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# समाचार पत्रों से चयनित अंश Newspapers Clippings

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

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



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Thu, 15 Aug 2024

### DRDO के वैज्ञानिक राम नारायण अग्रवाल का निधन, 'अग्नि मैन' के नाम से थे मशहूर; हैदराबाद में ली अंतिम सांस

रक्षा अनुसंधान एवं विकास संगठन, DRDO के प्रसिद्ध वैज्ञानिक राम नारायण अग्रवाल का निधन हो गया है। समाचार एजेंसी एनआई ने डीआरडीओ अधिकारी के बयान के हवाले से बताया कि राम नारायण अग्रवाल का गुरुवार को 84 वर्ष की आयु में हैदराबाद में निधन हो गया।

डीआरडीओ के अनुसार उन्हें अग्नि मिसाइलों के जनक के रूप में भी जाना जाता है और उन्होंने देश में लंबी दूरी की बैलिस्टिक मिसाइल कार्यक्रम में महत्वपूर्ण भूमिका निभाई। वह अग्नि मिसाइलों के पहले कार्यक्रम निदेशक भी थे। उन्हें अग्नि मैन के नाम से भी जाना जाता था।

<https://www.jagran.com/news/national-drdo-scientist-ram-narayan-aggarwal-famously-known-as-agni-man-passed-away-in-hyderabad-23779000.html>

## THE ECONOMIC TIMES

Thu, 15 Aug 2024

### Renowned DRDO scientist Ram Narain Agarwal, Father of Agni Missiles, passes away

Renowned DRDO missile scientist Ram Narain Agarwal, widely celebrated as the Father of Agni Missiles, passed away on Thursday in Hyderabad. Agarwal was a pioneering figure in India's defense research and development, significantly contributing to the country's long-range ballistic missile program.

Agarwal's work was instrumental in shaping India's missile capabilities. As the first Programme Director of the Agni missiles, he played a pivotal role in the development of these strategic weapons. His leadership and vision earned him the moniker "Agni Man".

**Father of Agni Missiles: All you need to know**

Dr Agarwal led India's Agni missile programme from its inception in 1983 until his retirement in 2005. He spearheaded the development of various versions of the Agni missile, culminating in the successful Agni V, capable of striking targets over 5000 kilometers.

He played a pivotal role in launching the Agni missile programme as Project Director in 1983. Under his leadership, the Technology demonstrator missile was successfully tested in May 1989. Over the next several years, numerous versions of the Agni missile were developed and incorporated into India's defense arsenal.

In 1995, he was appointed Programme Director for the weaponization and deployment of Agni 2. By 1999, Dr Agarwal and his team had developed a new version with road-mobile launch capability and an enhanced strike distance compared to Agni-1. He also contributed significantly to the development of the Agni-3 missile weapon system, which demonstrated India's capacity to indigenously develop long-range, nuclear-capable missiles.

His tenure at the Advanced Systems Laboratory (ASL) in Hyderabad underscores his significant contributions to missile technology. He worked closely with notable scientists like Dr Arunachalam and Dr APJ Abdul Kalam. During his 22-year career, he established re-entry technology, all-composite heat shields, onboard propulsion systems, and advanced guidance and control systems for missiles.

The Agni missile was the most ambitious of the five missiles sought to be developed under the Integrated Guided Missile Development Programme launched in 1983 by the Government of India. The others were Prithvi, Akash, Nag, and Trishul.

In recognition of his contributions, he received numerous accolades. He was awarded the Lifetime Achievement Award in 2004 by the Prime Minister of India for his contributions to aerospace and the Agni missile. He also received the DRDO Technology Leadership Award and Chandrasekhara Saraswati National Eminence Award. He was honored with the Padma Shri in 1990 and Padma Bhushan in 2000 by the President of India.

### **India's Agni Man**

Dr Agarwal was born on July 24, 1941, in Jaipur into a family of traders. He completed his Aeronautical Engineering degree from MIT, Guindy, and his Master's from the Indian Institute of Science, Bangalore.

He also obtained a doctorate from the University of Rajasthan. Throughout his career, he remained a prominent figure in various national academies, delivering lectures on self-reliance and missile technology.

He was a fellow of the Aeronautical Society of India and the National Academy of Engineering. Senior serving and former DRDO scientists condoled the death of Dr Agarwal.

Former DRDO chief and missile scientist Dr G Satheesh Reddy said the country has lost a legend with his passing away. He said Dr Agarwal played a crucial role in expanding the long-range missile manufacturing and launch facilities in the country.

<https://economictimes.indiatimes.com/news/defence/renowned-drdo-scientist-ram-narain-agarwal-father-of-agni-missiles-passes-away-at-84/articleshow/112549418.cms>

## **Indian Army to procure cutting-edge tech to detect enemy drones near border areas**

The Indian Army is set to procure an advanced version of the Integrated Drone Detection and Interdiction system (MK IIA) to counter the growing threats from unmanned aerial systems, particularly along the western and northern borders.

As per the Army, the proposed system should have a surveillance, detection and tracking capability, microprocessor for computing a targeting solution and a LASER weapon system for hard kill or destruction and jamming capability for soft kill or denial. A Request for Information (RFI) was published last month by the Army to seek details about the system from prospective vendors.

The fresh RFI comes within months after the Army inducted indigenous integrated drone detection and interdiction systems in the northern border along the China border in the northern sector and is reflective of the efforts to develop and procure counter drone systems in the wake of an increase in threats from enemy unmanned aerial systems.

Developed by Defence Research and Development Organisation (DRDO) and Bharat Electronics, the Army Air Defence had got seven of these systems, five of which were inducted for deployment close to the northern borders. These systems too had both soft and hard kill options.

Apart from these indigenous systems, other improvised systems with different counter-UAS capabilities have been deployed by the Armed Forces. This includes prototypes of laser-based systems developed indigenously with Army Air Defence, improvised versions of ZU-23 and L/70 guns for drone detection and killing, ad-hoc handled jammers, low-level lightweight radars, among others. The Armed Forces have inducted anti-drone systems from Indian private firms and the Israeli SMASH 2000 plus systems to tackle enemy drone threats.

Parameters such as range of detection and other technical parameters will be submitted by the vendors when they submit their bids. However, the RFI states that it should have a radar system that should be able to detect and track low RCS targets, and assist in designation of the hostile targets to the weapon system. As per officials, it is likely that the advanced system may have a greater bandwidth of frequencies for tracking and taking down enemy drones and an improved range for the system beyond 800 metres, which is there for its MK 1 version.

<https://indianexpress.com/article/india/army-to-procure-advanced-system-to-detect-enemy-drones-9514791/>

# Defence Strategic: National/International



Press Information Bureau  
Government of India

Ministry of Defence

*Thu, 15 Aug 2024*

## **India is becoming 'Aatmanirbhar' in defence & emerging as a global manufacturing hub, says Prime Minister Shri Narendra Modi during his Independence Day 2024 address**

**“India was earlier a victim of terror attacks, today it is strong & bold; Armed Forces give a befitting reply to anyone who tries to harm us”**

India is attaining 'Aatmanirbharta' in defence and is emerging as a global manufacturing hub due to the steps taken by the Government in the last few years. This was stated by Prime Minister Shri Narendra Modi during his address to the Nation from the ramparts of the iconic Red Fort in Delhi on the occasion of 78th Independence Day on August 15, 2024.

