (DRDO) is developing a new high-calibre Pinaka rocket with a range of 120 km, a DRDO official told Janes at Aero India 2025 in Bangalore. The official did not disclose the exact calibre of the new rocket variant but indicated that it could be similar to that of Russian Smerch rockets. The Smerch rockets have a calibre of 300 mm and have been in service with the Indian Army since 2007.

According to the DRDO official, development of the new Pinaka rocket variant started in 2024. He added that the new rocket is already in an advanced stage of development and that its first test is expected to be conducted in October 2025. This new longer-range rocket variant will be launched from the Pinaka Multi Barrel Rocket Launcher (MBRL), the official said. A new pod to launch the new rocket variant will be fitted to the Pinaka MBRL, he added.

The existing Pinaka family consists of 214 mm fin-stabilised, solid-propellant, guided and unguided rockets and are launched from 214 mm Pinaka MBRL.



The DRDO is developing a new variant of the Pinaka rocket. The 214 mm variant of the Pinaka rocket is seen above displayed at Aero India 2025

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Aero India 2025: DRDO progresses development of new 'compact' electromagnetic railgun

Source: Janes, Dt. 14 Feb 2025,

URL: <https://www.janes.com/osint-insights/defence-news/weapons/aero-india-2025-drdo-progresses-development-of-new-compact-electromagnetic-railgun>

India's state-owned Defence Research and Development Organisation (DRDO) showcased a model of its new compact and transportable electromagnetic railgun (EMRG) at the Aero India 2025 show held in Bangalore. DRDO said the EMRG, which is being developed by the DRDO's Armament Research & Development Establishment (ARDE) laboratory, is a trailer transportable version and is ready for field trials. DRDO officials said the trials represent a major step towards enabling the EMRG to become fully functional.

The compact EMRG set-up comprises a modular capacitor bank, a lithium chemistry cell-based battery bank, a railgun, and a diesel generator as a power source. The DRDO officials said the system's size has been partly enabled by its capacitor bank, which was developed through an ARDE science and technology project, and its 15 kW portable diesel generator that can fully charge the battery bank in 30 minutes. The generator replaces the grid power used in larger EMRG systems.

The energy contained in the battery bank is used to charge the capacitor bank to 10 MJ, which in turn is delivered to the railgun. The railgun uses this energy to propel a projectile with a monolithic armature to muzzle speeds exceeding 2,000 m/s. The system features 25 modular capacitor power banks, with each possessing a storage capacity of 400 KJ.



DRDO displayed a model of its electromagnetic railgun at Aero India 2025

Fully charged, the EMRG can fire 30 rounds at the rate of 3 rds/min. The life of the rails in the EMRG compact version has been enhanced to more than 50 shots after which they would require maintenance.

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क्या है DRDO की हर्डल टेक्नोलॉजी जो डिब्बाबंद और डिहाइड्रेटेड फलों के लिए है बेस्ट

Source: TV9 Bharatvarsh, Dt. 16 Feb 2025,

URL: <https://www.tv9hindi.com/lifestyle/what-is-drdo-hurdle-technology-for-fruit-preservation-know-more-about-it-3111564.html>

रक्षा अनुसंधान एवं विकास संगठन (DRDO) ने हर्डल टेक्नोलॉजी विकसित की है, जो कि फूड आइटम्स को प्रिजर्व करने का एक मॉडर्न और इफेक्टिव तरीका है। यह तकनीक फलों और दूसरे फूड आइटम्स को ज्यादा समय तक ताजा बनाए रखने के लिए इस्तेमाल की जाती है। हर्डल टेक्नोलॉजी में तरह-तरह के कारकों का यूज करके फलों के खराब होने की प्रक्रिया को धीमा किया जाता है, जिससे उनकी शेल्फ लाइफ बढ़ जाती है और वो ज्यादा समय तक सुरक्षित रहते हैं।

हर्डल टेक्नोलॉजी फूड प्रिजर्वेशन की एक मल्टीडाइमेंशनल प्रक्रिया है जिसमें कई कारकों का कॉम्बिनेशन करके माइक्रो ऑर्गेनिज्म की वृद्धि को रोका जाता है। इसमें तापमान, मॉइस्चर, पीएच (pH), प्रिजर्वेटिव्स और पैकेजिंग जैसी तकनीकों का इस्तेमाल किया जाता है। यह तकनीक केवल सिंगल प्रक्रिया पर निर्भर नहीं करती, बल्कि कई बैरियर्स का कॉम्बिनेशन करके फूड आइटम्स की गुणवत्ता बनाए रखती है। इसका मुख्य उद्देश्य यह देखना है कि खाना अधिक समय तक सुरक्षित, पोषक और ताजा बना रहे।

हर्डल टेक्नोलॉजी का इस्तेमाल कैसे किया जाता है?

रक्षा अनुसंधान एवं विकास संगठन (DRDO) द्वारा विकसित हर्डल टेक्नोलॉजी का उपयोग कई स्टेप्स में किया जाता है, जिसमें नीचे दी गई प्रमुख तकनीकों को शामिल किया जाता है:

तापमान नियंत्रण: फलों को सही तापमान पर रखा जाता है, जिससे उनकी नमी संतुलित रहती है और खराब होने की गति धीमी हो जाती है। ठंडे वातावरण में स्टोरेज से माइक्रो ऑर्गेनिज्म की वृद्धि रोकी जाती है।

पीएच स्तर का संतुलन: एसिडिटी को नियंत्रित करके बैक्टीरिया और फफूंद की वृद्धि को रोका जाता है। नेचुरल प्रिजर्वेटिव का इस्तेमाल करके फलों की ताजगी बनाए रखी जाती है।

वॉटर एक्टिविटी का नियंत्रण: माइक्रोऑर्गेनिज्म की वृद्धि को रोकने के लिए फलों की सतह पर पानी की मात्रा को कम किया जाता है। इस प्रक्रिया से फलों की बनावट और स्वाद लंबे समय तक बना रहता है।

प्रिजर्वेटिव्स का उपयोग: रक्षा अनुसंधान एवं विकास संगठन नेचुरल प्रिजर्वेटिव्स जैसे कि बायो-केमिकल कंपाउंड्स का इस्तेमाल करता है, जो फलों को लंबे समय तक सुरक्षित रखते हैं। सिंथेटिक केमिकल्स के बजाय नेचुरल तरीकों को तवज्जो दी जाती है।

मॉडिफाइड एटमॉस्फियर पैकेजिंग: फलों को एक नियंत्रित वातावरण में पैक किया जाता है, जिससे ऑक्सीजन और कार्बन डाइऑक्साइड की मात्रा संतुलित बनी रहती है। यह तकनीक फलों की ऑक्सीडेशन प्रक्रिया को धीमा कर देती है, जिससे वो जल्दी खराब नहीं होते।

ये तकनीक आम लोगों के लिए कैसे उपयोगी है?

DRDO की हर्डल टेक्नोलॉजी केवल लैब्स तक सीमित नहीं है, बल्कि ये आम जनता के लिए भी बहुत फायदेमंद है। इसका लाभ देशभर में किसानों, ट्रेडर्स और कंज्यूमर्स को मिलता है।

किसानों को ये फायदे मिलते हैं:

- हर्डल टेक्नोलॉजी से फलों की शेल्फ लाइफ बढ़ जाती है, जिससे किसानों को जल्दी बिक्री करने का दबाव नहीं रहता।
- खराब होने वाले फलों की बर्बादी कम होती है, जिससे किसानों को अधिक लाभ मिलता है।
- यह तकनीक किसानों को विदेशी बाजारों में अपने प्रोडक्ट्स का एक्सपोर्ट करने में मदद करती है।

ट्रेडर्स को मिलने वाले फायदे:

- फलों के स्टोरेज और ट्रांसपोर्टेशन में कम लागत आती है।

- व्यापारी लंबे समय तक ताजा फल बेच सकते हैं, जिससे बिजनेस में वृद्धि होती है।
- ऑर्गेनिक और नेचुरल प्रिजर्वेटिव के कारण ग्राहक ज्यादा आकर्षित होते हैं।

कंज्यूमर्स को मिलने वाले फायदे:

- लोग ज्यादा समय तक ताजा फल खा सकते हैं, जिससे उनकी सेहत बेहतर बनी रहती है।
- केमिकल फ्री और नेचुरल तरीके से संरक्षित फलों का सेवन स्वास्थ्य के लिए अधिक फायदेमंद होता है।
- कम कीमत पर लंबे समय तक स्टोर किए गए फल मौजूद रहते हैं, जिससे फलों की बर्बादी कम होती है।

डीआरडीओ की हर्डल टेक्नोलॉजी इंडियन फूड प्रिजर्वेशन सिस्टम के लिए एक बेहतरीन इनोवेशन है। यह किसानों, ट्रेडर्स और कंज्यूमर्स के लिए समान रूप से फायदेमंद है। इस तकनीक के जरिये फलों की गुणवत्ता लंबे समय तक बनी रहती है, बर्बादी कम होती है और नेचुरल प्रिजर्वेटिव के कारण स्वास्थ्य को भी फायदा मिलता है।

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Defence News

Defence Strategic: National/International

CDS Gen Anil Chauhan concludes a significant visit to Aero India 2025, boosting India's strategic defence partnerships and capability development

Source: Press Information Bureau, Dt. 15 Feb 2025,

URL: <https://pib.gov.in/PressReleasePage.aspx?PRID=2103572>

Chief of Defence Staff General Anil Chauhan held multiple high-level engagements at Aero India 2025, demonstrating India's willingness to forge strategic defence partnerships. Key interactions included meetings with General Kevin B Schneider, Commander Pacific Air Force (USA), Lord Vernon Coaker, Minister of State for Defence (UK) and Air Vice Marshal Suraya Marshall (UK), Lt Gen Ibrahim Nasser Al Alawi (UAE), Maj Gen Duong Van Yen (Vietnam), Maj Gen Ro Jone Kalouniwai Logavatu (Fiji), General Paul Velentino Phiri (Malawi), Lt Gen Salum Haji Othman (Tanzania) and Vice Admiral Exon Oswaldo Ascencio Albeno (El Salvador). The discussions centered on enhanced military cooperation, capacity building, and strategic partnerships in the defence sector.

The CDS engaged extensively with global defence industry leaders, conducting strategic discussions with executives from major aerospace companies including Saab AB, Airbus, Israel Aerospace Industries, BAE Systems, Dassault Aviation, and Rolls Royce. These interactions

centered on indigenous manufacturing, technology transfer, and the development of niche capabilities under India's Make in India and Atmanirbhar Bharat initiatives.

General Chauhan also visited various defence pavilions, engaging with both Indian and foreign defence equipment manufacturers, MSMEs, and startups. He witnessed impressive displays of military aircraft from friendly foreign countries and received comprehensive briefings on the capability and performance parameters, including the F-35 from the USA, MRTT from Germany, A400 from Spain, SU-57 from Russia and H125 from France, underlining India's commitment to fostering international defence collaboration while strengthening domestic capabilities.

In a notable development, Raksha Mantri Shri Rajnath Singh had unveiled a landmark document on 'Network Centric Multi Domain Operations' in the presence of key military leadership. This pivotal document, created by Headquarters Integrated Defence Staff, outlines the roadmap for preparing the Indian Armed Forces for future warfare, emphasizing decision superiority in an increasingly data-centric environment amidst rapidly evolving military technologies.

