

सितम्बर

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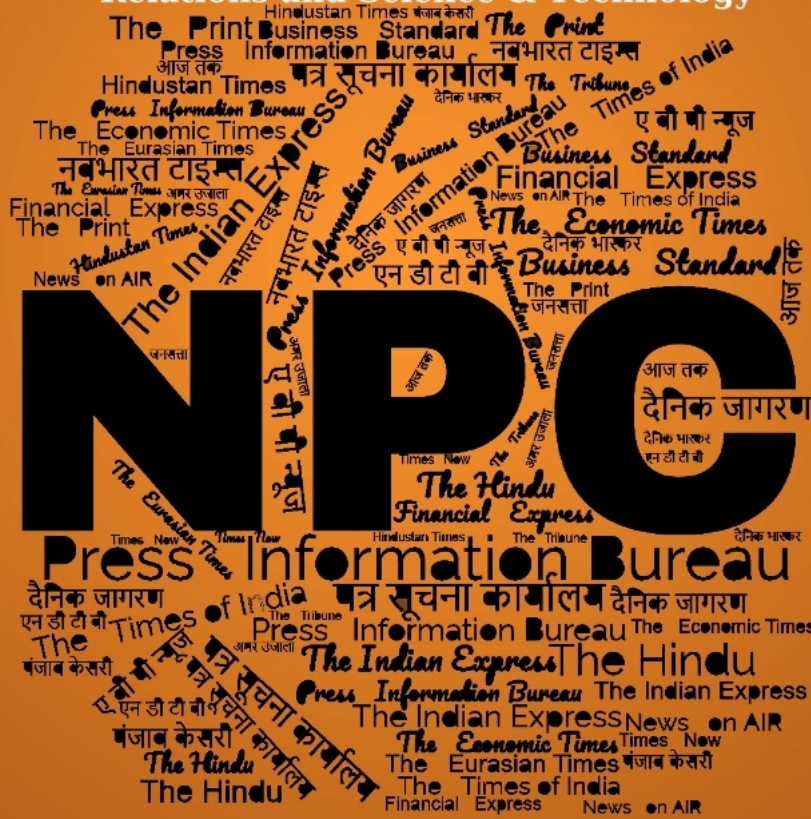
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# समाचार पत्रों से चयनित अंश Newspapers Clippings

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

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Fri, 13 Sep 2024

## डीआरडीओ और भारतीय नौसेना को बड़ी कामयाबी, सरफेस टू एयर मिसाइल का सफल परीक्षण

भारतीय नौसेना और डीआरडीओ ने गुरुवार को ओडिशा तट से कम दूरी की वर्टिकली लॉन्च शॉर्ट रेंज सरफेस टू एयर मिसाइल का सफल परीक्षण किया.

यह उड़ान परीक्षण आईटीआर रेंज लांचर से किया गया, जिसमें कम ऊंचाई पर उड़ रहे एक उच्च गति वाले हवाई लक्ष्य को निशाना बनाया गया.

इस बारे में जानकारी देते हुए रक्षा मंत्रालय ने कहा कि मिसाइल प्रणाली ने लक्ष्य का पता लगाया और उसे भेद दिया.

आईटीआर रेंज से किया गया परीक्षण

इसके साथ ही कहा, “रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) और भारतीय नौसेना ने ओडिशा तट से दूर चांदीपुर में एकीकृत परीक्षण रेंज (आईटीआर) से वर्टिकल प्रक्षेपित कम दूरी की सतह से हवा में मार करने वाली मिसाइल (वीएल-एसआरएसएएम) का सफलतापूर्वक उड़ान परीक्षण किया.”

मंत्रालय ने कहा कि परीक्षण का उद्देश्य हथियार प्रणाली के कई अद्यतन तत्वों को प्रमाणित करना था, जिसमें ‘प्रॉक्सिमिटी फ्यूज’ और ‘सीकर’ भी शामिल थे.

रक्षा मंत्री ने की डीआरडीओ और भारतीय नौसेना की सराहना

मंत्रालय ने एक बयान में कहा, “इस प्रणाली के प्रदर्शन की आईटीआर चांदीपुर में तैनात रडार इलेक्ट्रो-ऑप्टिकल ट्रैकिंग सिस्टम और टेलीमेट्री जैसे विभिन्न उपकरणों द्वारा सावधानीपूर्वक निगरानी व पुष्टि की गई.”

इस प्रक्षेपण की निगरानी विभिन्न डीआरडीओ प्रयोगशालाओं के वरिष्ठ वैज्ञानिकों और भारतीय नौसेना के प्रतिनिधियों द्वारा की गई.

रक्षा मंत्री राजनाथ सिंह ने डीआरडीओ और भारतीय नौसेना की टीमों की उनकी उपलब्धि के लिए सराहना करते हुए कहा कि यह परीक्षण वीएल-एसआरएसएएम हथियार प्रणाली की विश्वसनीयता और प्रभावशीलता की पुष्टि करता है.

डीआरडीओ के अध्यक्ष तथा रक्षा अनुसंधान एवं विकास विभाग के सचिव डॉ. समीर वी. कामत ने भी इस परीक्षण में शामिल टीमों को बधाई दी और इस बात पर जोर दिया कि यह प्रणाली भारतीय नौसेना की परिचालन क्षमताओं को महत्वपूर्ण रूप से बढ़ाएगी और बल गुणक के रूप में कार्य करेगी.

<https://ndtv.in/india/indian-navy-drdo-successfully-flight-test-vertical-launch-short-range-surface-to-air-missile-6553708>



*Thu, 12 Sep 2024*

## **DRDO & Indian Navy successfully flight test Vertical Launch Short Range Surface-to-Air Missile off Odisha coast**

Defence Research & Development Organisation (DRDO) and the Indian Navy successfully conducted the flight test of the Vertical Launch Short Range Surface-to-Air Missile (VL-SRSAM) from the Integrated Test Range (ITR) in Chandipur, off the coast of Odisha, on September 12, 2024, at approximately 1500 hours. The flight test was carried out from a land-based vertical launcher, targeting a high-speed aerial target flying at a low altitude. The missile system successfully tracked and engaged the target.

This test aimed to validate multiple updated elements of the weapon system, including the Proximity Fuse and Seeker. The performance of the system was meticulously tracked and confirmed by various instruments such as the Radar Electro-Optical Tracking System and telemetry deployed at ITR Chandipur.



Raksha Mantri Shri Rajnath Singh, praised the teams from DRDO and the Indian Navy for their achievement, stating that this test reaffirms the reliability and effectiveness of the VL-SRSAM weapon system.