The Prime Minister pointed out that there was a time when the majority of the defence budget was used to procure weapons/equipment from abroad, but his Government focused on indigenous manufacturing to make the nation self-reliant. He lauded the Ministry of Defence and the Armed Forces for taking a series of decisions, including the notification of a number of positive indigenisation lists, wherein there are over 5,600 items that are being/will be procured only from the Indian industry after designated timelines. He expressed satisfaction that India, which was once completely dependent on import of defence equipment, is today exporting to numerous countries.

It may be recalled that due to the persistent efforts of the Government, the annual defence production hit a record high of Rs 1.27 lakh crore in Financial Year (FY) 2023-24. In the same fiscal, defence exports touched a record high of Rs 21,083 crore, an increase of 32.5% over FY 2022-23. In addition, there has been a massive jump in defence exports in the first quarter of FY 2024-25. Rs 6,915 crore worth of defence equipment has been exported in the first quarter, an increase of 78% from the first quarter of FY 2023-24, when the figure was Rs 3,885 crore.

Referring to the 2016 surgical strike & 2019 air strike, the Prime Minister, in his Independence Day address, stated that there was a time when the country was a victim of terror attacks; but today it is bold and strong, with the Armed Forces giving a befitting reply to anyone who tries to harm the sovereignty, unity and integrity of the country. He asserted that the nation is proud of its brave soldiers who selflessly serve the motherland.

On the growing role of women in all the sectors, the Prime Minister emphasised the women are not just participating in the progress of the nation, but are playing a leadership role. “Be it the Army, Navy, Air Force or the space sector, we are witnessing the ever-growing Nari Shakti of our country,” he said.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2045533>



**Press Information Bureau**  
**Government of India**

**Ministry of Defence**

*Thu, 15 Aug 2024*

## **Indian Naval Ship Tabar Reaches Gothenburg, Sweden For A Two Day Visit**

Indian Navy's frontline stealth frigate, INS Tabar commanded by Capt MR Harish arrived at Gothenburg, Sweden on 14 Aug 24 for a two day visit. India and Sweden share warm bilateral diplomatic relations that span diverse fields, including defence relations. The visit by INS Tabar to Gothenburg, Sweden aims to strengthen these bonds and also explore newer avenues of bolstering the relationship in the maritime domain.

INS Tabar is equipped with a versatile range of weapons and sensors and is amongst the earliest stealth frigates of the Indian Navy. The ship is part of the Indian Navy's Western Fleet which is based at Mumbai under the Western Naval Command. Further, the ship during her inbound transit to Gothenburg, Sweden conducted a Maritime Partnership Exercise with the Swedish Navy Ship HMS Munter, involving visual signaling and escort operations.

The ship's crew will participate in various bilateral professional interactions with the Swedish Navy. These engagements seek to enhance best practices between the two navies. The Indian Navy remains committed to fostering partnerships with navies across the world.

INS Tabar, celebrated the 78th Independence Day in Gothenburg, Sweden. Gp Capt Amit Budhwar, Indian Defence Attache, Stockholm & Capt MR Harish, Commanding Officer, Flagged Off 7.7 kms of run today to commemorate 77 yrs of Indian Independence with participation by 77 Indian Navy & Swedish Armed Forces personnel.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2045739>



## **With an eye on China and Pakistan, India fasttracks deal for 31 'hunter-killer' drones from the US**

As China and Pakistan enhance their fleets of armed drones, India is expediting talks to purchase 31 weaponized MQ-9B 'hunter-killer' drones from the US. The goal is to finalize this substantial deal by November-December this year.

Techno-commercial discussions for the inter-governmental contract for the 31 armed high-altitude, long endurance drones “are in an advanced stage now”, with 15 Sea Guardians earmarked for Navy and 8 Sky Guardians each for Army and IAF, defence ministry sources told TOI.

This comes at a time when China, which continues the military confrontation in eastern Ladakh for the fifth year running now, has stepped-up supplies of its armed Cai Hong-4 and Wing Loong-II drones to Pakistan.

“Pakistan has sought 16 more armed CH-4 drones from China. It already has seven CH-4 drones in the Army and 3 in Navy,” a TOI source said.

The MQ-9B Reaper or Predator-B drones, designed to fly for around 40 hours at altitudes over 40,000-feet for surveillance and armed with Hellfire air-to-ground missiles and smart bombs for precision strikes, are considered far superior to Chinese armed drones.

The operational utility of the MQ-9B drones has been reinforced by extensive ISR (intelligence, surveillance, reconnaissance) missions being undertaken by the two unarmed Sea Guardian drones -- taken on lease from US firm General Atomics -- both over the vast Indian Ocean Region (IOR) as well as along the 3,488-km Line of Actual Control with China.

While the US has put a price tag of \$3.9 billion (over Rs 33,500 crore) for the 31 weaponised MQ-9B drones and associated equipment, including 170 Hellfire missiles, 310 GBU-39B precision-guided glide bombs, navigation systems, sensor suites and mobile ground control systems, the Indian negotiating team is working to bring the costs down.

“The price and terms offered by the US govt and General Atomics to other countries is being taken into account. All efforts are underway to conclude the deal within this calendar year after the final nod from the cabinet committee on security,” a source told TOI.

Under the deal, the drones will be assembled in India, while General Atomics will also source some components from Indian companies as well as set up a global MRO (maintenance, repair, overhaul) facility.

“Since General Atomics cannot give transfer of technology for the varied subsystems it sources from other companies, it will provide expertise and consultancy to DRDO and other entities to develop such advanced drones indigenously,” the source said.

The armed forces hope to induct the first 10 MQ-9B drones within a couple of years of the contract being inked, though it will depend on General Atomics' production capacity. The rest will come in batches every six months.

The plan is to deploy the fighter-size drones at ISR command and control centres at Arakkonam and Porbandar for the Indian Ocean region and Sarsawa and Gorakhpur for the land borders. "With their long-distance hunting and killing capabilities, such drones are required at a time when China's naval forays into the IOR are only going to increase further," an officer said.

<https://economictimes.indiatimes.com/news/defence/with-an-eye-on-china-and-pakistan-india-fast-tracks-deal-for-31-hunter-killer-drones-from-the-us/articleshow/112516022.cms>

# THE ECONOMIC TIMES

Wed, 14 Aug 2024

## **India debuts new 'swadeshi' Kamikaze drones with 1,000 km range; Cutting-edge answer to modern warfare**

As India gears up to celebrate its 78th Independence Day, the National Aerospace Laboratories (NAL) has announced a groundbreaking development in the country's defence arsenal: fully indigenous kamikaze drones. These "do-and-die" unmanned aerial vehicles (UAVs) are designed with the capability to strike enemy targets with precision and are seen as a significant advancement in India's defence technology.

### **Design and Capabilities: Engineered for Precision**

The Indian kamikaze drones, each approximately 2.8 meters in length with a wingspan of 3.5 meters, weigh around 120 kilograms. These drones are powered by a 30-horsepower Wankel Engine, a creation of NAL, enabling them to reach speeds of up to 180 kilometers per hour. With a range of up to 1,000 kilometers, these UAVs are equipped to carry an explosive payload of 25 kilograms, making them formidable in any combat scenario.

### **Loitering Munitions: A Modern Warfare Tool**

Kamikaze drones, also known as loitering munitions, have gained prominence in contemporary conflicts, including the ongoing Russia-Ukraine war and the Israel-Hamas conflict in Gaza. These drones have been extensively used by Ukrainian forces to target Russian infantry and armored vehicles. They are designed to loiter over an area of interest for extended periods, carrying explosives and awaiting commands from human controllers to strike specific targets. These drones can also be deployed in swarms, overwhelming enemy defences and radars.