The visit of General Chanegriha Said, Minister Delegate to the Minister of National Defence and Chief of Staff of Algeria's People's National Army, marked a significant milestone in Indo-Algerian defence relations. During his comprehensive tour of India's vital defence establishments and industrial complexes, General Chanegriha expressed strong satisfaction with the similarities in military traditions and cultures between both nations, setting the stage for enhanced military cooperation and defence modernization initiatives.

Aero India 2025 has emerged as a landmark event in India's defence ecosystem, showcasing the nation's growing stature as both a significant market and an emerging producer of defence technology. The unprecedented participation of military leaders from diverse nations, coupled with engagements with global defence industry giants, underscores India's pivotal role in shaping international defence partnerships. The exhibition's success not only highlights India's commitment to achieving self-reliance in defence manufacturing but also positions the country as a reliable partner for joint development and production of advanced military systems, marking a significant step toward realizing the vision of 'Make in India, Make for the World.'

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Launch Of Eighth Missile Cum Ammunition (MCA) Barge, LSAM 11 (Yard 79)

Source: Press Information Bureau, Dt. 14 Feb 2025,

URL: <https://pib.gov.in/PressReleasePage.aspx?PRID=2103328>

Launch ceremony of eighth MCA Barge, LSAM 11 (Yard 79) was held on 14 Feb 25 at Mira Bhayandar, Maharashtra, launch site of M/s SECON Engineering Projects Pvt Ltd Visakhapatnam. Chief Guest for the launching ceremony was Cmde N Gopinath, AGM (PL), ND (Mbi).

The contract for construction of eighth Missile Cum Ammunition Barges was concluded with MSME Shipyard, M/s SECON Engineering Projects Pvt Ltd, Visakhapatnam on 19 Feb 21. These Barges have been indigenously designed and built by the Shipyard in collaboration with an Indian

Ship Designing firm and Indian Register of Shipping (IRS). Model testing was undertaken at Naval Science and Technological Laboratory (NSTL), Visakhapatnam to ensure seaworthiness. The Shipyard has successfully delivered seven of these Barges till date and are being utilized by Indian Navy for its operation evolutions by facilitating Transportation, Embarkation and Disembarkation of articles/ ammunition to IN platforms both alongside jetties and at outer harbours.

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

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HQIDS bolsters global defence partnerships during Aero India 2025

Source: Press Information Bureau, Dt. 14 Feb 2025,

URL: <https://pib.gov.in/PressReleasePage.aspx?PRID=2103305>

Aero India 2025, India's premier aerospace and defence exhibition, provided a platform for key engagements, technological showcases and strategic deliberations aimed at strengthening global military cooperation. Headquarters Integrated Defence Staff (HQ IDS) demonstrated robust military diplomacy at Aero India 2025, under the leadership of Lt Gen JP Mathew, Chief of Integrated Defence Staff (CISC). The senior Indian delegation, including Lt General DS Rana, Director General Defence Intelligence Agency and Vice Admiral Sanjay Vatsayan, Deputy Chief PP&FD conducted extensive bilateral discussions, industry interactions and defence capability assessments, advancing India's strategic defence partnerships.

Lt Gen JP Mathew's engagement with Lt Gen Augustine S Malanit, Inspector General of the Armed Forces of Philippines emphasised the need for deeper bilateral military cooperation and exploring opportunities in defence procurement. The CISC also interacted with Israel's Elbit Systems representatives, reaffirming the strong India-Israel defence partnership. Demonstrating India's commitment to defense modernization, he received briefings on the capabilities and performance parameters of various aircraft and also carried out assessments of advanced military systems showcased by the domestic and international defence industry at the Aero India 2025.

Vice Admiral Vatsayan engaged with Maj Gen Ramanka Mokaloba, Chief of Logistics, Lesotho Defence Forces, exploring defense export possibilities. Additional strategic dialogues were conducted with Maj Gen Andrei Matsiyevich, First Deputy Chief of General Staff of Belarusian Armed Forces, strengthening military cooperation with these nations. He also spearheaded crucial meetings with global defense industry leaders from MBDA (Europe), L3Harris (America), Hensoldt (Germany), and Boeing (USA). These strategic interactions concentrated on technology transfer initiatives and establishing defense production facilities under the Make in India initiative, with special emphasis on integrating startups and MSMEs into the defence manufacturing ecosystem.

A series of high-level bilateral meetings showcased India's growing diplomatic outreach. Notable engagements included discussions with the Japanese delegation led by Mr Kegoya Masanori, Deputy Director General for Global Combat Air Program (GCAP). The Italian delegation, under Lt Gen Giuseppe Lupoli, Director of Italian Air Armaments and Air Worthiness Directorate and the French team led by Lt Gen Gael Diaz de Tuesta, engaged in comprehensive discussions on defence manufacturing and technology exchange.

Lt General DS Rana held productive discussions with Brig Gen Ahmed Ghiyas, Vice Chief of Defence Force from Maldives, focusing on joint training opportunities. He held substantive talks on enhancing bilateral military cooperation with the German contingent, headed by Lt Gen (OF-8) Thorsten Michael Poshwatta of the German Air Force, accompanied by Ambassador Philip Ackermann. DG DIA also visited various defence pavilions and stalls at Aero India 2025, where he reviewed advancements in military technology, simulators and warfighting systems, supporting the vision of Atmanirbhar Bharat.

The engagements held during Aero India 2025 not only strengthen India's position as an emerging defense manufacturing hub but also advance the nation's vision of achieving self-reliance in defense production while fostering meaningful international partnerships for global security cooperation. These strategic interactions underscore India's focus on self-reliance, innovation and the development of robust international defence collaborations.

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Indian Navy's First Training Squadron Arrives At Sihanoukville, Cambodia

Source: Press Information Bureau, Dt. 14 Feb 2025,

URL: <https://pib.gov.in/PressReleasePage.aspx?PRID=2103248>



The ships of First Training Squadron (1TS) comprising INS Sujata and ICGS Veera arrived at Sihanoukville Port, Cambodia on 14 Feb 25 as part of Long Range Training Deployment of the

squadron to South East Asia. The ships were warmly welcomed by representatives of Maritime agencies of Cambodia.

During the port call from 14 - 17 Feb 25, the ships will engage in numerous activities aimed at enhancing cooperation and interoperability between the Indian Navy and the Royal Cambodian Navy (RCN). The visit includes professional exchanges, cross training visits, social interaction, friendly sports fixtures and PASSEX with RCN. The visit also features formal handing over of a Small Arms Simulator to Royal Cambodian Army.

The defence engagement and capacity building is an integral part of the warm and cordial India-Cambodia ties and the visit of squadron is aimed at further consolidating the maritime relationship between the two countries. Previously in Feb 2024, the Cambodian Navy participated in Ex-MILAN 24 at Visakhapatnam. The extant visits highlight the importance of growing India-Cambodia relations and strengthening maritime association and regional stability as a part of India's 'Act East' policy.

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Indian Navy Platforms Arrive In Indonesia To Participate In The International Fleet Review 25, And The Multilateral Naval Exercise Komodo

Source: Press Information Bureau, Dt. 16 Feb 2025,

URL: <https://pib.gov.in/PressReleasePage.aspx?PRID=2103820>

Indian Navy platforms INS Shardul and Long Range Maritime Surveillance P8I aircraft are in Bali, Indonesia, to participate in the International Fleet Review (IFR) 2025, scheduled from 15 Feb to 22 Feb 25. The IFR, a prestigious multinational naval event, will be reviewed by the Hon'ble President of Indonesia and will witness participation of Naval forces from various countries.



During this period, the Indian Navy will also take part in various high-level engagements including International Maritime Security Symposium, and tactical floor games. Additionally, the crew will join in multinational activities such as a city parade, baby turtle release, coral & mangrove plantation and beach cleaning underscoring commitment towards environmental conservation and maritime cooperation.



Following IFR 25, both INS Shardul and the P8I will participate in Exercise Komodo, a multilateral naval exercise aimed at enhancing maritime interoperability and regional security cooperation.

This follows the participation of INS Mumbai & the P8I aircraft in the LA PEROUSE exercises in Indonesia in Jan 2025 and visit of Adm Muhammad Ali, Chief of Staff of the Indonesian Navy, to India, as part of the high-level delegation accompanying His Excellency President Prabowo Subianto, the Chief Guest for the Republic Day Parade 2025.

Indian Navy's regular participation in the exercise is a reaffirmation of India's commitment to engage with the regional Navies to maintain Security and Growth for All in the Region (SAGAR).

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Au revoir, Aero India: Bengaluru bids goodbye to its biennial aero show

Source: The Economic Times, Dt. 15 Feb 2025,

URL: <https://economictimes.indiatimes.com/news/defence/au-revoir-aero-india-bengaluru-bids-goodbye-to-its-biennial-aero-show/articleshow/118241831.cms>

As soon as they entered, as if on cue, the crowd made a beeline to the stands from where they could get a better view of the aerial stunts on the final day of 'Aero India 2025' on Friday.

Their efforts paid off: the pilots put on a breathtaking show.

They rolled the aircraft zigzagged through the sky flipped them over, and hovered vertically before plunging at full speed—cutting through the air like a bomb—only to pull up again.

The daredevilry drew a collective gasp from the crowd. The penultimate show at 10.30 am showcased the prowess of 10 aircraft, including the popular Russian Su-57 and the American F-16, along with Hindustan Aeronautics Limited (HAL)'s LUH, HTT-40, LCA Mk-1A, and IJT.

The Indian Air Force's Su-30 MKI and nine HAWKs flown by the renowned Surya Kiran Aerobatic Team (SKAT) also participated along with National Aerospace Laboratories (NAL)'s Hansa and the Defence Research and Development Organisation (DRDO)'s FTB.

In the final aerial display at 2.30 pm, which also showcased 10 aircraft the American F-16 was replaced with another American aircraft, the KC-135. Meanwhile, the exhibitors, thanks to the fifth-day fatigue and the pressing crowd, were seen putting their things together already waiting to leave as soon as they could. But mostly the exhibitors were a happy lot.

A Boeing representative said he was thrilled as Defence Minister Rajnath Singh visited the Boeing stall on the inaugural day and the response that the Boeing's presentation got. In what looked like a scene from a sci-fi movie, people learnt about Boeing's product portfolio in a sensor-activated transparent screen with the flick of their hands.

Vasili Fainveits, CEO, CTO & Founder of Latvia-based Fixar, a software and aircraft design developing firm said he found a perfect partner in Hyderabad-based Aksi Aerospace Group. With their help, said Fainveits he would be able to scale up the production of his 'luxury' drone Fixar 007, a fully autonomous, vertical take-off and landing drone giving them the advantage of pricing it cost-effectively.

"We are also planning to name the drone Shiv, as a nod to one of my good friends who passed away recently and who happened to be Indian," said Fainveits to PTI.

Arjun Naik, Founder and CEO of Scandron, a Bengaluru-based logistics and surveillance drone manufacturer who launched his 200-kg capacity logistic drone during 'Aero India 2025' felt the heat most as his drones were displayed right by the hangar where the roar of the aircraft was almost a constant background noise.

"You get used to it, believe me," Naik insisted to PTI, even as visitors to his stall instinctively closed their ears whenever flights roared past them.

Stalls displaying crowd-favourite things—like military outfits and SKAT souvenirs—were filled to the brim even on the last day.

Especially SKAT souvenir stall, as has been the case on all days, saw a swell in the crowd every time the famous aerial acrobats put up a show.

While the first three days were reserved for industry visitors, Thursday and Friday were open to the public.

Despite the crowd, the final day began smoothly, and security was well-coordinated to ensure the crowd kept moving, preventing pile-ups at any point.

Unfortunately the same cannot be said for the Bengaluru traffic.