Dr Samir V Kamat, Chairman, DRDO and Secretary, Department of Defence Research and Development also congratulated the teams involved, emphasising that the system will significantly enhance the operational capabilities of the Indian Navy and serve as a force multiplier.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2054307>

## Defence News

## Defence Strategic: National/International



**Press Information Bureau**  
Government of India

**Ministry of Defence**

*Thu, 12 Sep 2024*

### **Indian Army Contingent Departs For India-Oman Joint Military Exercise AL NAJAH V**

The Indian Army contingent departed today for the 5th edition of India-Oman Joint Military Exercise AL NAJAH. The exercise is scheduled to be conducted from 13th to 26th September 2024 at Rabkoot Training Area in Salalah, Oman.

Exercise AL NAJAH has been held biennially since 2015, alternating between India and Oman. Last edition of the same exercise was conducted at Mahajan in Rajasthan.

The Indian Army contingent comprising 60 personnel is being represented by a Battalion of the Mechanised Infantry Regiment along with personnel from other arms and services. The Royal Army of Oman contingent also comprising of 60 personnel will be represented by the troops of Frontier Force.

Aim of the Joint Exercise is to enhance joint military capability of both sides to undertake counter terrorism operations under Chapter VII of the United Nations Charter. The exercise will focus on operations in the Desert environment.

Tactical drills to be rehearsed during the exercise include Joint Planning, Cordon and Search Operation, Fighting in Built Up Area, establishment of Mobile Vehicle Check Post, Counter Drone and Room Intervention, among others. Combined field training exercises that simulate real-world counter-terrorism missions have also been planned.

Exercise AL NAJAH V will allow both sides to exchange best practices in tactics, techniques and procedures for joint operations.

It will foster interoperability, goodwill and camaraderie between the two armies. Additionally, the joint exercise will strengthen defence cooperation and further enhance the bilateral relations between the two friendly nations.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2054052>



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

**Ministry of Defence**

*Thu, 12 Sep 2024*

**Raksha Mantri Shri Rajnath Singh says Tarang Shakti Exercise will strengthen cooperation, coordination & trust with friendly countries**

**“Tarang Shakti underscores the growing stature of Indian Armed Forces”**

**“The resolve of making India Aatmanirbhar in Defence is demonstrated by Ex Tarang Shakti”**

Raksha Mantri Shri Rajnath Singh has termed Multinational Exercise 'Tarang Shakti' as an effort to strengthen cooperation, coordination and trust with the partner countries.

Addressing the gathering at the Distinguished Visitors' Day event in the second phase of the multinational exercise in Jodhpur, Shri Rajnath Singh said that through Tarang Shakti, India has further strengthened its defence ties with all partner countries and instills confidence among them that whenever the need arises, we all will stand together.

Reiterating India's vision of mutual coexistence and cooperation, Raksha Mantri said that our nation believes in all nations marching together holding each others hands.

“When an exercise of such complexity and large magnitude takes place, soldiers with different work cultures, air combat experiences and war fighting principles learn a lot from each other,” Raksha Mantri said.

Raksha Mantri said, “Today’s landmark event is an opportunity to celebrate the grand achievements of the Indian Air Force. We are not only celebrating the achievements of being the fastest growing economy, but also taking pride that our armed forces are now being considered as one of the most powerful in the world.”

Elaborating further, Raksha Mantri said, “At the time of independence the Indian Air Force had only six squadrons of two types of aircraft. Similarly, the rest of the war equipment was not only old but also limited in number. But today, equipped with the best and modern aircrafts from around the world and next generation equipment, the Indian Air Force has transformed itself.”

Referring to the recent collaboration of Hindustan Aeronautics Limited with the French company Safran Helicopter Engines, Raksha Mantri said that we have transformed ourselves from being only an importer of arms and equipment to a nation which today exports arms and equipment to about 90 countries.

He further said, “Domestic defence sector has taken strong steps towards indigenisation in the manufacturing of weapons, platforms, aircraft etc. Today we have become self-reliant to a greater extent in the manufacturing of Light Combat Aircraft, Sensors, Radars and in executing electronic warfare.”

Minister of Culture and Tourism Shri Gajendra Singh Shekhawat also graced the Distinguished Visitors’ Day event at Exercise Tarang Shakti. Chief of Defence Staff (CDS) Gen Anil Chauhan, Chief of Air Staff (CAS) Air Chief Marshal VR Chaudhari, Chief of Army Staff (COAS) Gen Upendra Dwivedi, Chief of Naval Staff (CNS) Adm Dinesh K Tripathi, and senior military leaders from friendly foreign nations attended the event.

The event showcased a display by the Agniveer Vayu Women Air Warrior Drill Team (AWDT) and demonstrations from the LCA Tejas, LCH Prachand, Sarang & SKAT teams.

Later in the day, Raksha Mantri inaugurated the prestigious International Defence and Aerospace Expo (IDAX-24), which showcased India’s commitment to indigenous defence manufacturing and aerospace innovation.

The event saw enthusiastic participation from startups, MSMEs, and major aeronautical industries, with sixty-eight industry players presenting cutting-edge defence technologies.

With participation from seven nations and twenty-one observer countries in phase two of the exercise, IDAX-24 underscored international collaboration, fostering dialogue, cooperation, and the exchange of expertise, further strengthening India’s global standing in defence and aerospace.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2054173>



## **Rajnath Singh inaugurates IDAX-24 Expo in Jodhpur, latest defence tech like anti-drone gun, pseudo satellite on display**

The India Defence Aviation Exposition (IDAX-24) was officially inaugurated by Defence Minister Rajnath Singh on September 12, 2024, at Jodhpur. This major event coincides with Exercise Tarang Shakti-24, one of the largest multinational air exercises hosted by the Indian Air Force (IAF).

IDAX-24, running from September 12 to 14, highlights the significant advancements and contributions of the Indian aviation industry. Defence Minister Rajnath Singh noted, "A while back, India was seen as an arm importer country but now we export to over 90 countries. India has become self-reliant to a great extent in field of sensors, radars, electronic warfare," during a press conference at the event.

"Since its inception, the IAF is known for its power and valour. The IAF has faced tough situation whenever the country needed it. The IAF has always shown its power ensuring that the nation's prestige is kept intact in front of the world. IAF has transformed itself with next generation equipment," he went on to say.

IDAX-24 promises a grand display of products and technologies, offering a unique opportunity for both domestic and international participants to engage with the latest advancements in aviation. The exposition will feature contributions from Defence Public Sector Undertakings (DPSUs), the Defence Research and Development Organisation (DRDO), private industries, and top startups. Singh also called upon friendly nations to elevate their partnership and collaboration to new heights in view of the evolving global challenges.