### **Project and National Security: A Collaborative Effort**

The development of these indigenous drones is part of a broader initiative led by the Council of Scientific and Industrial Research (CSIR), which has given in-principle approval for the project. CSIR-NAL serves as the nodal laboratory, with participation from major engineering labs across

the country. The goal is to address India's national security needs by developing a robust and reliable defence technology that can be deployed in various combat scenarios.

### **Enhanced Features: GPS-Denied Operations**

One of the key features of these drones is their ability to operate in GPS-denied environments. Equipped with the Indian NAVIC system, these UAVs can navigate and acquire targets even in areas where GPS signals are jammed or unavailable. This capability significantly enhances the drones' operational flexibility, making them suitable for a wide range of combat situations.

### **Expert Opinion: A Game-Changing Technology**

Dr. Abhay Pashilkar, Director of NAL and the leading force behind the research, emphasized the significance of these drones in modern warfare. "India is developing these fully indigenous kamikaze drones; they are a game-changing 21st-century new-age war machine," he told NDTV. He further explained that the Indian loitering munition would have an endurance of about nine hours, allowing it to continuously hover in the area of interest. "Such drones deployed by other nations have shown great potential in the modern ongoing wars elsewhere," Dr. Pashilkar added.

### **The Kamikaze Legacy**

The concept of kamikaze missions is not new; it dates back to World War II when Japanese pilots would ram their planes into Allied forces, sacrificing themselves to inflict maximum damage. The modern kamikaze drones, however, are unmanned and remotely controlled, allowing for precise strikes without risking the lives of pilots.

### **A New Era in India's defence**

The unveiling of these indigenous kamikaze drones marks a significant milestone in India's defence capabilities. As the nation celebrates its Independence Day, the development of these advanced UAVs reflects India's commitment to strengthening its national security and enhancing its technological prowess. With the potential to redefine modern warfare, these drones are set to play a crucial role in the country's defence strategy, ensuring that India remains at the forefront of global defence technology.

<https://economictimes.indiatimes.com/news/defence/india-debuts-new-swadeshi-kamikaze-drones-with-1000-km-range-cutting-edge-answer-to-modern-warfare/articleshow/112526356.cms>

# THE ECONOMIC TIMES

Wed, 14 Aug 2024

## **Defence ministry to sign Rs 21,000 cr deal for 230 Sukhoi jet engines**

The defence ministry is set to ink an estimated ₹21,000 crore deal to acquire jet engines for its Su 30MKI fighter fleet. The engines will be made in India from the raw material stage by Hindustan

Aeronautics Limited (HAL) and will replace older engines that are coming to the end of their service life.

The order for about 230 engines will be placed in the coming days, with deliveries to take place over the next few years, said people familiar with the matter.. The total requirement of the AL 31 FP engines is close to 950 as they power the entire fleet of the twin-engine Su 30MKI fighter, they said.

The engines are being made by HAL under a licence arrangement with a high level of localisation. A large part of the order value is expected to be passed on to the vendor and supplier base created by HAL over the years.

In addition to the new engines, the mainstay Su 30MKI fighter jet fleet is set to be upgraded under a plan that will include completely new avionics, radars and electronic warfare suites. Close to 100 of the fighters are to be upgraded in the first tranche that will be conducted entirely in India.

The upgrade plan is valued in excess of ₹60,000 crore and HAL will be the lead agency for the upgrade in partnership with the Indian Air Force and other partners. India had ordered 272 of the fighter jets from Russia that form the mainstay of the air force fighter fleet. An order for 12 more jets valued at close to ₹11,000 crore, to replace aircraft lost to accidents, has also been cleared by the defence ministry but is yet to be inked.

ET had earlier reported that HAL is also close to signing a deal with American engine manufacturer GE Aviation to produce advanced jet engines under a technology transfer deal. The GE 414 engines will power the next version of the Tejas light combat aircraft as well as other future programmes.

<https://economictimes.indiatimes.com/news/defence/defence-ministry-to-sign-rs-21000-cr-deal-for-230-sukhoi-jet-engines/articleshow/112532904.cms>



*Wed, 14 Aug 2024*

## **Indian Airforce exploring various methods to encourage indigenisation**

As part of its indigenisation programmes, the Indian Air Force (IAF) is exploring various methods, including plant-in-plant (embedded model), at its Base Repair Depots (BRDs).

Speaking at the inaugural of the International Defence Aviation Exposition 2024 on Wednesday at the Air Force Station at Sullur here, Air Marshal Vijay Kumar Garg AVSM VSM, Air Officer Commanding in Chief, Maintenance Command of the IAF, said the government had taken several initiatives to facilitate and accelerate efforts towards self-reliance in defence.

The Department of Defence Production is pursuing efforts to encourage joint ventures with some of the Original Equipment Manufacturers (OEMs) and the Indian industry under inter-governmental agreements. The IAF has also established 13 nodal technology centres at its BRDs for interaction

with industry, research and development labs, and the academia to initiate research and development projects for sustenance. It has signed 22 memoranda of understanding with the academia and the labs, Air Marshal Garg added.

The BRDs of the IAF have successfully indigenised nearly 70,000 items over the years. Indigenisation efforts by the defence public sector undertakings are also under way. According to Air Vice Marshal KAA Sanjeeb VSM, Assistant Chief of Air Staff, Maintenance Plans, industry partners could use the facilities available at the BRDs (plant-in-plant concept).

Air Marshal Garg and Air Vice Marshal Sanjeeb later told the media that in the plant-in-plant concept, the industry would work with its workforce at the facilities of the IAF. These are efforts towards reducing the dependence on foreign OEMs. Also, two joint ventures have been signed as part of inter-governmental agreements, they added. The exposition, with 73 stalls, is on till Thursday.

<https://www.thehindu.com/news/cities/Coimbatore/indian-airforce-exploring-various-methods-to-encourage-indigenisation/article68525708.ece>

## ThePrint

*Thu, 15 Aug 2024*

### **Army scouts for 90 tracked air defence systems with minimum 50% indigenous content**

The Indian Army is looking to procure a minimum of 90 Carrier Air Defence Tracked (CADET) systems, with a minimum of 50 percent indigenous content, to deploy them with mechanised columns.

The Army will deploy the CADET in all terrains such as plains, deserts, semi-deserts, and high-altitude and mountainous areas of up to 5,000 m.

The CADET chassis will, afterwards, be a common link for other air defence projects that the Army has been looking at.

The Army will also buy more CADET systems with upgrades put in place.

Earlier this year, Russia completed the trials of the track-based Pantsir-SM-SV air defence system, which will be put into service shortly with the Russian ground and airborne forces.

The basic CADET platform, conceptualised as a box-shaped, tracked chassis with a raised structure, will provide space inside its body to accommodate a crew of four and equipment. Outside its body will be attachment points for mounting various equipment and structures associated with current and future air defence systems.

The basic CADET platform, per se, will be equipped with a high-power engine to meet both movement and power generation requirements. A compact auxiliary power unit to meet the high-

power requirement of onboard equipment, an intelligent power management system, an effective temperature management system, and navigation and communication systems will also be a part of it.

Dedicated sensors, weapons, and equipment for fitment inside or on the basic CADET platform have either been contracted for or are under various stages of development. These will fall within the Buyer Nominated Equipment (BNE) or Buyer Furnished Equipment (BFE) specification at the time of procurement, said the Request for Information (RFI) sent out by the Army.