Despite a horde of traffic cops braving the pollution and heat, vehicles piled up.

The 'X' handle of Bengaluru Post, a hyper-local podcast spotlighting Bengaluru, shared a video reporting that spillover traffic from Airport Road choked the inner roads in Kodigehalli, Amruthahalli, and Jakkur.

During the final aerial display particularly, it got worse as people pulled their cars over to record the aerial manoeuvre with their mobiles.

It took nearly an hour to navigate the two-km stretch of the Airport Road that is flanked by the airbase.

More than 500 delegates from 84 countries, including foreign guests, Defence Ministers and service chiefs have participated in 'Aero India 2025' the biennial show that has emerged as Asia's largest.

This year saw 931 exhibitors, including 782 Indians.

This also included 58 Original Equipment Manufacturers (OEM) and 115 global CEOs.

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A nuanced deal to boost defence, tech ties

Source: Hindustan Times, Dt. 15 Feb 2025,

URL: <https://www.hindustantimes.com/india-news/on-defence-the-dance-between-indian-commitments-and-american-tech-flexibility-101739532464697.html>

Prime Minister Narendra Modi and President Donald Trump have expressed their “unwavering commitment to a dynamic defence partnership spanning multiple domains”, with India expressing its willingness to buy more American equipment and engage in nuclear commerce and the US expressing openness to lift tech restrictions that have inhibited sales.

This commitment comes in a year when both countries are set to announce a new ten-year framework for the US-India major defence partnership. Each such framework in the last two decades has been accompanied by a major qualitative and quantitative deepening of defence ties.

In his remarks at a joint press conference with President Donald Trump, Prime Minister Narendra Modi said the US had a key role in Indian defence preparedness, new technologies and equipments will enhance Indian capacities and as trusted strategic partners, both countries would engage in joint development, joint production and transfer of technology. Trump said that India would buy “billions of dollars” of US equipment.

What India has bought, what it will buy

The segment on defence in the joint statement acknowledges India’s acquisitions of American platforms that Trump wants to see India do more. “The leaders welcomed the significant integration of US-origin defence items into India’s inventory to date, including C-130J Super Hercules, C17 -Globemaster III, P-8I Poseidon aircraft; CH-47F Chinooks, MH-60R Seahawks, and AH-64E Apaches; Harpoon anti-ship missiles; M777 howitzers; and MQ-9Bs.”

Both leaders then agreed that the US would expand defence sales and co-production with India to strengthen interoperability and defence industrial cooperation.

Trump and Modi announced plans to pursue in 2025 itself new procurements and co-production arrangements for Javelin Anti-Tank Guided Missiles and Stryker Infantry Combat Vehicles in India “to rapidly meet India’s defence requirements”. “They also expect completion of procurement for six additional P-8I Maritime Patrol aircraft to enhance India’s maritime surveillance reach in the Indian Ocean Region following agreement on sale terms,” the statement said.

The tech transfer potential, F35 riddleThe joint statement recognised India’s status as a major defence partner with Strategic Trade Authorisation-1 (STA-1) and as a key Quad partner. Based on this, it said that the US and India will review their respective arms transfer regulations, including International Traffic in Arms Regulations (ITAR), “in order to streamline defence trade, technology exchange and maintenance, spare supplies and in-country repair and overhaul of US-provided defence systems”.

A person familiar with the development said that this was a significant breakthrough, and the US had shown higher willingness than the past in moving towards a more flexible tech transfer regime. But while export control regulations from the US side are the key obstacle to deeper defence exchanges, serving and retired American officials have also pointed out that India’s tech security and export control regimes also need a close examination because of India’s ties with US adversaries including Russia.

The possible technology relaxations under the Trump administration was also visible in the section on tech cooperation within the newly branded mechanism of TRUST. The statement said, “The leaders determined that their governments redouble efforts to address export controls, enhance high technology commerce, and reduce barriers to technology transfer between our two countries, while addressing technology security.”

But in the case of defence, tech flexibility is linked to acquisitions. And the statement hinted at that. “The leaders pledged to accelerate defence technology cooperation across space, air defence, missile, maritime and undersea technologies, with the US announcing a review of its policy on releasing fifth generation fighters and undersea systems to India,” the statement said.

This assumes significance because these have been denied to India in the past, and the reference to fifth generation fighters came up in Trump’s remarks in the press conference when he specifically said that the US was “paving the way to ultimately provide India with F35”.

When asked at a press conference later if India had decided on buying F35s, foreign secretary Vikram Misri pointed out that platforms are acquired usually through a process with the floating of a request for proposal and then responses to it are evaluated. “With regard to acquisition of advanced aviation platform, that hasn’t started.”

After having signed the foundational agreements and then the Security of Supply Agreement last year, the leaders also called for opening negotiations this year for a Reciprocal Defense Procurement (RDP) agreement “to better align their procurement systems and enable the reciprocal supply of defence goods and services”.

Autonomous systems and military coordination

India and the US also announced a new initiative, the Autonomous Systems Industry Alliance (ASIA), “to scale industry partnerships and production in the Indo-Pacific”.

“The leaders welcomed a new partnership between Anduril Industries and Mahindra Group on advanced autonomous technologies to co-develop and co-produce state-of-the-art maritime systems and advanced AI-enabled counter Unmanned Aerial System (UAS) to strengthen regional security, and between L3 Harris and Bharat Electronics for co-development of active towed array systems.”

And finally, Trump and Modi agreed to elevate their military cooperation across air, land, sea, space, and cyberspace “through enhanced training, exercises, and operations, incorporating the latest technologies”. They also welcomed the Tiger Triumph tri-service exercise “with larger scale and complexity” to be hosted in India.

In what may mark the beginning of a new level of cooperation in the Indo-Pacific, Trump and Modi also agreed to break new ground “to support and sustain the overseas deployments” of the US and Indian militaries in the Indo-Pacific, “including enhanced logistics and intelligence sharing, as well as arrangements to improve force mobility for joint humanitarian and disaster relief operations along with other exchanges and security cooperation engagements”.

In the last two decades, India has bought more US equipment than it ever did in history. Indian and US forces work together in ways that they have never done in history. And this has spanned administrations in US and governments in India. It has required Delhi to be more open and shed the baggage of history, as Modi put it in a speech to the US Congress, and it has required Washington DC to be more trusting and flexible and adaptable to friends who are not allies. The Trump-Modi statement shows that this is likely to continue and intensify in new forms and ways in the next decade and beyond.

Commenting on the big message that emerges from the section on defence in the joint statement, Sameer Lalwani, a senior expert on South Asia at the United States Institute of Peace (USIP), said, “The two leaders told us to expect a lot of continuity in the defence relationship that has been accelerating for a decade. I observed three focal areas: building capability, enhancing deterrence, and countering Chinese malign influence.”

Lalwani said that the two countries had recommitted to advancing collaboration on strategic technologies with the announcement of COMPACT and TRUST initiatives, and the INDUS innovation bridge. “They also highlighted efforts intended to strengthen deterrence such as Quad maritime patrols and interoperability, an India leadership role in the Combined Maritime Forces, and new industrial partnerships to co-develop autonomous capabilities and maritime undersea surveillance. The strategic minerals and undersea cables initiatives will also help to counter China’s dominance and coercive leverage in these sectors.”

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ITAR review gives India a chance to align with US allies

Source: The Economic Times, Dt. 15 Feb 2025,

URL: <https://economictimes.indiatimes.com/news/defence/itar-review-gives-india-a-chance-to-align-with-us-allies/articleshow/118256757.cms>

The Donald Trump Administration's willingness to review its International Traffic in Arms Regulations (ITAR) to facilitate easier military trade with India, as conveyed in the Indo-US joint statement during PM Narendra Modi's just concluded visit, is an opportunity to revisit an old effort to bring India on a par with key US allies for defence sales.

The ITAR, which flows from the US Arms Export Control Act, controls the Munitions List dedicated to defence items. This regime is governed by the Department of State and has not been amended or tweaked to bring it in sync with India's STA1 (Standard Trade Authorization) status in the Export Administration Regulations governed by the Department of Commerce.

The EAR list is largely focused on dual use items meant for both civilian and military purposes, while sensitive top-end military items are on the ITAR list. The STA1 status, which was also affirmed by the previous Trump Administration in 2018, gave a substantive meaning to India's description as a Major Defence Partner. Only America's closest allies are in the STA1 category with Japan and Korea being the only other Asian countries.

The licensing requirements work on a presumption of approval, thus removing several barriers on accessing high-end technology. A similar change to mirror this approach was not done in ITAR framework, where approvals continue to be given on a case-by-case basis. This has not just led to delays, but also continuation of a denial-based approach towards India, which is exactly what was sought to be ended with the civil nuclear deal.

The remedy lies in amending the US Arms Export Control Act and include India in the list of allies and friendly nations where the President enjoys considerable executive freedom on defence sales. These include NATO allies, Australia, Israel, New Zealand and Korea. Inventories also remain well-stocked in these countries for real-time operations.

In December 2019, during Trump's first term, an effort was made by way of a bipartisan amendment moved by Senators John Cornyn and Mark Warner to effect this change through the 2020 National Defence Authorization Act. However, domestic politics took over and the divisions in the US Congress over NDAA 2020 almost derailed the entire process. Finally, it was decided to pass the Act without any amendments as compromise.

The Biden Administration did not venture to take any of this further, but it tried to streamline and quicken the approval process within the ITAR. The fundamental disconnect, however, between the US Departments of State, Commerce and Defence on how to frame India began to surface as a significant barrier in executing ambitious plans.

Now that Trump has better control of the US Congress, a fresh attempt could be made especially when the plan is to move on sale of F-35 fighters. Notably, a similar offer was on the table in Trump 1.0 but India's call to press ahead with the purchase of the S-400 missile system from Russia was a serious problem. At that point, Washington even offered the THAAD system as an

alternative to the S-400 to rectify an Obama Administration decision to not offer a high-end missile defence system to New Delhi.

A special status for India in the ITAR along with the Reciprocal Defence Procurement agreement that the US currently has with only 28 'qualifying countries' could be a significant strategic upgrade that would enable better interoperability besides giving shape to more ambitious co-production plans.

In other words, the ITAR review is a chance to close the window on a trust gap that sits oddly with the overall trajectory and health of the Indo-US strategic partnership.

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Army Chief lauds '10-year plan' for India-US defence deals, says will boost defence production

Source: The Economic Times, Dt. 16 Feb 2025,

URL: <https://economictimes.indiatimes.com/news/defence/army-chief-lauds-10-year-plan-for-india-us-defence-deals-says-will-boost-defence-production/articleshow/118276009.cms?from=mdr>

Army Chief General Upendra Dwivedi lauded the India-US defence deals signed following Prime Minister Narendra Modi's visit to the United States and said that the 10-year plan that will be laid out will greatly benefit defence production in the country. He further said that the Indian Army has a big role not just in providing security but also in nation-building.

Speaking to the media after attending the annual reclaiming ceremony in Noida, General Dwivedi said, "We have received very good news that a 10 year plan will be laid out. The joint production will greatly benefit the defence production in our country, benefit the Indian Army and promote self-reliance."

"Indian Army has a great role to play in nation building and not just providing security," he added. Notably, India and the US are set to begin talks to sign this year a new 10-year defence framework that will run from 2025 to 2035 and is expected to be finalized later this year.

The framework for the "US-India Major Defence Partnership in the 21st Century," is aimed at strengthening defence ties between the two countries, according to a joint statement released following Prime Minister Narendra Modi's recent meeting with US President Donald Trump in Washington DC.