"While countries today are indulging in wars, India aims to unite and move forward together," he said. Singh's remarks come in the backdrop of calls for India's potential role in pushing peace talks between Russia and Ukraine as New Delhi has good relations with both the nations. The defence minister also noted that India is becoming largely self-reliant in areas like light combat aircraft, sensors, radars, and electronic warfare.

### **Indian Air Force's Expanding Role**

The Indian Air Force, known for its crucial role in safeguarding India's airspace, is also making significant contributions to various sectors of the economy. Exercise Tarang Shakti 2024 not only demonstrates India's enhanced defence capabilities but also reflects the broader economic impact of the IAF. By hosting this multinational exercise, the IAF underscores its role in both national security and international collaboration. — ANI (@ANI)

### **India Defence Aviation Exposition (IDAX-24)**

Parallel to Exercise Tarang Shakti, the IAF is hosting the India Defence Aviation Exposition (IDAX-24) from September 12 to 14 in Jodhpur. The exposition, inaugurated by Defence Minister

Rajnath Singh, will feature a wide range of products and technologies from the Indian aviation industry.

IDAX-24 is set to showcase innovations from Defence Public Sector Undertakings (DPSUs), the Defence Research and Development Organisation (DRDO), private industries, and leading startups.

This edition of IDAX-24 aims to present India's indigenous aviation capabilities to global air forces and industry leaders participating in Exercise Tarang Shakti. The exposition will provide a platform for Indian companies and startups to demonstrate their technological advancements, fostering opportunities for international collaboration and export growth. Participation from foreign countries is expected to enhance integration into global supply chains and co-development initiatives.

### **Innovative Technologies from Startups and MSMEs**

The IAF's Directorate of Aerospace Design (DAD) will participate in IDAX-24 alongside various startups. These startups are set to showcase a range of innovative technologies, including RF Guns to counter unmanned aerial threats, High Altitude Pseudo Satellites (HAPS), loitering ammunition, air-launched flexible assets, augmented reality/virtual reality (AR/VR) smart glasses for training, expandable active decoys, real-time aircrew health monitoring systems, and foldable field mats for rapid runway repairs. These technologies highlight the growing strength and potential of India's aerospace sector.

### **IAF's Support for Innovation and Self-Reliance**

The IAF is playing a crucial role in nurturing startups, MSMEs, and innovators through its Directorate of Aerospace Design. By providing dedicated mentoring and guidance, the IAF supports the development of advanced technologies that align with future defence requirements. This initiative is part of the broader government effort towards 'Atmanirbharta' (self-reliance), emphasizing the importance of indigenous innovation in strengthening India's defence capabilities.

### **Opportunities for Industrial Partners**

IDAX-24 serves as a significant platform for aviation and defence sector partners to engage with the IAF's Innovation Directorate and other key decision-makers. The exposition offers opportunities to witness and connect with the latest indigenous products and technologies. Interested parties can explore participation and collaboration opportunities through the official event website: IDAX-24.

Exercise Tarang Shakti 2024 and IDAX-24 together highlight India's advancements in defence and aerospace sectors. With a focus on showcasing indigenous technologies and fostering global partnerships, these events represent a milestone in India's journey towards self-reliance and international collaboration in the defence domain. The participation of foreign aircraft and companies in these events underscores India's growing role as a significant player in global defence and aerospace industries.

### **Advanced Aircraft Showcase at Exercise Tarang Shakti 2024**

While the Indian Air Force has previously exercised with many of these aircraft individually, Exercise Tarang Shakti 2024 integrates these platforms to create a comprehensive and realistic

simulation of a high-tech conflict. This exercise provides valuable insights into how these advanced systems perform together in a sophisticated combat environment, reflecting the evolving nature of global defence strategies.

**Famed A-10 Warthog Takes Center Stage** One of the most remarkable aircraft featured is the A-10 Warthog, renowned for its powerful GAU-8 Avenger rotary cannon, which fires 30 mm rounds. The A-10's nose gear is offset to accommodate the massive gun, underscoring its design focused on close air support. The aircraft has a storied history, having served in Afghanistan, Iraq, Kosovo, and Libya. Its role in these conflicts highlights its effectiveness in ground support, even as modern warfare increasingly relies on stand-off weapons.

**Japanese F-2 Fighter:** The 'Viper Zero' Another significant participant is the Japanese F-2 fighter aircraft, also known as the 'Viper Zero'. This name pays homage to the F-16 family and the World War II-era A6M Zero. The F-2, built by Mitsubishi, was among the first fighters equipped with an AESA radar, showcasing its advanced technology.

Despite its innovation, only 94 units entered service, and few have been seen outside Japan, adding to the F-2's unique status in the exercise. **UAE's Advanced F-16 E/F and Other Variants** The UAE's F-16 E/F Block 60 variants are also making their debut at Exercise Tarang Shakti. These aircraft represent some of the most advanced F-16s in service today. Greek and U.S. pilots are flying F-16 C/D Block 52 variants, testing their skills in the exercise.

The Emirati F-16s are noted for their technological advancements, while the Greek Air Force is upgrading to the Block 72 standard, which is anticipated to become the new benchmark for F-16 fleets. Lockheed Martin is offering the upgraded F-21 variant to the Indian Air Force, while Pakistan has inducted Block 52s into its air force.

**Boeing EA-18G Growler:** Electronic Warfare Excellence The Boeing EA-18G Growler, an electronic warfare aircraft based on the F/A-18 Super Hornet, is another standout at the exercise. The Growler provides electronic warfare capabilities to fighter strike packages, including jamming and potentially destroying enemy radars. Its presence at the exercise underscores the importance of electronic warfare in modern combat scenarios.

<https://economictimes.indiatimes.com/news/defence/rajnath-singh-inaugurates-idax-24-expo-in-jodhpur-latest-defence-tech-like-anti-drone-gun-pseudo-satellite-on-display/articleshow/113281032.cms>

## THE ECONOMIC TIMES

*Thu, 12 Sep 2024*

### **Tarang Shakti: "We are going to formalize pattern in which..." says Air Chief Marshal VR Chaudhari**

Addressing a press conference, Air Chief Marshal VR Chaudhari said that we are now going to formalize a pattern to hold exercises, particularly Tarang Shakti. "We are lacking a common data link to be able to share data with friendly foreign nations. The biggest lesson for us is to speed up

the process of procuring and setting up a data link that can have interoperability with other air forces as well for future exercises," Air Chief Marshal VR Chaudhari said on Thursday. "We are now going to formalize the pattern in which we will hold such exercises, particularly Tarang Shakti, a multilateral one," he further said.