The CADET will usually get fitted with the Akashteer equipment to make self-propelled air defence units. Akashteer is an automated air defence control and reporting system that allows the Army's air defence units to operate in an integrated manner. The Army inducted it earlier this year.

By integrating radar and communication systems at all levels into a unified network, Akashteer aims to deliver unprecedented levels of situational awareness and control. The same will enable swift engagement of hostile targets and reduce the risk of fratricide in contested airspace.

According to the Army, in the future, CADET will also be utilised as a carrier platform for many other varieties of the Counter Unmanned Aerial System (C-UAS) weapon systems for self-propelled air defence units. These include the Integrated Drone Detection & Interdiction System, the Drone Kill System, and the Vehicle Mounted Counter Swarm Drone System.

<https://theprint.in/defence/army-scouts-for-90-tracked-air-defence-systems-with-minimum-50-indigenous-content/2223612/>



*Fri, 16 Aug 2024*

## **INS Shivalik reaches Guam, an island territory of the U.S.**

INS Shivalik reached Guam, an island territory of the United States of America, for an Operational Turnaround on successful completion of the recently concluded world's largest Multinational Maritime Exercise RIMPAC 2024, according to an official release from the Eastern Naval Command here on Thursday.

The visit is part of the operational deployment of Indian Navy's Eastern Fleet to the South China Sea and the Pacific Ocean.

Activities planned during the visit include interactions with the Governor of Guam, Commander (Navy Region Marianas), professional interactions with the US Navy, cross deck visits, sports fixtures and community outreach.

<https://www.thehindu.com/news/cities/Visakhapatnam/ins-shivalik-reaches-guam-an-island-territory-of-the-us/article68529200.ece>

## **US Navy's newest air-to-air missile AIM-174B could tilt balance in South China Sea**

The U.S. Navy's deployment of new extremely long-range air-to-air missiles in the Indo-Pacific could erase China's advantage in aerial reach, experts say, part of an intensifying focus on projecting power amid high tensions in the region.

The AIM-174B, developed from the readily available Raytheon SM-6 air defence missile, is the longest-range such missile the United States has ever fielded and was officially acknowledged in July.

It has three key advantages: it can fly several times farther than the next-best US option, the AIM-120 AMRAAM; it does not require new production lines; and it is compatible with the aircraft of at least one ally, Australia.

Crucially, a weapon such as the AIM-174B, which can attack aerial targets as far away as 400 km (250 miles), outranges China's PL-15 missile, allowing U.S. jets to keep threats farther from aircraft carriers, and safely strike "high-value" Chinese targets, such as command-and-control planes.

"The United States can ensure the safety of their important assets, such as carrier groups, and launch long-range strikes on PLA targets," said Chieh Chung, a researcher at a Taipei-based thinktank, the Association of Strategic Foresight, using an abbreviation for the People's Liberation Army.

The West has not easily been able to do that until now. The AIM-120, the standard long-range missile for U.S. aircraft, has a maximum range of about 150 km (93 miles), which requires the launching aircraft to fly deeper into contested territory, exposing aircraft carriers to greater danger of anti-ship attacks.

Any type of South China Sea conflict, within the so-called First Island Chain, which runs roughly from Indonesia northeast to the Japanese mainland, means the U.S. Navy would operate within few hundred kilometres of its Chinese adversary. Supporting Taiwan in an invasion would pull the Navy in even closer.

The AIM-174B changes that equation, keeping PLA carrier-hunting aircraft out of firing range and even endangering their planes attacking Taiwan, Cheih said. That increased the likelihood the United States would get involved in a major conflict in the region, he added.

"The big thing is that it lets the United States push in a little bit further" into the South China Sea during a conflict, said a senior U.S. defence technical analyst, who declined to be identified because the matter is a sensitive one.

"And it's going to potentially change Chinese behaviour because it's going to hold large, slow, unmanoeuvrable aircraft at greater risk."

### **Range Advantage**

For decades, the United States' advantage in stealth fighters, first with the F117 and then with the F-22 and F-35, meant that missiles such as the AIM-120 were all that was needed.

The U.S. military also leaned into developing the AMRAAM as a cheaper alternative to a new missile, drastically improving its performance over decades, said Justin Bronk, an airpower and technology expert at London's Royal United Services Institute.

The SM-6 is estimated to cost about \$4 million each, says the Missile Defense Advocacy Alliance, while an AMRAAM costs about \$1 million. European nations, which lacked access to stealth technology until recent years, developed the ramjet-powered Meteor missile, with a range of 200 km (124 miles), produced by MBDA.

MBDA did not respond to a request for comment. The advent of Chinese stealth aircraft such as the J-20, and more important, the PL-15 missile it can carry internally - with a range of 250 km (155 miles) or more - eroded the U.S. edge, said Kelly Grieco, a senior fellow at the Stimson Center.

Now a stealthy Chinese aircraft could theoretically spot non-stealthy U.S. aircraft and shoot them down well outside the range where they could even fight back, she said. Even U.S. stealth aircraft might be forced to fly dangerously close to fire their missiles.

"If a Chinese fighter can outrange an American fighter, it means they can get the first shot," she said. "It's hard to outrun something that's travelling at Mach 4."

The AIM-174B was developed to quickly address that need. The secretive Lockheed Martin AIM-260, a separate U.S. Air Force program to develop an extremely long-range air-to-air missile small enough for stealth aircraft to carry internally, has been in development for at least seven years.

Lockheed Martin declined to comment on the project. China is developing missiles with longer range than the PL-15, Bronk said, but the radar of launching aircraft may be unable to spot targets at such distances.

"If you go too big and too heavy with the missiles, you end up trading off fuel" for the aircraft, he added.

### **Availability**

Using Raytheon's SM-6, originally designed for a ship-launched air defence role, means production lines are already available. Funding has already been earmarked for more than 100 SM-6 missiles a year.

Raytheon declined to comment on how many AIM-174Bs would be produced or if existing SM-6s would be converted. So far it has only been shown on U.S. Navy F/A-18E/F Super Hornet aircraft, which are operated by the U.S. and Australian militaries.

The United States sees Australia as a crucial ally and location for projecting power into the South China Sea, and is investing hundreds of millions of dollars in military infrastructure there.



Australia's defence ministry said it "works closely with the U.S. to understand capability options available for Australian consideration".

The U.S. Defense Department referred questions about the AIM-174B to the U.S. Navy. The Navy said the missile was "operationally deployed" but declined to comment on whether it would be supplied to allies, whether it would be integrated onto other aircraft, and how many AIM-174Bs it wanted each year.

The versatility of the SM-6, which has also been used to hit ships, land targets and missiles, opens up possibilities beyond the AIM-174B, said Peter Layton, a defence and aviation expert at the Griffith Asia Institute.

For instance, if fitted with an anti-radar seeker, it could attack and disrupt surface-to-air missile batteries from extremely long range. For now, though, adding the AIM-174B to the U.S. Navy's arsenal, even if not yet in large numbers, changes the calculus of a regional conflict, the senior technical analyst said.

"If this is enough to push (China's high-value) aircraft way back, then you don't need many," the analyst added.

"Because the threat has caused the adversary to change their behaviour ... It makes a South China Sea scenario easier."