Once this agreement is in place it will ensure that both countries can easily purchase defence goods and services from one another, promoting efficiency in procurement processes. During the meeting, PM Modi and President Trump reaffirmed their commitment to a robust and dynamic defence partnership, with both leaders agreeing to review their respective arms transfer regulations, including the International Traffic in Arms Regulations (ITAR).

This review is expected to facilitate smoother defence trade, technology sharing, and the maintenance and repair of US-provided defence systems in India, as India's status as a 'Strategic

Trade Authorization-1 (STA-1)' as well as a QUAD partner further solidified its position for defence cooperation with the US.

The two countries also agreed to initiate negotiations for a 'Reciprocal Defence Procurement' (RDP) agreement, which would align their defence procurement systems and allow the reciprocal supply of defence goods and services. The US also plans to expand defence sales and co-production with India, including new procurement and co-production initiatives for "Javelin" anti-tank guided missiles and "Stryker" infantry combat vehicles.

Additionally, the two countries have agreed to finalise the procurement of six more P-8I Maritime Patrol aircraft, which will enhance India's maritime surveillance capabilities in the Indian Ocean Region.

PM Modi and President Trump, "announced plans to pursue this year new procurements and co-production arrangements for "Javelin" Anti-Tank Guided Missiles and "Stryker" Infantry Combat Vehicles in India to rapidly meet India's defence requirements. They also expect completion of procurement for six additional P-8I Maritime Patrol aircraft to enhance India's maritime surveillance reach in the Indian Ocean Region following agreement on sale terms.

"These come under the "US-India COMPACT for the 21st Century" initiative launched by PM Modi and President Trump to drive change in "Military Partnership, Accelerated Commerce and Technology" between the two countries. While addressing the joint press conference along with Prime Minister Narendra Modi, US President Donald Trump had stated that the United States will be increasing the defence sales with India with billions of dollars. He added that his administration is paving the way to provide India with F35 air crafts.

"Starting this year, we will be increasing military sales to India by many billions of dollars. We are also paving the way to ultimately provide India with the F35, Stealth fighters", Donald Trump said.

The Lockheed Martin F-35 Lightning II is the most widely deployed fifth generation fighter aircraft. It took part in the Aero India 2025 show held between February 10 to 14 at the Yelahanka Air Force Station in Bengaluru. It was Asia's biggest aerospace and defence exhibition.

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India may take Rafale route to buy US' F35 fighter jets: Govt likely to opt for limited numbers; may require special monitoring clauses

Source: The Economic Times, Dt. 16 Feb 2025,

URL: <https://economictimes.indiatimes.com/news/defence/india-may-take-rafale-route-to-buy-us-f35-fighter-jets-govt-likely-to-opt-for-limited-numbers-may-require-special-monitoring-clauses/articleshow/118308940.cms>

The procurement of fifth-generation fighter jets from the US could follow key aspects of India's acquisition of Rafale jets from France, namely that it is likely to be a government-to-government

deal and will be seen as a stop-gap arrangement till the development of indigenous jets under Advanced Multirole Combat Aircraft programme.

Negotiations to acquire F35 jets, mentioned by President Donald Trump after his meeting with Prime Minister Narendra Modi, will start shortly and are likely to be complicated given the safeguards the US will require to protect high-end technology onboard the jets.

India could go in for a limited number of F35 fighter jets, given the high cost of not just acquisition but also maintaining and operating the aircraft. This could be similar numbers to the two squadrons (36 aircraft) of French-origin Rafale fighters that are in operation with the Air Force.

Like the Rafale deal, the F35 acquisition will also follow the government-to-government mode, which guarantees deliveries and pricing at par with the US armed forces. However, unlike the Rafales, F35s may require a stringent end-user monitoring protocol. This could mean the US keeping a close watch on jets to ensure that the personnel of other nations like Russia do not get access to them.

A key objection of the Pentagon to the sale of the fifth-generation jets to India in the past was the presence of Russian-origin S400 air defence systems. The US jets are designed to evade advanced Russian air defence systems and no country in the world operates both of these systems simultaneously. A key American concern is that the S400 should not be finetuned to detect and engage the advanced combat aircraft.

It is still unclear what assurances or safeguards can be kept in place to separate the two systems. Indian Navy, which is looking to acquire 26 aircraft carrier borne fighter aircraft, with negotiations with France in advanced stages, normally operates beyond the range of deployed S400 systems.

F 35s are also likely to be pitched as a stop gap arrangement. At present, the first of the AMCA jets are not expected to enter service before 2036, a deadline that is likely to be extended. The purchase of French Rafale Marine aircraft was pitched as a stop-gap arrangement till the development of indigenous Twin Engine Deck Based Fighters.

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India seen seeking global bids this year for 114 fighters

Source: The Economic Times, Dt. 14 Feb 2025,

URL: <https://economictimes.indiatimes.com/news/defence/india-seen-seeking-global-bids-this-year-for-114-fighters/articleshow/118246738.cms>

India is likely to seek bids this year for 114 multi-role fighters, two sources said, marking a major step in a process to bolster the country's stock of combat aircraft that has gone on for nearly two decades.

The project is critical for the Indian Air Force, whose squadrons of mainly Russian and ex-Soviet aircraft have fallen to 31 from an approved strength of 42 at a time when rival China is expanding its air force rapidly. On the sidelines of the Aero India aerospace exhibition in Bengaluru, many of

the companies who expressed interest in 2018 - when the government last sought planemakers for the project - said they were still in the hunt.

"The Chinese are inducting modern fighters and Pakistanis are also getting some Chinese support whereas the Indian Air Force, in terms of combat squadrons, is deficient. There is no doubt about it," said Laxman Behera, a defence expert at government-funded Jawaharlal Nehru University in New Delhi. "We'll have to wait and watch."

Potential competitors for the Multi-Role Fighter Aircraft (MRFA) contract include U.S. defence firms Lockheed Martin and Boeing, Russia's United Aircraft Corporation (UAC), France's Dassault Aviation, Sweden's Saab AB, and Germany's Eurofighter.

Companies are preparing supply chain blueprints, scouting for local partners, and ensuring cost effectiveness of their offerings, two executives and three sources told Reuters this week at the exhibition.

Lockheed Martin is trying to sell its F-21, an India-specific variant of its widely used F-16 fighter, to New Delhi for the MRFA, which will be a 4.5 generation aircraft made in India with a local partner.

Separately on Thursday, President Donald Trump said the U.S. would eventually sell the country fifth generation F-35 stealth fighters, although India's foreign secretary said afterward that no formal process had started yet.

"We are encouraged by the recent announcement by President Trump to provide the F-35 to India. However, these are government-to-government decisions. We look forward to working closely with both governments on upcoming strategic procurements," a Lockheed Martin spokesperson said.

Russian Supplies

Lockheed builds F-16 wings at the company's joint production facility with India's Tata Group in the southern city of Hyderabad and has plans to use the facility for F-21 jets.

The IAF does not have U.S. fighter jets in its active fleet, but about 50 aircraft are powered by General Electric engines, with 170 more on order.

UAC may have advanced jets on offer, including the stealthy Sukhoi Su-57, a Russian industry source said.

The Su-57 is a generation ahead of the Su-35 and the MiG-35 that were previously on offer for the MRFA and has a more powerful engine, avionics, and radar systems.

Russia has for decades been the main weapons supplier to India, the world's biggest arms importer. But New Delhi has been diversifying its imports since the war in Ukraine hobbled Moscow's ability to supply spares to India.

Russia brought the Su-57 to Aero India and offered to make the aircraft in India in "informal" conversations with Indian defence officials, saying it could be built using local production lines for Su-30s.

More than 10 years ago, Russia and India had planned to build the Su-57, then called the T-50, in India, but the effort was abandoned.

Sweden's Saab, which also intends to compete for the MRFA project with its JAS-39 Gripen E jet, has a blueprint for an Indian supply chain, said Kent-Ake Molin, head of the Gripen India campaign.

Molin said he was speaking to potential partners for the project and that Indian officials had given a "very positive" reception to the aircraft, adding that the jet was more cost-efficient than its peers.

The MRFA project is a continuation of an uncompleted acquisition of 126 jets that started in 2007 but was withdrawn in 2015 after Modi's government decided to buy 36 Rafale fighter jets from Dassault Aviation. The Rafale is also a potential competitor in the MRFA project.

Dassault did not immediately respond to a request for comment.

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India reaffirms long-held policy to rule out third party role in its border row with China

Source: The Economic Times, Dt. 14 Feb 2025,

URL: <https://economictimes.indiatimes.com/news/defence/india-reaffirms-long-held-policy-to-rule-out-third-party-role-in-its-border-row-with-china/articleshow/118244124.cms>

India has virtually ruled out any role for a third party in its border dispute with China after US President Donald Trump suggested that he was ready to extend support if it helps in the resolution of the lingering issue between the two neighbours. At a media briefing, Foreign Secretary Vikram Misri said on Thursday (Friday IST) that New Delhi has always adopted a bilateral approach in dealing with these issues.

As a matter of long-held policy, India has been maintaining that there is no role for any third party in any of its bilateral issues or disputes with any country.

"Your question about the offer to mediate between India and China, I think, I suspect you know the answer to this question," he said when asked about Trump's offer.

"Whatever issues we have with any of our neighbours, we have always adopted a bilateral approach to dealing with these issues. It's no different between India and China," he said.

"We have been discussing any issues that we have with them on a bilateral plane, and we will continue to do so," Misri added.

After his talks with Prime Minister Narendra Modi, the US president made the offer of support at a media briefing while responding to a question on India's frosty ties with China over the border row.

"I do see the skirmishes on the border, which are quite vicious, and I guess they continue to go on. If I could be of help, I would love to help as that should be stopped," he said.

The US president also described China as a "very important player" globally and even suggested that Beijing could play a role in ending the war in Ukraine. Trump also underlined the importance of cooperation among India, China, Russia and the US.

"I would hope that China and India and Russia and the US and all of us can get along. It's very important," he said.

The ties between India and China came under severe strain following the deadly Galwan Valley clashes between the militaries of the two countries in June, 2020.

The two sides completed the disengagement process after firming up a pact for the withdrawal of troops from Depsang and Demchok, the last two friction points in eastern Ladakh.

Two days after finalisation of the pact, Prime Minister Modi and Chinese President Xi Jinping held talks in Kazan on October 23.

In the meeting, the two sides decided to revive the various dialogue mechanisms.

India has been maintaining that its ties with China cannot be normal unless there is peace in the border areas.

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Swan Defence and Heavy Industries completes refit of offshore patrol vessel SAJAG ahead of schedule

Source: The Economic Times, Dt. 14 Feb 2025,

URL: <https://economictimes.indiatimes.com/news/defence/swan-defence-and-heavy-industries-completes-refit-of-offshore-patrol-vessel-sajag-ahead-of-schedule/articleshow/118251343.cms>

Swan Defence and Heavy Industries Ltd on Friday said it has completed the refit of the Indian Coast Guard offshore patrol vessel SAJAG ahead of schedule. Originally scheduled from November 15, 2024 to March 15 this year, the refit was completed ahead of schedule following a successful sea trial, the commercial and defence shipbuilding, heavy fabrication and ship repairs firm said.

"As the industry experiences a pivotal shift with increased government investments in shipbuilding and defence infrastructure, the company is poised to play a crucial role in this evolution," said Vivek Merchant, Director, at Swan Defence and Heavy Industries Ltd.

Merchant further said "with a strategic focus on modernization and self-reliance, we are committed to expanding our capabilities beyond ship repairs and soon resuming full-scale shipbuilding operations to shape the future of the maritime sector."