Defence Minister Rajnath Singh on Thursday attended the multilateral aerial exercise 'Tarang Shakti 2024'. In his address, the Defence Minister said, "Indian Air Force and defence sector are moving ahead rapidly with resolution of self-reliant India".

He added that India's defence sector has taken strong steps towards indigenisation in the manufacture of weapons, platforms and aircraft. Singh said, "We have become self-sufficient to a large extent in things like Light Combat Aircraft, Censors, Radars and Electronic warfare, and we are constantly striving to move ahead in these areas."

'Tarang Shakti' has been organised in two phases. Its first phase was organised in Sullur, while its second phase is being organised in Jodhpur. He said that when any exercise takes place on such a large scale, the countries participating in it learn a lot from each other. When an exercise of such complexity, and of such a large magnitude, takes place, soldiers with different work cultures, different air combat experiences, and warfighting principles learn a lot from each other.

"We are not only the fastest growing economy in the world, but our armed forces are also considered one of the most powerful armed forces in the world," he said. The multilateral aerial exercise 'Tarang Shakti 2024' on Thursday also showcased the display of Surya Kiran aircraft and Tarang helicopters of the Indian Air Force (IAF).

<https://economictimes.indiatimes.com/news/defence/tarang-shakti-we-are-going-to-formalize-pattern-in-which-says-air-chief-marshal-vr-chaudhari/articleshow/113306403.cms>

# THE ECONOMIC TIMES

*Thu, 12 Sep 2024*

## **Eastern Ladakh row: India, China agree to work with 'urgency' to realise complete disengagement**

India and China on Thursday agreed to work with "urgency" and "redouble" their efforts to realise complete disengagement in remaining friction points in eastern Ladakh as NSA Ajit Doval held talks with Chinese Foreign Minister Wang Yi in St Petersburg with a focus on an early resolution of the lingering border standoff.

Doval conveyed to Wang that peace and tranquillity in border areas and respect for the Line of Actual Control (LAC) are essential for normalcy in bilateral ties, according to the Ministry of External Affairs (MEA). The Doval-Wang meeting took place in the Russian city on the sidelines of a conclave of national security advisors of the BRICS (Brazil-Russia-India-China-South Africa) nations.

"The meeting gave the two sides an opportunity to review the recent efforts towards finding an early resolution of the remaining issues along the Line of Actual Control, which will create conditions to stabilise and rebuild bilateral relations," the MEA said.

"Both sides agreed to work with urgency and redouble their efforts to realize complete disengagement in the remaining areas," it said in a statement. "The NSA conveyed that peace and tranquillity in border areas and respect for LAC are essential for normalcy in bilateral relations," the MEA said.

"Both sides must fully abide by relevant bilateral agreements, protocols, and understandings reached in the past by the two governments," it said.

The MEA said the two sides agreed that the India-China bilateral relationship is significant not just for the two countries but also for the region and the world. "The two sides also exchanged views on the global and regional situation," it said.

<https://economictimes.indiatimes.com/news/defence/eastern-ladakh-row-india-china-agree-to-work-with-urgency-to-realise-complete-disengagement/articleshow/113299691.cms>



*Thu, 12 Sep 2024*

## **Need to diversify production lines of LCA to meet demand: IAF Chief**

As the Indian Air Force (IAF) awaits deliveries of the indigenous Light Combat Aircraft (LCA)-Mk1A and India markets the fighter for exports, IAF Chief Air Chief Marshal VR Chaudhari has said there is the issue of matching up production capability with requirements. Mr. Chaudhari was addressing a press conference at the closing of Tarang Shakti, a multilateral air exercise, in Jodhpur on Thursday (September 12, 2024).

Union Defence Minister Rajnath Singh, who spoke at the event after a flypast by indigenous platforms, termed the exercise an effort to strengthen cooperation, coordination and trust with partner countries.

"Our present orders of 83 LCA-Mk1As, which will be followed up with 97 more, will definitely take a few years to fructify. The way forward is to diversify the production lines, have more public-private partnerships or joint ventures with private partners to have multiple weaponry lines as well as multiple production lines," ACM Chaudhari said in response to a question from The Hindu. "That is the way we can catch up with our requirements and be able to export to other nations as well," he said.

While recommending PPP or joint ventures, he said Hindustan Aeronautics Limited (HAL) should take the lead in any model evolved. In February 2021, the Defence Ministry had signed a ₹48,000 crore deal with HAL for 83 LCA-Mk1A, a fighter more capable than the current LCA-MK1 in service.

Following this, in August 2021, the HAL signed a \$716 mn deal with GE Aerospace for 99 F404 aircraft engines and support services for the LCA-Mk1A. As per contract, three LCA-MK1A were to be delivered to the IAF in February 2024 and 16 aircraft per year for subsequent five years. However, the first LCA-MK1A is yet to be delivered due to engine delays from GE Aerospace which has cited supply chain issues.

In this backdrop, the HAL has come up with an alternate plan to install used engines on the initial batch of jets as an interim measure if delays continue, as reported earlier. In addition to the 83 Mk1A aircraft ordered and 97 additional aircraft to be ordered, a larger and more capable LCA-Mk2 is under development which will be powered by the GE F-414 engines.

As of now, the IAF has committed to procuring around 120 LCA-Mk2. This makes at least 300 LCA variants are in the line up of orders for the near future.

<https://www.thehindu.com/news/national/need-to-diversify-production-lines-of-lca-to-meet-demand-iaf-chief/article68635099.ece>

## ThePrint

Thu, 12 Sep 2024

### **SIG Sauer 716 rifles are a stopgap. AK-203 is the future rifle of Indian armed forces**

The Indian Army's additional order of 73,000 SIG Sauer 716 G2 rifles, at a cost of Rs 840 crore, or \$100 million, under emergency procurement has triggered a spate of articles on India's never-ending quest for a state-of-the-art rifle. For this order, placed last month after the 72,400 ordered in 2019, the government was berated for flouting its policy of Atmanirbharta in defence, under which the import of small arms is banned.

The armed forces have for long been roasted for their ever-changing "Marvel comics"-style General Staff Qualitative Requirements (GQSRs), while the Defence Research and Development Organisation (DRDO) has come under fire for failing to develop an indigenous rifle. In the current instance, private defence manufacturer Vivek Krishnan, CEO of SSS Defence, too jumped into the fray, criticising the government for ignoring "made in India" weapons and throwing a challenge to test his rifle against global benchmarks.