<https://economictimes.indiatimes.com/news/defence/us-navys-newest-air-to-air-missile-aim-174b-could-tilt-balance-in-south-china-sea/articleshow/112524873.cms>



*Thu, 15 Aug 2024*

## **Reviving India-Poland ties amidst geopolitical shifts: PM Modi's upcoming visit**

Prime Minister Narendra Modi's forthcoming visit to Poland on August 21 marks a pivotal moment in India-Poland relations, coming at a time of significant geopolitical changes due to the ongoing Russia-Ukraine conflict. This visit, the first by an Indian Prime Minister since 1979, aims to rejuvenate the bilateral relationship that has seen limited interaction in recent decades.

### **Historical Context and Defense Cooperation**

India and Poland have shared a robust, albeit underutilized, partnership, particularly in the defense sector. Poland has been a reliable supplier of military equipment to India, with notable instances of support during critical moments. However, after the Cold War, as Poland moved closer to the United States and integrated into Western alliances, its ties with India, though stable, lacked the earlier strategic depth.

In a significant step towards renewing these ties, India appointed its first Defence Attache in Warsaw earlier this year after a long hiatus. This move underscores India's intent to deepen defense cooperation with Poland, a country that is currently undertaking an extensive military modernization program.

### **Strategic Importance of the Visit**

The visit comes at a crucial time as both nations celebrate 70 years of diplomatic relations. Prime Minister Modi's discussions with Polish leaders, including President Andrzej Duda and Prime Minister Mateusz Morawiecki, are expected to focus on defense collaboration, trade, and strategic alignment. Poland's ongoing military buildup, particularly in the wake of the Ukraine conflict, presents India with an opportunity to enhance its own defense capabilities through collaborative efforts.

Poland's strategic location and its significant role in NATO's eastern flank make it a valuable partner for India, especially in the context of European security. The appointment of a Defence Attache is a clear signal that India is keen on establishing a strong strategic partnership with Poland, one that could extend beyond defense to include areas like technology transfer and joint manufacturing.

### **Cultural and Historical Ties**

Modi's visit will also pay homage to the historical ties between India and Poland. He is expected to visit memorials dedicated to the Maharajas of Jamnagar and Kolhapur, who provided refuge to thousands of Polish refugees during World War II. Such gestures not only strengthen cultural connections but also highlight the longstanding friendship between the two nations.

### **Looking Forward: A New Era of Cooperation**

As Poland continues to expand its defense capabilities, spending over 4 percent of its GDP on defence, India sees an opportunity to collaborate more closely in areas like defense technology and manufacturing. The discussions during Modi's visit are likely to set the stage for deeper strategic ties, with an emphasis on mutual benefits in defense and beyond.

<https://www.financialexpress.com/business/defence/reviving-india-poland-ties-amidst-geopolitical-shifts-pm-modis-upcoming-visit/3583531/>



*Wed, 14 Aug 2024*

## **India's S-400 Triumph, Ballistic Missile Shield Threatens Pakistan's Nuclear Deterrence – Islamabad Think Tank**

Pakistan has been watching the advances in India's missile capability. It is particularly concerned with the indigenous ballistic missile defense system and the Russian S-400 'Triumph' surface-to-air

defense system, which displayed its prowess in an Indian Air Force wargame by bringing down 80 percent of the enemy fighter aircraft package. A Pakistan think tank contends that this will allow India to keep the 'limited war' option open.

Contending that the cornerstone of deterrence is the "mutual vulnerability to retaliation," the BMD system undermines this principle and also Pakistan's nuclear deterrence. India had a successful test of Phase II of its BMD system on July 24, 2024. The system boasted a range of 5,000 kilometers and demonstrated the taking down of the adversary's ballistic missile endo-atmospherically. The two-phased BMD System has been under development for years now.

The induction of the Russian S-400 system (NATO name SA-21 Growler) in the IAF has been done in the aftermath of the clash between the two nuclear-armed countries in 2019. India has already operationalized three units, and the remaining two systems are awaiting delivery.

As reported by an Indian news agency, the IAF tested the system's efficacy and was impressed by its performance, as it took down 80 percent of fighter jets in a military exercise.

Regarding the implications of these developments, a think tank issue brief contends that the S-400 could detect objects 600 kilometers inside Pakistani territory with the "sophisticated" longer-range radars it is developing. Also, theoretically, it will be able "to counter Pakistan's Hatf, Ghauri, and Shaheen missiles."

"Phase I is complete and already deployed around Delhi, while phase II is under development. The S-400 is already deployed along Pakistan and China borders. India can, thus, deploy its mixture of indigenous and acquired systems to undermine the effectiveness of Pakistan's nuclear forces.

As the scope and sophistication of Indian BMD increase, it is likely to have a greater impact on Pakistan's nuclear deterrence," an issue brief in the Institute of Strategic Studies Islamabad (ISSI) read.

S-400 is an advanced BMD capable, and its radars are capable of tracking 300 targets in one go. The missiles can engage 60-80 targets in one go. It sends two missiles after one target. The missile system will make attacks like Operation Swift Retort, which Pakistan did in 2019 in response to India's Balakot air strikes, impossible.

The Pakistan think tank contends that the possession of BMD can increase India's willingness to take greater risks in case of conflict between the two countries. "This could potentially embolden India to adopt a more aggressive posture, increasing the risk of nuclear conflict. BMD systems would also increase Indian comfort zones, and in the future, it is likely to increase misadventures, such as the Balakot strikes of February 2019. It also emboldens India to keep the limited war option open," the scholar contends.

The fear is that backed by its BMD systems, India will be encouraged to carry out a pre-emptive strike against Pakistan's strategic assets to wipe out a majority of its assets and absorb and intercept any remaining missiles through its BMD system. This, the think tank says, exacerbates Pakistan's security dilemma. Pakistan needs modifications to its nuclear and missile forces to counter the advantage gained by India through its BMD systems.

“Pakistan can opt for qualitative technologies to penetrate Indian BMD systems, as well as to fog their interception system. It is already diversifying its missile systems.

It is pursuing cruise missiles like Babar and Multiple Independently Targetable Reentry Vehicle (MIRV) like Ababeel that can penetrate BMD systems due to maneuverability and sheer numbers,” reads the brief.

Along with this, Pakistan can deploy strategies like mobility, dispersion, and camouflage to increase the survivability of its nuclear force in case of a pre-emptive strike. “Despite their limitations, missile defense systems can create a false sense of security for Indian leadership, bringing instability and encouraging pre-emption and adventurism. It would encourage an arms race and make South Asia more volatile,” concludes the scholar.

### **India’s Quest For A Ballistic Missile Shield**

India’s BMD program was launched in 2000 after the Kargil War and aims at creating a multi-layer defense shield against ballistic missiles. Its key components are the Prithvi Air Defence (PAD) interceptor missile, which is meant for high-altitude interception, and the Advanced Air Defence (AAD) missile, which handles lower-altitude interceptions.

The recently concluded Phase-II AD Endo-atmospheric missile test featured an indigenously developed Two-stage solid-propelled ground-launched missile system meant for neutralizing many types of enemy ballistic missile threats in the altitude bracket of endo to low exo-atmospheric regions.

The system is based on a multi-layered approach and uses both land and sea-based interceptor missiles. It has an overlapping network of radars and command and control posts, ensuring early detection and tracking of incoming threats. While the full operational deployment of the Indigenous BMD is still at least a decade away, India has sought to plug the gap with Russian S-400s.

In October 2018, India signed a US\$5.5 billion deal with Russia to acquire five S-400 systems for the IAF. The three system regiments delivered so far have already been inducted into the service of the IAF and deployed along the Pakistan and China border. The S-400 is a development of the S-75 missile that famously shot down the American U-2 spy plane over Russia in 1960.