The successful delivery further reinforces the company's expertise in managing complex ship repair operations with efficiency and precision, it said.

Swan Defence and Heavy Industries, formerly known as Reliance Naval and Engineering Ltd (RNEL), also said that the dry docking and refit of the second vessel also represent a key milestone in the shipyard's ongoing revival.

Earlier in January last year Swan Energy took control of the management of RNEL after emerging as the winning bidder under an insolvency resolution process.

The Indian Coast Guard's fast patrol vessel Raj Ratan was the first vessel to undergo refit exercise.

Over the three months, the vessel underwent extensive repairs and testing, carried out in collaboration with the official repair partner Krasny Defence Technologies Ltd, the company said.

As part of this overhaul, SDHI provides end-to-end services, including berthing, dry docking, undocking, and other critical yard operations essential to its completion, it said.

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Army & IAF intensify hunt for advanced anti-drone system

Source: The Times of India, Dt. 16 Feb 2025,

URL: <https://timesofindia.indiatimes.com/india/army-iaf-intensify-hunt-for-advanced-anti-drone-systems/articleshow/118290751.cms>

With the threat from hostile drones and unmanned aerial systems (UAS) in both conventional and irregular warfare continuing to expand exponentially, the armed forces are stepping-up induction of a wide array of anti-drone systems but underline the urgent need for more advanced ones.

The Army this week floated the tender for procurement of nine more indigenous integrated drone detection and interdiction systems (IDD&IS) to add to the ones already inducted under emergency procurements for the frontier with China.

The IAF, in turn, wants 10 new kamikaze drones-based anti-swarm drone systems, 10 mobile micro munitions-based anti-swarm drone systems and 100-200 vehicle-mounted counter-UAS.

Among other systems, IAF will begin inducting 200 radio frequency jammer guns from next month under a contract inked a year ago, while Army is getting around 30 vehicle-based drone jammers.

“But much more advanced anti-drone systems, with multiple ‘soft-kill’ and ‘hard-kill’ options as well as much longer interception ranges, are urgently needed,” a senior officer said. These systems range from jamming, spoofing and blinding systems that disrupt the satellite or video command-and-control links of drones to laser-based directed energy weapons (DEWs) for hard-kills.

A major problem, however, is that India is way behind other countries in indigenously developing such complex technologies. After DRDO developed anti-drone systems with 2-kilowatt to 10-kilowatt lasers, the armed forces ordered 23 such systems for around Rs 400 crore.

“DRDO is developing DEWs with higher power. Many domestic private firms are also tying up with foreign companies for advanced anti-drone solutions. Let’s hope they work out,” another officer said.

The Modi-Trump summit, incidentally, welcomed the new partnership between US company Anduril Industries and Indian Mahindra Group on advanced autonomous technologies to co-produce an “advanced AI-enabled counter-UAS”.

The Army still relies heavily on old air defence systems, many of which have outlived their operational lives. “Though emergency procurements of anti-drone systems have been undertaken in recent years, they remain inadequate in countering the rapidly evolving threat from drones, which has been repeatedly reinforced by the Armenia-Azerbaijan, Israel-Hamas and Russia-Ukraine conflicts,” he added.

There is, for instance, the need to develop more advanced versions of the existing vehicle-mounted IDD&IS inducted by the Army Air Defence, which at present can soft-kill drones by jamming at 2 to 5-km range, with the effective hard-kill range through lasers only around 800-metre. “There is a mounting threat from low radar cross-section UAS and swarm drones,” an officer said.

IAF air defence systems, with advanced radars and ground-to-air missile systems, are also geared towards thwarting air intrusions by large UAS, aircraft and helicopters. “The lack of adequate effective multi-sensor, multi-kill systems against smaller drones is an operational gap,” an officer said.

A concerted effort is required to reduce the R&D time, fast-track procurement processes and ensure rapid induction of advanced counter-drone technologies. “The domestic defence industry should accelerate the production of advanced and scalable anti-drone systems to protect critical assets, particularly during wartime and heightened tensions,” he added.

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India, U.S. identify underwater domain awareness technologies for co-production in India

Source: The Hindu, Dt. 15 Feb 2025,

URL: <https://www.thehindu.com/news/national/india-us-identify-underwater-domain-awareness-technologies-for-co-production-in-india/article69223304.ece>

India and the United States are scaling up their cooperation in underwater domain awareness (UDA), a key focus for both countries, with a new initiative, the Autonomous Systems Industry Alliance (ASIA), announced during Prime Minister Narendra Modi’s recent visit to Washington.

The alliance is aimed at scaling up industry partnerships and production in the Indo-Pacific region, and has identified a range of UDA technologies for co-production in India, according to official sources.

Maritime domain awareness and, increasingly, underwater domain awareness have become key focus areas both at a bilateral level and among the Quad group — comprising India, Australia, Japan, and the U.S. — especially given the rapid expansion of the Chinese Navy and its increasing presence in the Indian Ocean region.

Sensitive technologies

The U.S. has offered a few co-production and co-development opportunities for UDA technologies on a commercial basis, sources in the know said. “India is the very first country with whom the U.S. defence industry has offered to work with on these sensitive technologies,” a source said.

These technologies include the Sea Picket autonomous surveillance system with sonar acoustic array produced by Thayer Mahan; the Wave Glider unmanned surface vehicle systems; low frequency active towed sonar; multistatic active (MSA) sonobuoys; large diameter autonomous undersea vehicles produced by Andruil; and the Triton autonomous underwater and surface vehicle produced by Ocean Aero.

The joint statement issued after the talks between Mr. Modi and U.S. President Donald Trump said that the leaders pledged to accelerate defence technology cooperation across space, air defence, missile, maritime and undersea technologies, with the U.S. announcing a review of its policy on releasing fifth-generation fighters and undersea systems to India.

Partnership talks Discussions are ongoing between the concerned U.S. companies and potential Indian partners regarding the identified technologies, sources said.

For the Wave Glider unmanned surface vehicle systems, negotiations are ongoing between Boeing’s Liquid Robotics and Sagar Defence Engineering for the co-production of 60 Wave Glider platforms in India. Similarly, for the low frequency active towed sonar, discussions are ongoing with L3 Harris for co-development with Bharat Electronics Limited.

U.S. pushes for more defence deals, offers F-35 fighter jet For the MSA sonobuoys, a high-end technology which can be used to track submarines in the deep seas and oceans, India and the U.S. had announced a “first-of-its-kind partnership on co-production” in January. As part of this, Ultra Maritime’s sonobuoys will be co-produced in India in partnership with the defence public sector undertaking Bharat Dynamics Limited. As previously reported by The Hindu, the final assembly of the sonobuoys will be done in India and an operational production line is expected to be ready in 2027.

Breaking new ground

According to the joint statement, the leaders also pledged to elevate military cooperation across all domains – air, land, sea, space, and cyberspace – through enhanced training, exercises, and operations, incorporating the latest technologies. In this regard, they committed to break new ground to support and sustain the overseas deployments of the U.S. and Indian militaries in the Indo-Pacific, including enhanced logistics and intelligence sharing, as well as arrangements to improve force mobility for joint humanitarian and disaster relief operations along with other exchanges and security cooperation engagements.

Pakistan expresses concern over U.S. transferring military technology to India At the Quad level, the statement said that as India looks to host the group’s summit later this year, the leaders will activate new Quad initiatives on “shared airlift capacity” to support the civilian response to natural disasters, and “maritime patrols” to improve interoperability.

While these technologies improve UDA, various other military platforms that India has procured from the U.S. augment its anti-submarine warfare capabilities in the Indian Ocean region, as well

the interoperability among Quad partners as they have commonality. These platforms include 12 P-8Is which are already in service; 24 MH-60R multi-role helicopters being inducted; 15 MQ-9B Sea Guardian high-altitude long-endurance Unmanned Aerial Vehicles that were contracted as part of a deal for 31 MQ-9Bs last October, with deliveries to begin from January 2029; and six more P-8Is that the leaders signed off on during the discussions earlier this week.

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India needs to weigh pros & cons of F-35 pitch

Source: The Times of India, Dt. 15 Feb 2025,

URL: <https://timesofindia.indiatimes.com/india/india-needs-to-weigh-pros-cons-of-f-35-pitch/articleshow/118258672.cms>

India will have to very carefully evaluate US President Donald Trump's offer of the fifth-generation F-35 fighter, even though the IAF would love to grab it with both hands given the China factor, while the two countries take forward the procurement of six more P-8I long-range maritime patrol aircraft as well as joint production of Stryker armoured infantry combat vehicles and Javelin anti-tank guided missiles this year.

The expansive India-US defence relationship will get a further boost with PM Modi and Trump "pledging to elevate" military cooperation across air, land, sea, space and cyberspace, institute the 'Autonomous Systems Industry Alliance (ASIA)', streamline defence trade and technology exchange, and sign a 10-year major defence partnership framework to renew the one inked in 2015.

The sales pitch for the F-35, which is sold only to Nato countries and close allies, however, was the key takeaway. It might just be "a proposal" at this stage with the long-drawn formal process yet to even begin, as foreign secretary Vikram Misri said, but India will have to increasingly contend with a pushy Trump, whose deal-oriented transactional approach to geopolitics is well-known.

"Starting this year, we will be increasing military sales to India by many billions of dollars. We are also paving the way to ultimately provide F-35 stealth fighters," said Trump. The joint statement also noted the US's "review of its policy on releasing fifth-generation fighters and undersea systems" to India.

The pros and cons will have to be weighed. "India will inexorably be drawn into the US's sphere of influence with the F-35 acquisition, impinging on its strategic autonomy. Why do you think successive Indian govts over the years have acquired Russian, French and other fighters but never American ones?" a senior official said.

If India indeed pursues the F-35 offer, it will also have to factor in several things like the off-the-shelf price, the technologies being given, life-cycle costs, maintenance and the like, apart from the strategic benefits it can reap.

Utmost care will have to be taken that India's own 5th-Gen fighter project of the advanced medium combat aircraft (AMCA), the development of which for over Rs 15,000 crore was cleared by the cabinet committee on security last March, is not adversely impacted.

The operational 5th-Gen jets currently are the American F-35 Lightning-II and F/A-22 Raptor, the Chinese Chengdu J-20 and Russian Sukhoi-57. China has deployed J-20s at its airfields facing India and is even going to soon supply a variant to Pakistan, while it also conducted maiden flights of two new 6th-Gen prototypes in Dec.

With the IAF grappling with just 30 fighter squadrons when it is authorized 42.5, and Hindustan Aeronautics struggling to produce even a 4th-Gen Tejas, Indian national security planners are obviously concerned. “With AMCA still at least 10-12 years away from production, IAF will obviously be deeply interested in getting two to three squadrons (36 or 54 jets) of F-35s in the interim. If you need deterrence to prevent wars, you obviously need capabilities,” another official said.

The F-35 could now even fly its way into IAF’s long-delayed project for 114 new multi-role fighter aircraft to be produced in India with foreign collaboration at an initial estimate of Rs 1.25 lakh crore. The defence ministry is working to break the logjam over this project, where French Rafale, Russian Sukhoi-57, Swedish Gripen-E, Eurofighter Typhoon and American F-15EX are the contenders.

There is also the lingering question of the Russian S-400 Triumf air defence missile systems being inducted under the \$5.43 billion contract in Oct 2018. The US is wary of any country operating F-35s and S-400s together since the latter’s powerful radars can “map or record” data of the former’s stealth characteristics, electronic warfare and other capabilities. This, too, will need to be resolved.