Given the Army's 17-year-old quest for a state-of-the-art rifle, which began in 2007, all of the above are guilty as charged.

However, in all fairness, the current problems stem mostly from the poor management of the India-Russia joint production of AK-203 rifles under "Make in India", coupled with the urgent need of the Army to equip minimum essential frontline troops with a cutting-edge rifle to replace the unreliable INSAS rifle. More so, when adversaries, including terrorists, were armed with better weapons.

## **A chequered past**

Over the past 129 years, the Indian Army has been equipped with three types of modern rifles. The British Lee Enfield .303 calibre rifle was introduced in 1895 and its various progressive versions remained in service for 70 years until the mid-1960s.

The second rifle, the L1A1 7.62 mm self-loading rifle (semi-automatic), the British version of the famous Belgian FN-FAL 7.62 mm self-loading rifle, was introduced in the mid-1960s, remaining in service for 40 years. This weapon was manufactured under licence in India. The third rifle, the indigenous 5.56 calibre Indian Small Arms System (INSAS), was progressively introduced into service with effect from 1999.

The INSAS was based on the legendary AK-47 assault rifle, 250,000 units of which had been procured off the shelf in the late 80s and 90s as an interim measure for counter-insurgency operations to match the weaponry of the terrorists. From the very outset, the INSAS rifle has had a host of technical problems due to its flawed design, sub-standard metallurgy, and poor quality control during mass production. Despite the best efforts of the DRDO and ordnance factories to eradicate these problems, it lost the confidence of the infantry soldier—a very dangerous situation that affects morale and fighting capabilities in battle. In 2007, it was decided to replace the INSAS with a next-gen rifle.

The next 10 years, however, were wasted due to the Army's unrealistic GSQRs and its failure to standardise the calibre. So much so that it became the laughing stock of the world for specifying a rifle with two barrels—one to fire the 5.56 mm NATO round and the other for the 7.62 mm Russian round due to its perceived higher penetration. By 2000, rifle technology had reached its optimum level. All weapons produced thereafter have only been upgraded designs of both the rifle and the ammunition. The DRDO was unable to match the quality of NATO or Russian rifles due to dated technology and poor metallurgy.

The best approach for the Army was to manufacture a proven rifle under licence, with absolute transfer of technology, including future design improvements and development. It's to the government's credit that it took the bull by the horns in 2018 and decided to manufacture the Russian AK-203—the latest rifle designed by Russia's Kalashnikov Concern. In January 2019, an Intergovernmental Agreement (IGA) was signed between India and Russia.

But just prior to the decision to manufacture the AK-203, it was decided to import 72,400 SIG 716 rifles as a one-time measure for frontline troops, mainly to address morale issues arising from the perception that their rifles were inferior to those used by terrorists. Further immediate needs were to be met through direct imports of AK-203 rifles.

## **Correct approach, tardy execution**

On 3 March 2019, Prime Minister Narendra Modi laid the foundation stone of the manufacturing unit for the AK-203 assault rifle in Amethi's Ordnance Factory Board (OFB) facility, rightly taking credit for the initiative ahead of the parliamentary elections.

However, the project soon became mired in contract negotiations, specifically with respect to the cost of transfer of technology and the high royalty per rifle. The situation was further compounded by the higher-than-expected production cost per unit quoted by the OFB.

It took two years to finalise the contract, which was finally cleared by the Defence Acquisition Council, chaired by the Defence Minister, on 23 November 2021. Indo-Russia Rifles Private Limited was established as a joint venture between OFB (with a 50.5 per cent majority stake), Kalashnikov (42 per cent), and Rosoboronexport (7.5 per cent), Russia's state-owned defence export agency.

Through this joint venture, the rifles are to be manufactured at the Korwa Ordnance Factory in Amethi district of Uttar Pradesh. Under the contract, more than 6 lakh AK-203 rifles will be produced in India, with an unspecified number to be imported directly from Russia. The details of progress are unclear and it is likely that supply has been impacted by Russia's own needs for the Ukraine war. However, ThePrint reported in 2021 that 70,000 rifles were imported by the Indian Air Force under emergency procurement.

Manufacturing of the AK-203 finally took off in July this year, with 35,000 rifles delivered to the Indian Army. The rate of production per year is not in the public domain. In my view, it would take a minimum of five years before the entire Army is equipped. It is expected that the scope of the contract will be widened to cater for the needs of the IAF, Indian Navy, and the Central Armed Police Forces (CAPFs).

It is in light of this that the additional order for the SIG 716 rifles should be seen. It is simply not logistically practical for Indian manufacturers to meet this demand on their own.

### **Quality control**

The DRDO and Defence Public Sector Undertakings have long been notorious for poor quality control during mass production. This is true even for equipment manufactured under licence after the transfer of technology. Having commanded mechanised force at all levels, it is my experience that in the case of the ICV BMP-2 and the T-90 tank, there was a 25 per cent drop in quality compared to direct imports.

The INSAS rifle had cleared the Army's stringent field trials before its induction. It was a good rifle that could have been refined further. Its downfall came from poor metallurgy and lacklustre quality control during mass manufacturing. Soldiers lost confidence in it due to its unreliability and this, in turn, magnified all other shortcomings—which were relative and could have been improved in later versions.

I am keeping my fingers crossed that the AK-203 does not meet the same fate and that Russian commercial participation ensures the maintenance of the world-famous Kalashnikov reliability.

### **Man behind the gun**

The technical proficiency of any rifle ultimately translates into combat effectiveness through the skill of the man wielding it. However, soldiers the world over are notorious for poor marksmanship. According to US Army statistics, it's estimated that in conventional wars, 25,000 rounds were fired to kill one enemy soldier in World War II, 50,000 in the Korean War, and 200,000 with the advent of automatic rifles in Vietnam.

My estimate for counter-insurgency operations in Jammu & Kashmir is that 3,000 to 5,000 rounds are fired for each terrorist killed. While the stress of combat and the need to minimise casualties



using a large volume of suppressive fire are justifiable reasons, poor marksmanship standards and the failure to make the rifle an extension of the body are major contributing factors. The marksmanship standards of our soldiers are below average, mainly due to poor training methods, a lack of simulators, and a shortage of ranges.

Marksmanship is the most important factor in infantry combat. It requires theoretical training to understand the theory of small arms, practical training in handling the weapon to make it an extension of the body, zeroing (aligning the sight with the barrel), firing on ranges, and shooting under combat conditions. We do not allocate adequate training time, and most soldiers do not understand the theory of small arms and cannot zero their own rifles.