Russia has dubbed the S-400 an effective counter-stealth weapon, which could even make it difficult for American F-35 fifth-generation stealth fighters to operate.

The counter-stealth claims related to the S-400 are primarily centered around the system’s acquisition radar, the AESA 1L119 NEBO SVU, which operates in the Very High Frequency (VHF) band.

As EurAsian Times has discussed earlier, Russian-made VHF (Very High Frequency) radars pose a significant threat to stealth or very-low observable (VLO) targets such as American-made F-35 aircraft.

<https://www.eurasiantimes.com/indias-s-400-triumf-ballistic-missile-shield/>

## **India-Pakistan armies have common professional DNA. It's time to start talking**

-By Manvendra Singh (Editor-in-Chief of Defence & Security Alert)

Pakistan Army's appearance, perceived or actual, is an Indian policymaker's nightmare. And when it happens in India's neighbouring countries—such as in Dhaka—New Delhi's antennas become even stiffer. All ulterior motives are placed at the doors of the Pakistan Army, for India's experience over the decades has been overwhelmingly negative. Repeated attempts have been made to rectify the India-Pakistan quagmire, and all setbacks are invariably held as the handiwork of recalcitrant Generals running the Pakistan Army. After a while, the truth doesn't really matter since the issues become so much bigger than the stakeholders themselves.

In sheer exasperation, the Dhaka shock echoed the Kabul of 15 August 2021, for the simple reason that the unseen shadow behind both events was that of the Pakistan Army. The General Headquarters (GHQ) in Rawalpindi and its various departments are being held responsible for transnational events that are always inimical to India's strategic interests. That they are responsible for each attack in Jammu and Kashmir is sine qua non, bestowing further credibility on an institution that continues to secure its central role in Pakistan. Such assertions culminated in a tactically and logistically outrageous claim that Pakistan had infiltrated hundreds of its commandos into J&K.

Terrorists and their minders in Pakistan have simply benefitted from an enormous human resource vacuum created by the depletion of troops from the south of Pir Panjal owing to the high-altitude standoff with China in Ladakh in May 2020. The upsurge in violence in this sector is not a recent phenomenon and has been commented upon before in these columns as well. Therefore, any sweeping declarations only give the Pakistan Army greater credence than its capability deserves, and are simply exposing its flaws and insufficient institutional knowledge. That insufficiency has also been alluded to here earlier.

Greater awareness is an urgent requirement.

### **More than a territorial, theological dispute**

India and Pakistan have been at each other's throats since both were escorted into independence on this day in 1947. Territorial disputes have metastasised into showboating over every other activity, from faith to flag-lowering ceremonies. In the meantime, politicians and diplomats have tried to bring the relationship out of its Stone Age reciprocal activities, even as many have continued to light more fires. Spy vs spy tales over caffeine and cutters liven up the covert world continually. But both sides have consistently ignored the silhouette that overlooks this thorny relationship, hoping to deliver the undeliverable, diplomatically.

The unachievable can only be achieved once both sides accept that the dispute is more about the psychology of military insecurity than it is simply territorial or theological. And in that game, the Pakistan Army is the player that matters. The only one who can challenge, play, interact, explain, and ultimately convince GHQ Rawalpindi is Sena Bhawan New Delhi. There is no point denying the fact that the Pakistan Army is the major player in this game, from running the political circus in Islamabad to supposedly sending hundreds of its commandos into J&K. Like all institutions, it has interests.

### **Military-military dialogue is essential**

The only Indian institution that can understand those interests is the Indian Army, not because it has similar concerns but because it has a common professional DNA and is the only one continually in contact with its Pakistani counterpart. From trading bullets across the Line of Control as young Lieutenants to serving together in multiple United Nations missions to studying together in coveted foreign military courses and once again eyeball-to-eyeball in higher military formations across the disputed zone, Indian and Pakistani officers know each other far better than civilian authorities believe, or even like to.

Civilian authorities still carry an insecurity vis-a-vis India's Army and its officers, suspecting it of being covertly conniving. Nothing is further from the truth; there are a million sociological and professional reasons as to why it isn't a possibility in India. But that is not the case in Pakistan, where civilian authorities have an intense dislike for the Army officer cadre—a sentiment that is amply reciprocated by the GHQ top brass. Since it is the major player in Pakistan, and certain to remain the centre of gravity, it is time for those who understand it to engage with it.

Indians have long taken to grandstanding democratic credentials and chafing at the thought of engaging coup planners like the Pakistan Army. But this sermonising hasn't gotten India any diplomatic progress nor earned it any brownie points. It's time to be realistic and open a dialogue with those New Delhi considers the perennial spoilers, and none better than the Indian Army to do that. Since it's the only institution that has never failed to pull New Delhi's chestnuts out of the fire, it will certainly do so again. A military-military dialogue is essential today; it's common sense and a politically mature statement.

<https://theprint.in/opinion/india-pakistan-armies-have-common-professional-dna-its-time-to-start-talking/2224308/>

## **Business Standard**

*Fri, 16 Aug 2024*

### **US relationship with India remains one of great importance: Pentagon**

US Defence Secretary Lloyd Austin is set to host his Indian counterpart, Defence Minister Rajnath Singh, at the Pentagon on August 23.

The relationship with India remains one of great importance. It's one of great importance to the Indo-Pacific as well. There's a visit coming up and when we have more to share on that, we certainly will, Pentagon Deputy Press Secretary Sabrina Singh told reporters at a news conference here on Thursday.

During the meet, the two leaders are expected to discuss a wide range of bilateral and regional issues, as well as ways to strengthen ties between the world's two largest democracies.

Sabrina Singh did not share details of the meeting, saying I'm not going to get ahead of the secretary or any meetings that he's doing.

As always, we will have a readout of his meeting. I just don't have more to provide on the front end, but we will on the back end, as we always do, she added.

The Pentagon official underscored that India and the US share a very strong military relationship.

The (defence) secretary, you know, visited India on one of his trips to the Indo-Pacific. India is an important partner when it comes to the Indo-Pacific and much of the NDS (National defence Strategy) that continues to guide. This department is focused on the Indo-Pacific and our pacing challenge of China and India has shown to be a great partner in that. So, our military to military relationship is strong, Sabrina Singh said.

Rajnath Singh is the highest-ranking Indian cabinet ministers scheduled to visit the United States since Prime Minister Narendra Modi was sworn in for his third term in June this year.

[https://www.business-standard.com/external-affairs-defence-security/news/us-relationship-with-india-remains-one-of-great-importance-pentagon-124081600024\\_1.html](https://www.business-standard.com/external-affairs-defence-security/news/us-relationship-with-india-remains-one-of-great-importance-pentagon-124081600024_1.html)



*Tue, 14 Aug 2024*

## **Flying Tejas was a great experience, says German Air Force Chief**

The Chief of the German Air Force Lieutenant General Ingo Gerhartz has termed his sortie on Indian Air Force's indigenous Indian fighter jet Tejas as a "great experience". He is in India for the India Air Force exercises Tarang Shakti. It is the Indian Air Force's largest air exercise.

The participating countries include Germany, France, Spain, the UK, Greece, Australia, Bangladesh, Singapore, the UAE, and the US.

Speaking to our diplomatic correspondent Sidhant Sibal, he said, " For the German Air Force, it was the first time that we practiced in India with the Indian Air Force. The Indian Air Force organised an excellent multinational exercise".