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Global defence spending rose to \$2.46 trillion in 2024 amid security challenges, shows IISS report

Source: The Print, Dt. 14 Feb 2025,

URL: <https://theprint.in/defence/global-defence-spending-rose-to-2-46-trillion-in-2024-amid-security-challenges-shows-iiss-report/2494216/>

The global defence spending in 2024 stood at \$2.46 trillion, according to the latest data published by International Institute of Strategic Studies (IISS)—up from \$2.24 trillion the year before.

The layout increased to an average of 1.9 percent of the world’s GDP, reflecting the heightened security challenges.

The hike in spending was marked by deteriorating security environments and sharpened threat perceptions in regions such as Europe, Middle East and North Africa (MENA), and Asia. The only region that did not have real-term increases was Sub-Saharan Africa, which in fact saw a decline by 3.7 percent.

The US, China and Russia were the top three countries with the largest defence budgets. The US set aside the most, at \$968 billion. China budgeted \$235 billion, while Russia allocated \$145.9 billion.

Between 2023 and 2024, Russia’s total military expenditure grew 41.9 percent in real terms. The Indian defence budget stood at \$74.4 billion.

Spending jump in Europe due to Russia

Over the past year, European defence spending jumped by 11.7 percent in real terms to reach \$457 billion, with 2024 marking the tenth consecutive year of growth.

According to the report, Russia's 2014 invasion of Crimea elevated threat perceptions across the continent and rejuvenated long-standing commitments from NATO members to spend two percent of GDP on defence. Regional growth in 2024 was dominated by the 23.2 percent real uplift in the German defence budget.

Defence budgets in other European countries, such as Poland, also grew significantly. The country became the 15th largest defence spender in 2024—up from 20th place in 2022. European growth, however, remained outpaced by Russia's increase in its total military expenditure.

The report said that since Russia's full-scale invasion of Ukraine began in February 2022, European states accelerated their modernisation efforts. This has created opportunities for companies outside of Europe, as well as traditional US suppliers. This is to fast-track procurement or produce equipment that few or no European companies currently can, such as multiple-rocket launchers (MRLs).

Benefitting from this trend, from February 2022 to the end of October 2024, South Korean companies secured production contracts worth \$18.03 billion from European states. Most of this sum, \$16.88 billion, was contracted by Poland, which sought to rapidly modernise and expand the size of its armed forces.

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Military exercise 'Jal-Thal-Raksha 2025' organised at Bet Dwarka to secure islands, combat illegal encroachment

Source: ANI News, Dt. 16 Feb 2025,

URL: <https://www.aninews.in/news/national/general-news/military-exercise-jal-thal-raksha-2025-organised-at-bet-dwarka-to-secure-islands-combat-illegal-encroachment20250216182102/>

To strengthen security in Dwarka and its surrounding islands, particularly in response to recent illegal encroachments, a military exercise titled 'Jal-Thal-Raksha 2025' was organised at Bet Dwarka.

The large-scale drill involved participation from 11 Ahmedabad and 31 Jamnagar Army units, as well as the Indian Coast Guard and Marine Police.

Retired Lt Col Amol Awate detailed the exercise and said, "Keeping in mind the security of Dwarka and its surrounding islands and the recent illegal encroachment, the Indian Army organized Jal-Thal-Shakti Exercise 2025. 11 Ahmedabad, 31 Jamnagar, Indian Coast Guard and Marine Police participated in it..."



Visuals of Military exercise Jal-Thal-Raksha 2025

"The exercise was monitored by the District Administration of Devbhoomi Dwarka, Forest Department, Maritime Board of Gujarat Energy, NSG... During the exercise, it was practised what kind of coordination should be there between the government departments and paramilitary forces and defence forces during a terrorist attack or war...," he added.

A video from the exercise showed security personnel being deployed to the coast via hovercraft, where they practised securing critical infrastructure and responding to potential land-based threats.

Earlier, the troops of the Indian Army recently participated in a comprehensive training exercise christened Ex Winged Raider. The exercise focused on special airborne operations, demonstrating a high level of operational readiness and inter-service coordination.

According to a release, the exercise involved rehearsing various airborne insertion techniques from both fixed-wing and rotary-wing aircraft, enhancing the skills of participating personnel. The exercise also witnessed a first in the Eastern Theatre in terms of training on airborne operations from the Chinook Helicopter.

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International Defence Conference 2025 kicks off tomorrow

Source: ANI News, Dt. 15 Feb 2025,

URL: <https://www.aninews.in/news/world/middle-east/international-defence-conference-2025-kicks-off-tomorrow20250215232851/>

Under the patronage of President His Highness Sheikh Mohamed bin Zayed Al Nahyan, the International Defence Conference 2025 will commence tomorrow at the Emirates Palace in Abu Dhabi.

Held alongside the International Defence Exhibition (IDEX) and the Naval Defence and Maritime Security Exhibition (NAVDEX), the conference will bring together global defence and security leaders, experts, and companies to discuss key challenges and opportunities in the sector, reaffirming the UAE's commitment to fostering dialogue, cooperation, and innovation in the evolving global defence landscape.

Organised by ADNEC Group in collaboration with the Ministry of Defence and the Tawazun Council, this year's conference is themed Defence Reimagined: Innovation, Integration and Resilience and is expected to attract more than 1,800 experts and specialists.

The conference will feature three key sessions covering: "Global Disruptions and Defence Preparedness: Mitigating Threats to Critical Supply Chains," "Disinformation and Influence Operations: The Weaponisation of Information in Modern Conflict," and "The Sky is No Longer the Limit: Emerging Threats and Opportunities in Space." A total of 12 distinguished speakers, including leaders, ministers, and senior defence officials from around the world, will contribute to the discussions.

With a strong track record of successful international engagement, the conference has established itself as one of the leading global forums for dialogue on defence and security. Previous editions have played a pivotal role in strengthening international cooperation, showcasing the latest innovations, and shaping the future of defence strategies. The conference's legacy of high-level discussions and influential participation underscores the UAE's steadfast commitment to driving progress and fostering meaningful partnerships within the global defence community.

This year, the conference will also offer virtual participation through global digital platforms, ensuring wider accessibility for an international audience. This hybrid model will allow industry leaders, policymakers, and media experts unable to attend in person to engage in crucial discussions from anywhere in the world. The event is expected to contribute to enhancing global collaboration and fostering impactful discussions to address the rapidly evolving challenges in defence and security.

The International Defence Conference will host high-profile international participation, attracting prominent figures from the fields of defence, economy, and technology. The conference will conclude with a dedicated session presenting strategic recommendations that will shape the framework for future defence programmes.

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Aero India 2025: Indian Army displays AI-based weapon system

Source: Janes Dt. 14 Feb 2025,

URL: <https://www.janes.com/osint-insights/defence-news/weapons/aero-india-2025-indian-army-displays-ai-based-weapon-system>

The Indian Army has displayed the Ten AI Weapon System (TAIWS) – an artificial intelligence (AI)-based remote weapon – at the Aero India 2025 show in Bangalore.

The new system, which can leverage AI capability to track, detect, and fire, is envisaged to be deployed at India's Line of Control (LoC) to enhance border surveillance and counter-insurgency operations.

The system's primary weapon is mounted on a tripod and features a 7.62 mm medium machine gun. However, the primary weapon can be changed to suit requirements. The system also includes an optical camera, a thermal imager, GPS, a magnetometer, an inclinometer, and a laser rangefinder.



The Ten AI Weapon System (TAIWS) is seen on display at Aero India 2025

Colonel Ashish Dogra from the Indian Army's Corps of Electronics and Mechanical Engineers (EME), which led the development of TAIWS, told Janes that the system has a night mode with a detection and identification range of 700 m and a 40x optical zoom camera for daytime use.

He said TAIWS features a modular design, which enables attachment to a wide selection of sights. Work is currently under way to achieve an IP65 rating to withstand adverse weather conditions.

TAIWS also has real-time sensor fusion and threat analysis capabilities. The primary weapon system can be operated manually or on a semi-automatic mode to keep a human in the loop, Col Dogra said.

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Aero India 2025: ideaForge unveils UAV platforms

Source: Janes Dt. 14 Feb 2025,

URL: <https://www.janes.com/osint-insights/defence-news/air/aero-india-2025-ideaforge-unveils-uav-platforms>



Netra 5 is equipped with a triple sensor primary payload (daytime, infrared, and laser rangefinder sensors)

Mumbai-based firm ideaForge unveiled its Netra 5 unmanned aerial vehicle (UAV) and two UAV concepts (tactical and logistics) at Aero India 2025 in Bangalore.

According to the company, Netra 5 is a production-ready platform that features a modular design and is optimised for applications including intelligence, surveillance, and reconnaissance (ISR); mapping; and cargo drop.

The UAV can also detect military assets including bunkers, tanks, bridges, posts, and obstacles, and identify and track moving objects or people in real time, during both day and night operations. ideaForge said Netra 5 can be assembled by a single-person crew in less than three minutes.

Ankit Mehta, CEO of ideaForge, said, “The Netra 5 is equipped with all-weather radar sensors all around for obstacle detection and avoidance, ensuring safe operations in complex environments. Its frequency-hopping technology enhances resistance to jamming, and GNSS [global navigation satellite services]-denied operation ensures reliable mission execution with continuous downlink for uninterrupted intelligence.”

Speaking to Janes, Ezhilan Nanmaran, head of Product and Strategic Partnerships for ideaForge, said Netra 5 is equipped with visual navigation sensors that enable return to home (RTH) in case of disruption or a loss of GNSS signal.

The UAV features a triple sensor payload as standard. Its primary payloads consist of electro-optic/infrared (EO/IR) and laser rangefinder sensors. Its secondary swappable payload bay can be equipped with a payload of up to 2 kg (including drop mechanisms). The secondary bay can accommodate payloads including synthetic aperture radar (SAR) by GalaxEye, 3D mapping payloads, LIDAR (light detection and ranging) payloads, and drop payloads.

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Aero India 2025: BDL, Javelin Joint Venture sign production agreement

Source: Janes Dt. 14 Feb 2025,

URL: <https://www.janes.com/osint-insights/defence-news/industry/aero-india-2025-bdl-javelin-joint-venture-sign-production-agreement>



Lockheed Martin has said it is exploring the opportunity to produce Javelin in India

India's Bharat Dynamics Limited (BDL) has signed an agreement with the Raytheon and Lockheed Martin-owned Javelin Joint Venture (JJV) to renew a pledge to collaborate on the Javelin anti-tank guided weapon system (ATGWS). Under a memorandum of understanding (MOU) – signed on 11 February at the Aero India 2025 show in Bangalore – the companies said they intend to explore opportunities to jointly manufacture Javelin in India.

Lockheed Martin said in a press release that the new MOU “renews” a previous agreement it signed with BDL in 2020 to also jointly produce Javelin in India. Lockheed Martin said the new MOU will “allow the JJV to evaluate the possibility of manufacturing Javelin in India, fulfilling potential future requirements of the Indian Ministry of Defence and strengthening its anti-tank capabilities”.

Lockheed Martin told Janes in 2023 that the Javelin could be mounted on India's planned next-generation armoured vehicle – known as the Futuristic Infantry Combat Vehicle (FICV) programme. Several prototypes are being developed for the FICV requirement by Indian companies including Armoured Vehicles Nigam Limited (AVNL), Tata, Larsen & Toubro (L&T), and Mahindra. According to Janes Weapons: Infantry, the Javelin Advanced Anti-Tank Weapon System-Medium (AAWS-M) is a manportable, lock-on-before-launch, fire-and-forget ATGWS. It has a 127 mm calibre and has a maximum range of 4,000 m.