Each unit used to have a short range within unit areas, but these have fallen into disuse or disappeared altogether. Long ranges, which require a 3 km by 1 km area, have been encroached upon and gone into disuse. Baffle ranges to replace these are too few, giving inadequate time to infantry units to train. Very few simulators are authorised, and those that exist are of the previous generation. Field firing ranges are inadequate to practice combat shooting. The three battle schools of Northern Command are notable exceptions for realistic combat shooting. These need to be replicated in all formations.

The future rifle of the armed forces is the state-of-the-art AK-203. The government and armed forces must ensure that production reaches its designated levels at the earliest. Above all, quality control must be ensured.

<https://theprint.in/opinion/sig-sauer-716-rifles-are-a-stopgap-ak-203-is-the-future-rifle-of-indian-armed-forces/2263620/>

# ThePrint

*Thu, 12 Sep 2024*

## **After Rajnath Singh flags Tejas engine delay with US, GE comes up with new delivery schedule**

American engine maker General Electric (GE) has assured India of a fresh delivery schedule, starting November this year, for the F404-IN20 engines that will power the country's Tejas Mk1A aircraft, ThePrint has learnt.

Sources in the defence establishment said the commitment by GE came after Defence Minister Rajnath Singh raised the matter during his visit to the US last month.

“GE has given a new schedule...They will start the delivery of engines from November,” a high-ranking source told ThePrint. Sources further said GE has promised them two engines per month.

According to the contract between Tejas manufacturer Hindustan Aeronautics Limited (HAL) and GE in August 2021, the American firm was supposed to deliver 99 engines starting March this year

to cater to the IAF's order for the 83 light-combat Tejas Mk1A aircraft inked earlier that year. No delivery has been made yet.

Incidentally, the IAF is currently working on ordering an additional 97 Tejas planes to strengthen its fleet.

As reported by ThePrint earlier, one of the main reasons behind the delay in Tejas's delivery has been GE's failure to stick to the contract timeline. GE was to deliver engines at the rate HAL was to deliver the aircraft — 16 each financial year, according to the terms of the contract.

Government sources said GE had informed them there were supply issues and that re-certification of new vendors took time. However, they said one was never fully sure whether other dynamics were also not at play.

The first aircraft of the Tejas Mk1A series, LA 5033, took to the skies in March this year, after the delivery schedule was hit by a delay of at least four months if not more. The aircraft did not fly with a new engine but with Category B engines, which are reserve machines that may have been used in the past or those that had remained unused as part of an earlier deal with GE for the Tejas series.

Sources said HAL's production plans were on schedule, and that the engines would be integrated as soon as they came in. "Engines are a critical part. First, an engine is selected and then the aircraft is made around it. It is not that the Tejas can be fitted with any other engine. It is not a simple plug-and-play system," a source explained. HAL has set up a new production line in Nashik for the LCA Mk1As, besides the one in Bengaluru which can produce 16 aircraft in a year. The public sector defence company can now make a total of 24 aircraft.

As reported by ThePrint in 2019, the air force was staring at an alarming fall in its muscle, hit by an ageing fleet, low serviceability and HAL's slow pace. According to IAF projections back then, the squadron strength would be 27 by 2032 and a mere 19 by 2042 even if the 36 Rafales, six squadrons of Tejas and two more squadrons of Su-30 MKI were taken into account.

<https://theprint.in/defence/after-rajnath-singh-flags-tejas-engine-delay-with-us-ge-comes-up-with-new-delivery-schedule/2264403/>



Thu, 12 Sep 2024

## **Embraer Expands Aggressively into India's MTA Program, Strengthening Supply Chain**

Brazilian aerospace company Embraer is making bold moves to expand its presence in the global defence and aviation markets, with a strong focus on India. The company is not only keen on increasing its footprint but also aims to strengthen its supply chain by tapping into India's growing

aerospace industry. This comes at a time when India's Medium Transport Aircraft (MTA) program offers significant opportunities for growth and collaboration in the defence sector.

Embraer's ten-member high-level delegation is visiting Bangalore exploring local suppliers across multiple business segments, including defence, commercial aviation, and executive jets. "India has a robust aviation and defence industry, and we see strong viability for manufacturers and systems developers in India to be key suppliers to Embraer," said Roberto Chaves, Executive Vice-President of Global Procurement and Supply Chain at Embraer.

This outreach marks a strategic step for Embraer, as the company evaluates potential suppliers in areas such as aerostructures, composites, machining, sheet metal, and software development. Recognizing India's well-established aerospace engineering capabilities, Embraer is positioning itself to benefit from the country's skilled workforce and advanced technology.

### **MTA Program and the C-390 Millennium**

One of the primary drivers of Embraer's engagement with India is the Indian Air Force's MTA program, a crucial defence initiative aimed at modernizing its fleet. In response to the Indian Air Force's Request for Information (RfI) for the acquisition of 40 to 80 multi-role transport aircraft, Embraer is offering its C-390 Millennium, a state-of-the-art medium transport aircraft known for its versatility and advanced capabilities.

In February 2024, Embraer entered into a partnership with Mahindra Group, to offer the C-390 Millennium for the MTA program. This collaboration underscores the company's commitment to India's "Make in India" initiative, which encourages local manufacturing and assembly. Embraer and Mahindra are in discussions to potentially establish an assembly line in India for the C-390 Millennium, should it be selected for the program.

Frederico Lemos, Chief Commercial Officer of Embraer Defence & Security, emphasized the importance of India as a strategic partner: "Embraer has a long-standing presence in India with aircraft and solutions across defence, commercial aviation, and executive jets. The C-390 Millennium is the ideal solution for the Indian Air Force's MTA program."

The MTA program offers Embraer a significant growth opportunity in India's defence sector, which has been increasingly looking to enhance its operational capabilities. In addition to the C-390's versatility, Embraer and Mahindra are aiming to create a robust local supply chain that includes long-term support programs for maintenance and sustainability.

### **Strengthening Supply Chain in India**

India's potential as a key supplier for Embraer extends beyond just the MTA program. The company has already established a presence in the country with over 44 aircraft in use across commercial, executive, and defence segments. The Indian Air Force operates three EMB 145 AEW "Netra" military aircraft, while the Indian government uses five Embraer VIP jets.

Embraer's aggressive approach to its supply chain in India highlights the importance of the country in its global strategy. "We are driven by a common vision, which is to drive the aviation capabilities of Brazil and India to greater heights, and to deliver value to our customers around the world," Chaves added.

The company's interest in aerostructures, wire harnesses, and other manufacturing elements signals its intent to rely on India's advanced engineering and manufacturing capabilities for future growth.