Germany participated in the exercises with five Eurofighter jets and an A400M transport aircraft. Full Interview:

Sidhant Sibal: Your first reflections of Indian Air Force's Tarang Shakti exercises?

German Air Force chief Lieutenant General Ingo Gerhartz: For the German Air Force, it was the first time that we practiced in India with the Indian Air Force. The Indian Air Force organised an excellent multinational exercise. Together with the Spanish, French and British air forces, we practiced intensively for more than a week. As it was the first exercise, the initial focus was on getting to know each other. As the exercise progressed, the tasks became more and more operational. In the end, we flew through complex scenarios.

Sidhant Sibal: What has been the focus of the exercises for the German side?

German Air Force chief Lieutenant General Ingo Gerhartz: The exercise was especially for us and our partners as a sign that we stand side by side. That we can act together. Pacific Skies and the last of our five exercises, Tarang Shakti, were never against anyone but always for us and our partners.

Sidhant Sibal: What kind of German assets are involved in the exercises if you can talk about that.

German Air Force chief Lieutenant General Ingo Gerhartz: We took part in Tarang Shakti with five Eurofighter jets and an A400M transport aircraft.

Sidhant Sibal: You have met your Indian counterpart several times, what have been conversations like?

German Air Force chief Lieutenant General Ingo Gerhartz: I have often met with the Indian Air Force Chief, Air Chief Marshal Vivek Ram Chaudhari in recent years. He was also recently in Germany as my guest at the International Aviation Exhibition in Berlin. Of course, I also talked to him about future opportunities for collaboration. We don't want our visit to be a one-off.

Sidhant Sibal: How do you see India, German air cooperation in the Indo Pacific?

German Air Force chief Lieutenant General Ingo Gerhartz: India is one of our most important partners in the region and the most significant. We have a great interest in intensifying this partnership together with the Indian Air Force.

Sidhant Sibal: Your take on India's Tejas?

German Air Force chief Lieutenant General Ingo Gerhartz: I myself had the opportunity to fly in a Tejas during Tarang Shakti. A great experience. The Indian Air Force is probably the most diverse in the world and that's a great thing.

Sidhant Sibal: There is a war in Europe, the Russia Ukraine war, what are your assessments? How has it changed the security for the continent

German Air Force chief Lieutenant General Ingo Gerhartz: My three most important takeaways from the war against Ukraine are: 1. Protecting the population with an effective air defense system saves lives and is essential. 2. no war can be won without a functioning command and control system and 3. the warehouses must be filled. Ammunition and supplies must be available in sufficient quantities.

<https://www.wionews.com/india-news/flying-tejas-was-a-great-experience-says-german-air-force-chief-750036>



*Thu, 15 Aug 2024*

## **India's strategic foray into Central America: Reliance Jio, C-DOT spearhead cybersecurity push in El Salvador, Guatemala**

India is rapidly expanding its influence in Central America, particularly in the telecommunications and cybersecurity sectors. With a focus on El Salvador and Guatemala, India is set to make significant inroads, leveraging advanced technology and strategic partnerships to enhance connectivity and security in these nations. The recent visit of a high-level team from the Centre for Development of Telematics (C-DOT) to El Salvador and Guatemala, along with representatives from Indian telecom giant Reliance Jio, marks a critical step in this direction.

### **El Salvador: Building the Foundation for 5G and Cybersecurity**

El Salvador is emerging as a key partner for India in Central America, particularly in the areas of telecommunications and cybersecurity. During a recent visit, a delegation led by C-DOT engaged in discussions with the Secretariat of Innovation of El Salvador, focusing on a pilot project aimed at enhancing cybersecurity and establishing an early warning system. This initiative is part of a broader effort to strengthen the digital infrastructure in El Salvador, ensuring the nation is better prepared to handle cyber threats and natural disasters.

Ambassador Manoj Kumar, who played a pivotal role in facilitating these discussions, highlighted the importance of this collaboration. The involvement of major Indian companies like Reliance Jio underscores India's commitment to supporting El Salvador's technological advancement. Reliance Jio, renowned for its leadership in 5G technology, participated in talks centered around both the technical and financial aspects of introducing 5G in El Salvador. This move is seen as a significant step toward revolutionizing the country's telecommunications sector, providing faster, more reliable internet services to its population.

Earlier this year, FinancialExpress.com was the first to report the foundation for this collaboration was laid when Ibrajim Bukele, Advisor to the President of El Salvador, led a high-level delegation to Mumbai. The delegation engaged in discussions with Reliance Jio to explore joint ventures in 5G technology and to tailor solutions that meet the specific needs of the Central American region. This visit, which also included top officials from El Salvador's Ministry of Public Works and Transportation, signified a mutual commitment to enhancing connectivity and infrastructure.

In addition to telecommunications, the El Salvador delegation visited various infrastructural projects in India, gaining valuable insights into manufacturing processes and operational techniques. This knowledge transfer is expected to foster future collaborations, particularly in the automotive industry, where discussions with Ashok Leyland centered on potential partnerships in bus manufacturing and operations.

### **Guatemala: Strengthening Disaster Preparedness Through Technology**

In Guatemala, India's focus has been on enhancing disaster preparedness and response capabilities through advanced technology. Ambassador Manoj Kumar's recent meetings with representatives from C-DOT India, Claro Guatemala, and Conred centered on implementing an advanced early warning system. This system, powered by Indian technology, aims to improve Guatemala's ability to predict and respond to natural disasters, which are frequent in the region.

The discussions in Guatemala also laid the groundwork for the upcoming visit of India's Minister of State (MoS), P Margherita, scheduled for next week. Ahead of this significant visit, Ambassador Manoj Kumar has been actively engaging with Guatemalan officials, including Foreign Minister CR Martinez, to discuss the key areas of collaboration that will be on the agenda. The meetings aim to solidify the progress made in the telecom and cybersecurity sectors and explore new avenues for cooperation that can be formalized during the MoS's visit.

The focus of the forthcoming discussions is expected to include the expansion of the early warning system project and the potential for introducing Indian 5G technology into Guatemala's telecom sector. These efforts will help strengthen existing ties and open new doors for collaboration in technology, infrastructure, and beyond. The MoS's visit is anticipated to further cement India's role as a key partner in Guatemala's development, especially in enhancing its disaster management capabilities and advancing its telecommunications infrastructure.

### **A Strategic Move in the Geopolitical Landscape**

India's growing engagement with Central American nations like El Salvador and Guatemala is not just about technology and infrastructure; it is also a strategic move in the broader geopolitical landscape. By fostering strong relationships with these countries, India is positioning itself as a key player in the region, countering the influence of other global powers while promoting its own technological and economic interests.

The introduction of 5G technology in El Salvador and the enhancement of disaster preparedness in Guatemala are just the beginning of what promises to be a long-term partnership between India and these Central American nations. As these collaborations deepen, India will continue to play a pivotal role in shaping the technological landscape of the region, driving progress, and fostering sustainable development.

### **Bottomline**

India's strategic foray into Central America, particularly through its initiatives in El Salvador and Guatemala, marks a significant milestone in the country's efforts to expand its global footprint. By leveraging its technological expertise and fostering strong bilateral relations, India is set to make lasting contributions to the region's telecommunications and cybersecurity sectors, paving the way for a more connected and secure future.

The upcoming visit by MoS P Margherita will be a crucial step in advancing these partnerships, setting the stage for even more robust cooperation between India and Central America.