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Aero India 2025: NewSpace unveils collaborative combat aircraft concept

Source: Janes Dt. 14 Feb 2025,

URL: <https://www.janes.com/osint-insights/defence-news/air/aero-india-2025-newspace-unveils-collaborative-combat-aircraft-concept>



NewSpace displayed a half-scale model of the Abhimanyu CCA at Aero India 2025

NewSpace Research and Technologies (NRT) unveiled a concept model of its collaborative combat aircraft (CCA) – named 'Abhimanyu' – at Aero India 2025. An official from NRT told Janes that the CCA – developed under the government's Innovations for Defence Excellence (iDEX) scheme – has been designed for the Indian Navy and it can be latterly adapted for the Indian Air Force. "The first proof of concept is for the navy," the official said.

The CCA is currently four months into its concept development phase. NRT intends to develop the proof of concept aircraft for the Indian Navy by 2026 and complete platform development in the next three years. "Three years from now we would want it to be fully mission capable including [the] completion of flight tests," the NRT official said.

Multiple missions

According to NRT, Abhimanyu is an unmanned multirole CCA that will be deployed to support manned fighter aircraft. It will be capable of missions including intelligence, surveillance, and reconnaissance (ISR), decoy, electronic warfare (EW), and air data relay and will be able to carry warhead.

"This [CCA] specifically comes with many AI/ML [artificial intelligence/machine learning] technologies," the official said. "For example, you have manned-unmanned teaming (MUM-T) technologies and with AI/ML you can do automatic target recognition."

One of the CCA's roles will be to engage with an adversary aircraft without the need for the manned fighter to be within the adversary's detection range. "With an aircraft like Abhimanyu in front of the manned fighter, say 150 km away, the adversary aircraft will detect and engage [with] this first instead of [the] manned fighter," the official said.

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Aero India 2025: Tonbo unveils microwave-based DEW

Source: Janes Dt. 14 Feb 2025,

URL: <https://www.janes.com/osint-insights/defence-news/defence/aero-india-2025-tonbo-unveils-microwave-based-dew>



A model of Tonbo's WaveStrike high-power microwave directed energy weapon system

Bangalore-based Tonbo Imaging has unveiled a high-power microwave (HPM) directed energy weapon (DEW) system that can help armed forces eliminate hostile unmanned aerial vehicles (UAVs).

Janes understands that this HPM DEW – unveiled at the Aero India 2025 show held in Bangalore from 10 to 14 February – will be installed on a surface vessel of the Indian Navy. Tonbo has also secured contracts from militaries outside Asia-Pacific to supply this HPM DEW.

Ankit Kumar, co-founder and chief technology officer of Tonbo, told Janes at Aero India 2025 that the HPM DEW, named WaveStrike, “uses multibeam klystrons, which can generate a lot of microwave energy with a small antenna and with limited power”.

The HPM DEW currently has a range of 3 km. Tonbo is developing an enhanced version of the system that will have a range of 5 km, Kumar said. He added that the HPM DEW has an active electronically scanned array (AESA) radar to detect threats and a camera to identify the threats.

The DEW uses information from these sensors to target a hostile UAV.

“This system's application is not just limited to UAVs. Technically, it will be able to eliminate any electronics you fire at whether it is a communication system or optronics,” Kumar said.

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Aero India 2025: Rosoboronexport discloses sensor capabilities of Pantsir-S1M system

Source: Janes Dt. 14 Feb 2025,

URL: <https://www.janes.com/osint-insights/defence-news/defence/aero-india-2025-rosoboronexport-discloses-sensor-capabilities-of-pantsir-s1m-system>



The Pantsir-S1M SAM system shown at the Armiya 2019 exhibition

Russian defence export agency Rosoboronexport revealed details about the sensors integrated into Pantsir-S1M, which is the latest variant of the Pantsir family of air-defence systems, at the Aero India 2025 show in Bangalore held from 10 to 14 February.

It is very likely that Russia is pitching this system to India. In November 2024 Rosoboronexport signed a memorandum of understanding (MOU) with India's state-owned Bharat Dynamics Limited (BDL) to collaborate on the Pantsir self-propelled anti-aircraft gun and missile (SPAAGM) system developed by Russia's Konstruktorskoe Byuro Priborostroeniya (KBP) Instrument Design Bureau. The companies did not specify the Pantsir variant they will be co-operating on.

Speaking to Janes at Aero India 2025, a Rosoboronexport official explained the electro-optical (EO) system, multifunctional radar, and target acquisition radar integrated into the Pantsir-S1M system.

The EO system can conduct automatic and semi-automatic search, and lock on to and track a target. It can track one target and guide one surface-to-air missile (SAM) at a time towards the target. The system has a maximum range of 26 km for automatic tracking of a target, the official said.

The official added the multifunctional radar can track four targets and guide four SAMs at a time towards the targets. This is a K-band radar with an operating frequency of 18–27 GHz, and an azimuth and elevation of -45° to 45°. Pantsir-S1M's target acquisition radar can detect and track up to 40 targets. This radar has an azimuth of 360°, an elevation of 80°, and a range of 80 km, the official said.

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Science & Technology News

CSIR-NIScPR Hosts One-Day Workshop on the Need and Significance of Communicating Science in India

Source: Press Information Bureau, Dt. 15 Feb 2025,

URL: <https://pib.gov.in/PressReleasePage.aspx?PRID=2103558>

The Council of Scientific & Industrial Research - National Institute of Science Communication and Policy Research (CSIR-NIScPR) successfully organized a one-day workshop on the "Need and Significance of Communicating Science in India" at its premises in New Delhi. The event aimed to evaluate existing efforts in science communication in Indian languages and explore strategies to enhance public engagement with science across diverse linguistic communities of India.

In her welcome address, Prof. Ranjana Aggarwal, Director, CSIR-NIScPR, emphasized the crucial role of science communication in bridging the gap between scientific research and society. She highlighted the importance of communicating science in regional languages to ensure inclusivity

and broader outreach, stating, "True scientific progress is inclusive. Promoting science in regional languages ensures that knowledge reaches every corner of society." Dr. Naresh Kumar, Head, PME, provided introductory remarks, reinforcing the need to disseminate scientific knowledge in regional languages. Dr. Manish Mohan Gore, Senior Scientist, CSIR-NIScPR and Principal Investigator of Indian language project said that public engagement is essential to percolate the authentic information of science and technology in regional languages of the country.

The workshop featured insightful discussions by esteemed speakers from various scientific and media institutions. Shri Deepak Kumar, Assistant Director, Commission for Scientific and Technical Terminology, addressed "Current Form, Problems, and Utility of Science Terminology." Shri Balendu Sharma, Digital Media Communication Head, Microsoft, provided insights into "The Present and Future of AI and the Digital World." Dr. Santosh Kumar Shukla, Executive Secretary, National Academy of Sciences, India, discussed "Science Writing and Popular Science Literature in Indian Languages," while Ms. Neha Tripathi, a Digital and Social Media Expert, elaborated on "Different Sources of Scientific Content and Their Authenticity."

Further, Dr. Krishna Nand Pandey, Former Scientist-F, ICMR, highlighted "The Role of Health Communication in Creating Awareness in Indian Society." Ms. Ankita Mishra, Editor, NRDC, explored "The Utility and Importance of Print Media in Science Popularization in the Social Media Era."

The afternoon session featured regional perspectives. Shri Shivanandan, Programme Executive, All India Radio, shared insights into "Radio and Agricultural Science Programmes: Nature and Possibilities." Shri Samir Ganguly, Science Writer, highlighted "Social References of Science Fiction Stories."

The workshop provided a dynamic platform for experts, communicators, and participants to engage in meaningful interactions. Discussions yielded policy recommendations to strengthen science communication in Indian languages, emphasizing increased academia-government-media collaboration and strategies for capacity building among science communicators. The event drew 40 participants, including faculty and students from Banaras Hindu University, Central Sanskrit University, Gurugram University, and CSIR-NIScPR, along with scientists, researchers, and policymakers. A total of 08 speakers participated, with 06 joining online and 02 attending in person, fostering a rich exchange of ideas.

The event concluded with an interactive session and a Q&A round with students, followed by closing remarks and a vote of thanks by Dr. Manish Mohan Gore, Senior Scientist, CSIR-NIScPR, and coordinator of the workshop. The workshop reaffirmed CSIR-NIScPR's commitment to promoting accessible and inclusive science communication in India.

About CSIR-NIScPR

The CSIR-National Institute of Science Communication and Policy Research (NIScPR) is a constituent laboratory under the Council of Scientific & Industrial Research, Ministry of Science and Technology, Government of India. It is dedicated to science communication, policy research, and the promotion of scientific awareness among the public.

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ISRO unveils 10-tonne vertical mixer to boost solid propellant production

Source: Hindustan Times, Dt. 14 Feb 2025,

URL: <https://www.hindustantimes.com/india-news/isro-unveils-10-tonne-vertical-mixer-to-boost-solid-propellant-production-101739510818360.html>

ISRO on Friday said it has developed and realised the ten-tonne propellant mixer for solid motors. Solid propulsion plays a crucial role in Indian Space Transportation Systems and vertical mixer is one of the critical equipment in solid motor production, ISRO said in a statement.

"Solid propellants are the backbone of rocket motors, and their production requires precise mixing of highly sensitive and hazardous ingredients," the statement read. The space agency said that towards increasing the production scale of solid motor segments, Satish Dhawan Space Centre in Sriharikota in collaboration with Central Manufacturing Technology Institute (CMTI), Bengaluru has successfully designed and developed 10-tonne Vertical Planetary Mixers for processing the solid propellants.

ISRO has termed it a significant technological marvel. It added that the 10-tonne vertical mixer is the world's largest solid propellant mixing equipment. The development involves collaboration with academia and industries and has completed factory-level acceptance tests. This high-capacity mixer will enable productivity, quality and throughput improvement for heavy solid motors production.

Stating that the Department of Space has undertaken multiple initiatives towards indigenous development of critical technologies, materials and machinery as part of 'Atmanirbharata (self reliance) in Space', ISRO said. "The realisation of indigenous 10-tonne vertical mixer is a true testament to India's growing technological prowess, self-reliance and unwavering commitment to innovation," it added.

The 10 tonne vertical mixer is handed over to Director, SDSC SHAR by Director, CMTI in the presence of ISRO Chairperson V Narayanan on Thursday in CMTI, Bengaluru. ISRO said the 10-tonne vertical mixer weighs about 150 tonnes with a length of 5.4 m, breadth of 3.3 m and height of 8.7 m. The system has multiple agitators, which are hydrostatic driven and will be remotely operated using PLC-based control system with SCADA stations.

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What's really inside a black hole? Quantum computing sheds new light

Source: The Times of India, Dt. 15 Feb 2025,

URL: <https://timesofindia.indiatimes.com/science/whats-really-inside-a-black-hole-quantum-computing-sheds-new-light/articleshow/118247422.cms>

Black holes have always been the cosmos' biggest mystery—gigantic cosmic vacuum cleaners that gobble up everything, including light itself. But what exactly lies in wait inside such mind-bending

voids? Scientists with state-of-the-art quantum computing might just have figured it out, and the results are nothing short of mind-blowing. Ditch science fiction speculations of wormholes and parallel universes—what they found is simultaneously bizarre and revolutionary.

By recreating intense gravitational forces on quantum systems, scientists have caught a glimpse of the very center of a black hole, turning our understanding of space and time upside down. Could this be the secret to unraveling the universe's deepest mysteries? The latest find could just blow your mind.