### **Rising Competition: Lockheed Martin's Meeting in Bangalore**

As Embraer pushes forward with its expansion, the competition for partnerships in India's aerospace industry is intensifying. Recently, US based Lockheed Martin, which is pitching its C-130J Super Hercules Tactical airlifter for IAF's MTA program, held a meeting with its suppliers in Bangalore to strengthen its supply chain presence in India.

And it has also announced tie-up with Tata Advanced Systems Limited (TASL) to deepen their collaboration on the C-130J and setting up an MRO in India to support the IAF's existing fleet of 12 C-130Js, as well as service other global Super Hercules fleets.

<https://www.financialexpress.com/business/defence/embraer-expands-aggressively-into-indias-mta-program-strengthening-supply-chain/3609166/>



Thu, 12 Sep 2024

## **Is Indonesia set to boost its defence with India's BrahMos missiles after the Philippines deal?**

India's BrahMos Aerospace is set to make another significant defence deal with an ASEAN nation, as Indonesia is expected to sign an agreement for the purchase of BrahMos supersonic missiles. This comes after the successful sale and delivery of the missile system to the Philippines earlier, further boosting India's defence exports and regional strategic ties.

A high-level Indonesian delegation, led by Maj. Gen. Yunianto from the National Resilience Institute of Indonesia, visited BrahMos Aerospace on Wednesday to discuss potential military cooperation. During the visit, Atul Dinkar Rane, CEO & MD of BrahMos Aerospace, provided the delegation with a detailed overview of the supersonic BrahMos missile and its capabilities.

In an earlier conversation with Financial Express Online, on the potential deal, Rane stressed the uniqueness of the BrahMos missile system, stating, "We are at a very good stage. We are in business, so we don't have any intent to lose hope from any business lead. All the countries know that this is the best weapon system in the whole world with best accuracy levels in supersonic speeds, giving no response time to the enemy."

Indonesia, which has been modernizing its military, is particularly interested in the air-launched version of the BrahMos missile. As part of its broader defence strategy, Indonesia has been keen on acquiring advanced missile systems to enhance its territorial defence capabilities, especially in light of regional tensions in the South China Sea.

Defence analysts believe that Indonesia's interest in the BrahMos missile is driven by its need to deter regional threats. According to Prof Srikanth Kondapalli from Jawaharlal Nehru University, "In the case of both Indonesia and Vietnam, Russia is already selling SU-27 fighters and Kilo Class submarines to both countries. Indonesia is keen on the air version of BrahMos from India."

India has been actively promoting the export of the BrahMos missile, a joint venture between India and Russia, to friendly nations. Russian officials have expressed no objection to India exporting the system to Indonesia and other countries, making the deal more feasible.

Should the deal with Indonesia materialize, it will further solidify India's presence in the ASEAN defence market, following its successful BrahMos sale to the Philippines. This would also mark another step forward in India's efforts to expand its defence exports, while deepening military cooperation with Southeast Asian nations.

<https://www.financialexpress.com/business/defence/is-indonesia-set-to-boost-its-defence-with-indias-brahmos-missiles-after-the-philippines-deal/3608910/>

## THE ECONOMIC TIMES

*Fri, 13 Sep 2024*

### **Here's how 'Storm Shadow' missiles could boost Ukraine's firepower in its war against Russia**

The United Kingdom has reportedly given clearance for Ukraine to use Storm Shadow cruise missiles to target Russian territories. This move could escalate the ongoing conflict between the two nations.

The Storm Shadow is a long-range, air-launched cruise missile co-developed by the UK and France. It has a range of around 500 km and has been integrated into Ukrainian fighter jets, including the Su-24 bombers. So far, Ukraine has used these missiles within its own territory to combat Russian forces.

Recent reports indicate that the UK has lifted restrictions on Ukraine's use of these missiles, which could now be deployed for strikes inside Russia. This change in strategy might push Moscow's red lines in the conflict.

Russia has expressed serious concerns about this potential shift. Kremlin spokesperson Dmitry Peskov stated, "Moscow foresees the likelihood of Ukraine using long-range missiles and other weapons supplied by the United States and its NATO allies to attack deep inside Russian territory. Ukraine will obviously do this, and we are taking that into account."

Russia has hinted at revising its nuclear doctrine in response to Western escalations. Peskov mentioned that changes to the current nuclear policy, set by President Vladimir Putin four years ago, are now necessary "against the backdrop of the challenges and threats provoked by the countries of the so-called collective West."

Meanwhile, India is making diplomatic efforts to mediate peace between Russia and Ukraine. National Security Adviser Ajit Doval is currently in Moscow, carrying a peace plan from Prime Minister Narendra Modi. India, which maintains friendly relations with both Russia and Ukraine, seeks to assist in ending the conflict.

The international community watches closely, concerned that the use of longrange missiles by Ukraine could severely escalate tensions and potentially lead to a more significant conflict.

<https://economictimes.indiatimes.com/news/defence/how-storm-shadow-missiles-could-boost-ukraines-firepower-in-its-war-against-russia/articleshow/113307700.cms>

## THE ECONOMIC TIMES

*Thu, 12 Sep 2024*

### **We want to give India F-16s: US Major General Piffarerio**

Major General David A Piffarerio, Mobilization Assistant to the Deputy Commander of the US Pacific Air Forces (PACAF), said on Thursday that the United States is ready to offer F-16 fighter jets to India.

Speaking with reporters on India's defence sector and F-16 Fighting Falcon fighter jets, Major General Piffarerio said, "...The more options that are out there, I think the stronger the Indian Air Force is going to be in the future." He added, "We certainly want to give them the best that we have -- the F-16s. But ultimately it's going to be a choice for the Indian Air Force on what they want to do with their air defence."

Notably, the US State Department in June had announced the clearance of two possible sales to Taiwan of F-16 parts and supporting equipment, valued at a total of USD 300 million for Taiwan.

Pentagon's Defence Security Cooperation Agency (DSCA) said the packages would include standard (USD 220 million) and non-standard (USD 80 million) spare and repair parts, components, consumables, and accessories for F-16 aircraft, as well as other technical and logistics support services, Focus Taiwan reported, citing the press releases.

The DSCA stated that the proposed sales would further strengthen Taiwan's requirements "to meet current and future threats by maintaining the operational readiness of [Taiwan's] fleet of F-16 aircraft."

According to the DSCA, the package would also support regional economic growth, political stability, military balance, and enhanced Taiwanese security. The US Congress was informed of the possible sales, according to the DSCA. The permission does not imply that an agreement has been signed for the equipment, according to Focus Taiwan.