<https://www.financialexpress.com/business/defence-indias-strategic-foray-into-central-americanbspreliance-jio-c-dot-spearhead-cybersecurity-pushnbspin-el-salvador-guatemala-3583692/>



**Press Information Bureau**  
**Government of India**

**Ministry of Science & Technology**

*Wed, 14 Aug 2024*

## **Safe microbial substitute can replace synthetic surfactants in the food industry**

Cost-effective biosurfactants, a healthier substitute for synthetic surfactants useful for the food industry, can be produced using green substrates from agro-industrial waste.

Surfactants are molecules that slither across surfaces of oil and water, water and oil, or air and water to form an emulsion. Surfactants are very useful in the food industry as lubricants and foamers to emulsify fats in batters, improve shelf life, as dispersing agents, and retain moisture.

However, the accelerated usage of synthetic food additives and emulsifiers in dietary goods has led to imbalances in the microbiome of the body, gut-related disorders and affect the intestinal barrier permeability leading to declination of beneficial microbiota. Therefore, an alternative option is essential.

Microbial biosurfactants obtained from various microbial sources exhibit high emulsification, solubilization, foaming, adsorption, and other physical characteristics. Also, they are very stable in a wide range of pH, temperature, and salinity, making them suitable for food applications. Biosurfactants are eco-friendly biomolecules and do not impart toxic effects; therefore, they can be considered safe for human consumption.

A research group led by Prof. Ashis K Mukherjee, Director, IASST, Prof. M. R. Khan and Anushree Roy from IASST, Guwahati, critically analyzed the application of biosurfactants in food industries, highlighting the challenges in the large-scale commercialization of biosurfactants.

In the food industry, besides bakeries and salad dressings, biosurfactants can be used for heavy metal removal from vegetables to boost immunity in fish, providing a protective effect against the pathogen. Also, it can be employed in food products as a natural antioxidant to prevent early spoilage. Their work has been published in the Journal Food control (Elsevier).

The study explores using green substrates from agro-industrial waste for cost-effective biosurfactant production, utilizing genetic engineering, recombinant DNA technologies, and nanotechnology to improve yield.

This study also suggested an in-depth toxicological study, dose assessment, and synergic effects of biosurfactants with other food components to charter approvals for food inclusion. In this regard,

researchers need to focus on safety assessment and less expensive, state-of-the-art technologies in coordination with the industrialists to maximize biosurfactants' production and expand their market space.

Publication Link: <https://doi.org/10.1016/j.foodcont.2024.110465>

<https://pib.gov.in/PressReleasePage.aspx?PRID=2045272>

# THE ECONOMIC TIMES

*Fri, 16 Aug 2024*

## **ISRO successfully launches third and final developmental flight SSLV-D3-EOS8 mission**

The Indian Space Research Organisation (ISRO) successfully launched an earth observation satellite on Friday, marking the third and final development flight of the Small Satellite Launch Vehicle-03 (SSLV-D3).

This mission follows the SSLV-D2-EOS07 launch in February 2023 and is the third mission ISRO has conducted in 2024, following the PSLV-C58/XpoSat mission in January and the GSLV-F14/INSAT-3DS mission in February.

The SSLV-D3, ISRO's smallest rocket, standing at 34 meters in height, was initially scheduled to launch on August 15 at 9:17 AM IST. However, it was rescheduled and successfully launched on August 16 at 9:19 AM IST from the Satish Dhawan Space Centre.

### **Isro SSLV-D3-EOS8 Mission Objectives**

The primary objectives of the SSLV-D3-EOS-08 mission include designing and developing a microsatellite, creating payload instruments compatible with the microsatellite bus, and incorporating new technologies required for future operational satellites, ISRO said.

With today's mission, ISRO completes the developmental flight of the smallest rocket which can carry satellites weighing up to 500 kg and can place them into Low Earth Orbit (of up to 500 km above Earth).

The mission would also give a boost to NewSpace India Ltd, the commercial arm of ISRO to take up commercial launches using such Small Satellite Launch Vehicles with the industry.

### **Isro EOS Satellite Specifications**

Built on the Microsat/IMS-1 bus, the Earth Observation Satellite carries three payloads: Electro Optical Infrared Payload (EOIR), Global Navigation Satellite System-Reflectometry payload (GNSS-R), and SiC UV Dosimeter. The spacecraft has a mission life of one year.

It has a mass of approximately 175.5 kg and generates power of around 420 W. The satellite interfaces with the SSLV-D3/IBL-358 launch vehicle, ISRO said.

The first payload EOIR is designed to capture images in the Mid-Wave IR (MIR) and Long-Wave IR (LWIR) bands, both during the day and night, for applications such as satellite-based surveillance, disaster monitoring, environmental monitoring, fire detection, volcanic activity observation, and industrial and power plant disaster monitoring.

The second GNSS-R payload demonstrates the capability of using GNSS-Rbased remote sensing for applications such as ocean surface wind analysis, soil moisture assessment, cryosphere studies over the Himalayan region, flood detection, and inland waterbody detection.

The third payload -- SiC UV Dosimeter monitors UV irradiance at the viewport of the Crew Module in the Gaganyaan Mission and serves as a high-dose alarm sensor for gamma radiation.

<https://economictimes.indiatimes.com/news/science/isro-successfully-launches-third-and-final-developmental-flight-sslv-d3-eos8-mission/articleshow/112555681.cms>



*Thu, 15 Aug 2024*

## **Indian Institute of Astrophysics astronomers find new method to predict amplitude of upcoming solar cycle**

Astronomers from the Indian Institute of Astrophysics (IIA) have found a new method to predict the amplitude of the upcoming solar cycle. Besides, their research can also help in space weather forecasting.

The astronomers have discovered a new correlation using 100 years of solar data from the IIA's Kodaikanal Solar Observatory.

The intricacies of the solar cycle and forecasting space weather are important fields of current research, including in India. Space weather is concerned with the varying conditions within the solar system and its heliosphere influenced by the sun and solar wind.

### **What is space weather?**

“The main components of space weather are the solar wind, coronal mass ejections, and solar flares. They can compress the magnetosphere of the Earth and trigger geomagnetic storms, which can affect communication and power transmission, damage spacecraft electronics, and threaten the lives of astronauts. Thus, space weather has a profound influence on modern civilization,” said the Department of Science and Technology.

Astronomers use many different ways to forecast the strength of the next solar cycle. This includes theoretical calculations based on dynamo models, extrapolations, precursor methods, etc. The precursor method uses the value of some measure of solar activity at a specified time to predict the strength of the following solar maximum.

### **Number of sun spots**

In a recently-published work, IIA researchers discovered that the width of the supergranular cells on the solar surface during the minimum year of the solar cycle is related to the number of sunspots seen during the subsequent solar cycle maximum.

This simple method can be used in space weather forecasting. The scientists studied the solar chromospheric images observed at 393.3 nm wavelength of Ca-K ion taken using the telescope that has been operating at the Kodaikanal Solar Observatory.

“Our analysis shows that these supergranular lane widths were positively correlated with the sunspot number. We found that the supergranular lane widths obtained near the mid-latitudes during the period of sunspot cycle minima are strongly correlated to the amplitude of the following sunspot cycle,” said K.P. Raju from IIA, the lead author of the study.

<https://www.thehindu.com/sci-tech/science/iaa-astronomers-find-new-method-to-predict-amplitude-of-upcoming-solar-cycle/article68528868.ece>