Are black holes just cosmic holograms? Quantum computing reveals a shocking twist

Black holes are one of the cosmos' biggest secrets, but researchers from the University of Michigan, headed by Enrico Rinaldi, might have cracked a groundbreaking secret. In their experiments with quantum computing and artificial intelligence simulations, they learned that black holes may not be storing information within but on the surface—just like a hologram.

Using quantum matrix models, the researchers examined how particles move near black holes and found patterns that might at last reconcile quantum mechanics with gravity, two forces that never quite meshed. This new method may redefine our understanding of space and time itself.

For a long time, physicists have been unable to reconcile Einstein's general theory of relativity with quantum mechanics. But with the help of quantum computers, we could soon be closer to cracking the code.

Are black holes merely a two-dimensional representation of three-dimensional space? If so, it would completely rewrite the laws of physics. The universe might hold more secrets than we've ever dreamed of.

How quantum computing is helping scientists unlock the secrets of the universe

For decades, researchers have grappled with relating two of the largest theories in physics—general relativity (gravity) and quantum mechanics (the behavior of small particles). But a new study by Enrico Rinaldi is taking us closer to cracking this celestial enigma.

With quantum computing and machine learning, scientists can simulate black holes as never before. They have found that information within black holes is indeed preserved on their surface, like a cosmic hologram. If this is the case, it would revolutionize everything we know about space, time, and gravity.

As quantum computing continues to progress, it may assist in unlocking some of the universe's greatest mysteries, from the composition of dark matter to the birth of the universe. Researchers now stand on the threshold of knowledge that may redefine physics itself. With every advance, we inch nearer to understanding the universe's most basic secrets.

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Indian researchers discover new exoplanet TOI-6038A b. Here's all about it

Source: The Economic Times, Dt. 16 Feb 2025,

URL: <https://economictimes.indiatimes.com/news/science/indian-researchers-discover-new-exoplanet-toi-6038a-b-heres-all-about-it/articleshow/118295180.cms>

Indian researchers have identified a new exoplanet, TOI-6038A b, which is approximately 78.5 times the mass of Earth and has a radius 6.41 times that of our planet.

Scientists from the Physical Research Laboratory (PRL) in Ahmedabad made this discovery in a wide binary system. The exoplanet, classified as a dense sub-Saturn, completes an orbit around a bright, metal-rich F-type star every 5.83 days in a nearly circular path. Falling within the transition zone between Neptune-like planets and gas giants, TOI-6038A b belongs to a unique category known as "Sub-Saturn," a classification absent in our solar system. This makes it a significant subject for studying planetary formation and evolution.

This marks the second exoplanet detection achieved using the advanced PARAS-2 spectrograph mounted on PRL's 2.5-meter telescope at Mount Abu Observatory. It is also the fifth exoplanet discovery facilitated by the combined efforts of the PARAS-1 and PARAS-2 spectrographs.

India's growing proficiency in astronomical instrumentation is highlighted through PARAS-2, the most precise stabilized radial velocity (RV) spectrograph in Asia. The high-resolution radial velocity data from PARAS-2, combined with speckle imaging from PRL's telescope, played a crucial role in confirming the planetary nature of the observed transit signal.

With a density of 1.62 g/cm³, TOI-6038A b is considered a highly dense sub-Saturn. Researchers suggest its formation may be linked to processes such as high-eccentricity tidal migration (HEM) or early disk-driven migration. Its host star, TOI-6038A, is part of a binary system along with a K-type companion star, TOI-6038B, situated 3,217 AU away.

The influence of this wide binary companion, along with the exoplanet's density and orbital characteristics, presents intriguing questions about its formation and migration. While gravitational perturbations from the companion star might affect the exoplanet's orbit, preliminary studies indicate that these interactions alone may not fully explain its close-in position. Notably, only four other sub-Saturn exoplanets have been identified in binary systems.

Initial findings on TOI-6038A b's internal structure indicate that about 75% of its mass consists of a dense rocky core, while the remaining fraction is composed of a hydrogen-helium envelope. This offers valuable insights into the transition from rocky planets to gas giants.

The system's brightness makes it an ideal candidate for further atmospheric studies and spin-orbit alignment research, potentially refining theories on exoplanet migration. Additionally, investigating possible undetected companions within the system may shed further light on the factors shaping its evolution.

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Adani-backed firm among three finalists in India's small satellite launch rocket privatisation

Source: The Economic Times, Dt. 14 Feb 2025,

URL: <https://economictimes.indiatimes.com/news/science/adani-backed-firm-among-three-finalists-in-indias-small-satellite-launch-rocket-privatisation/articleshow/118246849.cms>

Indian conglomerate Adani Group is a finalist, alongside two government-linked groups, to take over private production of India's Small Satellite Launch Vehicle, three sources familiar with the matter told Reuters.

The SSLV, developed by the Indian Space Research Organisation, is a low-cost vehicle capable of deploying satellites of up to 500 kg (1,100 pounds) into low-Earth orbit, or LEO - the most sought after segment of the satellite launch market.

After its first successful launch in 2023, the government moved to transfer the vehicle's production and technology to private industry as part of a broader push to expand India's commercial space sector.

That move has been the highest-profile piece of India's privatisation efforts, which the government hopes will help the country claim a greater share of the booming global satellite launch market, dominated by private players such as SpaceX.

"LEO is the name of the game right now, so the potential winner has the opportunity to really tap into a rapidly growing market," said Damodaran Raman, a director at Deloitte who specialises in space tech.

About 20 companies initially expressed interest in bidding for the SSLV, the first privatisation of its kind under Prime Minister Narendra Modi's policy drive to open up India's space industry.

The three finalist consortiums include Alpha Design Technologies, in which Adani Defence Systems and Technologies owns a stake; state-backed Bharat Dynamics Limited; and Hindustan Aeronautics Limited. Reuters could not verify the exact structure of each bidding group. The companies did not respond to Reuters requests for comment. The sources did not want to be named because details of the bids are not public.

The winning company is expected to pay India's space agency about 3 billion rupees (\$30 million) for the SSLV, covering design know-how, manufacturing processes, quality-assurance training, and up to 24 months of technical support or two successful launches, according to one of the sources. Beyond financial capability, bidders must demonstrate the ability to manufacture, sustain, and sell the SSLV.

A second source familiar with the matter said the limited availability of launch slots with major industry players such as SpaceX presents a significant opportunity for new entrants, with the possibility of positioning themselves as a go-to launch partner for South Asia.

The global satellite launch vehicle market is projected to grow from \$5.6 billion in 2025 to \$113 billion by 2030, with low-Earth orbit launches dominating, according to research firm Mordor Intelligence.

India accounts for only 2% of the global space economy. The Modi government aims to expand that share fivefold to \$44 billion by the end of the decade.

Companies vying for the SSLV contract were required to be profitable, with the lead bidder having at least five years of manufacturing experience and an annual revenue of at least 4 billion rupees (\$50 million), according to India's space regulator.

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क्या है प्लेनेट्री डिफेंस फोर्स, जिसमें भर्ती कर रहा चीन, ISRO ने भी बनाया प्लान

Source: TV9 Bharatvarsh, Dt. 16 Feb 2025,

URL: <https://www.tv9hindi.com/education/what-is-planetary-defense-force-china-is-recruiting-isro-also-made-a-plan-3122182.html>

चीन ने प्लेनेट्री डिफेंस फोर्स में भर्तियां शुरू कर दी हैं. ऐसा इसलिए किया गया है ताकि धरती को क्षुद्रग्रह से टकराने की वजह से होने वाले नुकसान से बचाया जा सके. दरअसल चीनी वैज्ञानिकों का मानना है कि 2032 तक एक ऐस्टेरॉयड धरती से टकरा सकता है. खास बात ये है कि भारत ने भी इस दिशा में पहल शुरू कर दी है. पूर्व इसरो अध्यक्ष एस सोमनाथ ने भी इसे लेकर प्लान बनाया था.

चीन की सरकार के राष्ट्रीय विज्ञान, प्रौद्योगिकी और उद्योग प्रशासन की ओर से युवाओं से आवेदन मांगे हैं. गार्जियन की एक रिपोर्ट के मुताबिक यह विज्ञापन चीन की मैसेजिंग एप वीचैट पर पोस्ट किए गए हैं. इनमें आवेदकों के लिए शर्त भी रखी गई है कि वह खगोल विज्ञान, स्पेस रिसर्च या एयरोस्पेस में पोस्ट ग्रेजुएट होना चाहिए.

क्या है प्लेनेट्री डिफेंस फोर्स?

प्लेनेट्री डिफेंस फोर्स को हिंदी में ग्रह रक्षा बल भी कहते हैं. यह एक ऐसा सैन्य बल होता है जो अंतरिक्ष के खतरों, खासकर ऐस्टेरॉयड से धरती को बचाने काम करता है. इस फोर्स का प्राथमिक काम ऐस्टेरॉयड का पता लगाना, उन्हें ट्रैक करना, निगरानी करना और उन्हें नष्ट करने के तरीकों को खोजना आदि शामिल है. अभी तक चीन, अमेरिका और रूस के पास ही ऐसी व्यवस्था है, लेकिन अब भारत भी इस तरफ कदम बढ़ाने वाला है.

टकरा सकता है ये क्षुद्रग्रह

धरती से जिस ऐस्टेरॉयड के टकराने की संभावना बढ़ी है वह 2024YR4 है, पिछले साल ही इसकी पहचान हुई जो धरती के पास तक 2032 में पहुंच सकता है. पिछले सप्ताह की चीन के वैज्ञानिकों ने ऐस्टेरॉयड के धरती से टकराने की संभावना को 1.3 से बढ़ाकर 2.2 कर दिया था. इसके बाद से संयुक्त राष्ट्र अंतरिक्ष मिशन, सलाहकार समूह आदि नियमित रूप से बैठकें कर रहे हैं.

इसरो ने भी बनाया है प्लान

पिछले दिनों पूर्व इसरो अध्यक्ष एस सोमनाथ ने भी धरती के लिए खतरा बने ऐस्टोरॉयड को अंतरिक्ष यान भेजकर रोकने की बात कही थी. हालांकि इसे लेकर अभी कोई कदम नहीं उठाया गया है, लेकिन माना जा रहा है कि भारतीय अंतरिक्ष अनुसंधान संगठन जल्द ही इसे लेकर कोई बड़ा कदम उठा सकता है. दरअसल यह एक ऐसा विषय है, जिस पर इसरो की ओर से अब तक बात नहीं की गई है. प्लेनेट्री डिफेंस फोर्स के माध्यम से भारत न सिर्फ खगोलीय पिंडों के संभावित विनाशकारी परिणामों की पहचान कर सकेगा, बल्कि इन्हें रोक भी सकेगा.

कितना बड़ा खतरा होते हैं क्षुद्रग्रह

क्षुद्रग्रह धरती के लिए बड़ा खतरा बन सकते हैं. दरअसल एक दिन में हजारों ऐस्टोरॉयड धरती की तरफ बढ़ते हैं, लेकिन बहुत छोटे होने की वजह से या तो वे जल जाते हैं, या फिर इतने प्रभावी नहीं हो पाते जो नुकसान पहुंचा सकें. 2013 में एक 20 मीटर चौड़ा क्षुद्रग्रह रूस के एक शहर में ऊपर पहुंच गया था, जिसे महज 30 किमी ऊपर नष्ट किया गया था. एक रिपोर्ट के मुताबिक इस धमाके के प्रभाव से ही सैकड़ों लोग घायल हो गए थे.

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