<https://economictimes.indiatimes.com/news/defence/we-want-to-give-india-f-16s-us-major-general-piffarerio/articleshow/113299650.cms>



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*Thu, 12 Sep 2024*

## **Paradox in water detected in magnets bringing new perspective to thermal control in devices**

In a magnetic material, a paramagnetic phase, in which the material shows weaker temporary attraction when exposed to a magnetic field, is attained at a temperature higher than the ferromagnetic phase. Surprisingly, the hotter paramagnets, even by travelling longer distances, thermodynamically, undergo faster transitions to their ferromagnetic phases, shows a new study.

The research which establishes a phenomenon called Mpemba effect, earlier found in water, to be existing in magnets too, can bring a new perspective to thermal control in devices.

Mpemba effect is a paradoxical phenomenon in which a hot liquid can cool or freeze faster than a cold liquid under certain conditions. The effect described by Aristotle, in his book *Meteorologica*, was rediscovered in 1960s by Erasto Mpemba, a schoolboy then in Tanzania. Recently, the topic has been drawing attention of scientists from diverse domains. Even though there are efforts to investigate the effect in systems other than water, theoretically as well as experimentally, the reason behind its occurrence remains a puzzle.

Within the active research domain of magnetism and magnetic materials, the kinetics of transition of the paramagnets (manifesting temporary weaker attraction because atomic magnets align in random directions to provide zero net magnetization) to ferromagnetic phase (manifesting permanent stronger attraction because atomic magnets are ordered in the ferromagnetic phase, giving nonzero spontaneous magnetization), with lowering of temperature, became an important topic of research.

Scientists from Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), an autonomous institute of Department of Science and Technology, studied such magnetic transitions and found that hotter paramagnets undergo faster transitions to their ferromagnetic phases.

The team of researchers investigated the phenomena, which they called Mpemba effect in magnets, from the perspective of simple model systems. They chose to study the para- to ferromagnetic transitions, separated by a “critical” temperature, called the Curie point, in a few well-known model systems. These simple models served as good prototypes for understanding of a multitude of experimentally observed phenomena of different types. They exhibit transitions near which there exists enhancement of correlations in the structure. The team exploited this fact to identify the

reason and capture a universality. The researchers have chanced upon the interesting universal picture showing that the effect in these magnetic transitions appears due to the differences in the structure at various initial states. As the initial state point approaches the critical point, atomic magnets in the initial configurations tend to be correlated with each other over longer distances. Thus, the “transformation of a hotter paramagnet quicker into a ferromagnet” implies that systems initially having less spatial correlation order faster.

This is because, for initial configurations with large correlations, a significant early time is spent in destroying this correlation and catching up with that expected at the final temperature. Given that such critical phenomena are ubiquitous in nature, systems of several varieties, including those related to societies and active matters, should be candidates for exhibiting this fascinating effect. Identifications of these, in addition to providing new knowledge, at the fundamental level, can lead to diverse applications such as giving a new perspective to thermal control in devices or defining better cooling strategies or even deriving beneficial rules in dynamics within living populations in crucial situations, say, during the spread of an epidemic.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2054232>



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*Thu, 12 Sep 2024*

## **Novel method of controlling defects in MOF-Based Supercapacitors can improve energy storage**

A new method of introducing controlled defects in MOF-Based supercapacitors through laser irradiation, can help enhance performance of existing energy storage technologies. In recent years, several methods have been investigated for creating defects, such as thermal annealing, chemical exposure, high-energy ball milling, e-beam, chemical vapor deposition. However, the extent of defects could not be controlled in the materials using these methods. Traditional methods lack the precision needed for fine-tuning of defects.

In order to enhance the activity of the pristine MOF (Metal Organic Framework) without transforming it into other materials or creating a composite out of it, scientists at Institute of Nano Science and Technology (INST), Mohali, an autonomous institute of Department of Science and Technology carefully adjusted laser power to systematically regulate defects and porosity. resulting in a significant increase in the electrode's surface area and activity.

By precise tuning of the laser powers, Prof Vivek Bagchi and his team controlled the defects and porosity in pristine CuZn-BTC MOF without changing its crystal structure. The novelty of this technique is the crystallinity of the MOF material is mostly preserved; however, the laser irradiation enhances the activity of the material.



According to the researchers, upon exposure to laser radiation, some bonds in CuZn-MOF may rupture, however, the crystal structure remains intact as it is bound to a several surrounding atoms. As a result, the three-dimensional (3-D) structure of MOF may develop pores throughout, potentially capturing multiple nano-sized MOF specks. These pores provide a microchannel pathway for ion diffusion. This 3-D porous network not only increases the stability but also enhances its accessibility to ions. The MOF nano-scooplets, upon elimination, also become integrated into the system, enhancing the overall surface area.

Laser processes are quicker than traditional methods, saving time, each step of the synthesis can be precisely controlled and it is safe, clean, and environmentally friendly approach, typically requiring no chemical solvents or extra materials. This technique published in the journal ACS Materials Letter presents an opportunity for further research, particularly if applied to various other MOFs. However, using this approach to enhance the activity of existing technologies where MOF materials are used, could lead to a significant technological advancement.

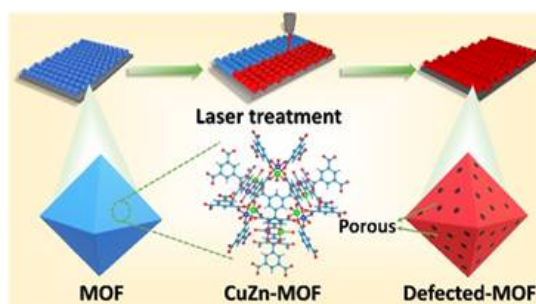


Figure1. Schematic illustration of treatment of CuZn-MOF at various laser powers

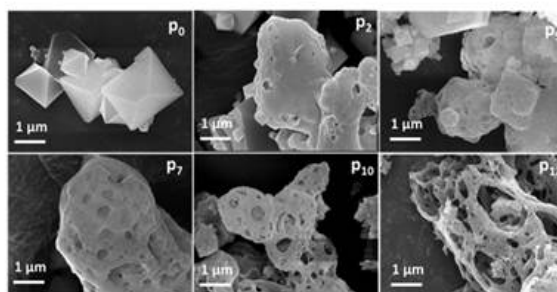


Figure 2. FESEM images of CuZn-MOF at different laser powers.



Figure 3. Graphical representation of the planar device and demonstration of the planar device's practicality via the operation of the clock watch and LED illumination.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2054229>

