

Sept
2021

समाचार पत्रों से चयित अंश Newspapers Clippings

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

खंड : 46 अंक : 179 09 सितम्बर 2021
Vol.: 46 Issue : 179 09 September 2021



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

CONTENTS

S. No.	TITLE	Page No.
DRDO News		1-11
DRDO Technology News		1-11
1.	First Medium Range Surface to Air Missile developed jointly by IAI & DRDO to be handed over to IAF tomorrow	1
2.	राजस्थान: वायुसेना की ताकत में होगा इजाफा, रक्षा मंत्री MRSAM मिसाइल को जंगी बेड़े में करेंगे शामिल	2
3.	Eye on China: In-house tech will surprise enemies in next conflict, says IAF Chief Bhadauria	3
4.	CCS clears two IAF projects worth over Rs 30,000 crore; 6 AEWG planes, 56 C-295 transport aircraft approved	4
5.	After US Navy, LCA trainer variant offered to Australia: HAL	5
6.	IAF looks to 'atmanirbhar' start-ups to boost India's swarm drone capability	6
7.	INS Dhruv to be commissioned on September 10 by NSA Doval: All you need to know about the N-missile tracking ship	8
8.	Exclusive Aligarh corridor, probable Brahmos Missiles unit in Lucknow part of big push for defence sector in UP	9
9.	Amrita University among the first to offer M.Tech in Defence Technology, launched by DRDO and AICTE	10
COVID 19: DRDO's Contribution		11-11
10.	Ready to tackle possible third Covid wave, claims Mohali administration	11
Defence News		12-25
Defence Strategic: National/International		12-25
11.	Cabinet approves procurement of 56 C-295MW transport aircraft for Indian Air Force	12
12.	कैबिनेट ने भारतीय वायु सेना के लिए 56 सी-95एमडब्ल्यू परिवहन विमान की खरीद को मंजूरी दी	13
13.	India begins theaterisation of military, unified commands will take 2-3 years to create	15
14.	सेना में जल्द होगा बड़ा बदलाव, शुरू हुई थिएटर कमांड के लिए 'कमांडर इन चीफ' बनाने की प्रक्रिया	16
15.	India's 1st emergency landing strip on highway to be inaugurated in Barmer today	17
16.	पाकिस्तान बॉर्डर के पास आज गरजेंगे भारतीय सेना के फाइटर प्लेन, पहला 'टच एंड गो' ऑपरेशन	18
17.	Uttar Pradesh's defence corridor to have small arm units along with tanks and missiles	19
18.	यूपी के डिफेंस कॉरिडोर में बनाए जाएंगे भारतीय सेना के लिए स्माल आर्म्स	20
19.	Head of Indian Air Force's Maintenance Command visits base repair depot in Pune	22
20.	Women can join NDA, Centre informs Supreme Court	23
21.	Ukraine to Supply Propulsion Systems for Indian Navy Frigates	24
22.	India, Australia to hold 2+2 meet	25
Science & Technology News		26-31
23.	Novel AR film developed to maximize the transmission of infrared light	26
24.	Artificial brain networks simulated with new quantum materials	27
25.	Graphene valleytronics: Paving the way to small-sized room-temperature quantum computers	28
COVID-19 Research News		30-31
26.	COVID-19 may not impair lung function in young adults, research shows	30

Thu, 09 Sept 2021

First Medium Range Surface to Air Missile developed jointly by IAI & DRDO to be handed over to IAF tomorrow

The Medium Range Surface to Air Missile (MR-SAM) has a range of 70 km and can hit aircraft, helicopters and also, incoming missiles

By Srinjoy Chowdhury

New Delhi: It will be a major addition to India's air-defence system, to protect the armed forces against air and missile attacks. The first MR-SAM or the Medium Range Surface to Air Missile, developed jointly by the Israel Aerospace Industries (IAI) and the Defence Research and Development Organisation (DRDO) will be handed over to the Indian Air Force at its base in Jaisalmer tomorrow.

Defence minister Rajnath Singh and chief of the IAF, Air Chief Marshal RKS Bhadauria, will be present at the function, to be held after an IAF aircraft lands on a highway in the Barmer area. Similar landings have happened on highways in Uttar Pradesh and a fighter plane having the option of landing on a highway in case there is a problem in the airfield during times of conflict is reassuring.



Defence Minister Rajnath Singh & DRDO Chairman G Satheesh Reddy (File Photo)
Photo Credit: IANS

The MR-SAM has a range of 70 km and can hit aircraft, helicopters and also, incoming missiles. It has a speed of Mach-2 and will be useful in protecting Indian armed forces' assets. The deal between the IAI and the DRDO to develop the MR-SAM was signed a decade ago. Once the MR-SAM is ready, it can be mass-produced for the armed forces.

India and Israel have worked together on the missile. The two countries remain close defence partners.

<https://www.timesnownews.com/india/article/first-medium-range-surface-to-air-missile-developed-jointly-by-iai-drdo-to-be-handed-over-to-iaf-tomorrow/809492>

राजस्थान: वायुसेना की ताकत में होगा इजाफा, रक्षा मंत्री MRSAM मिसाइल को जंगी बेड़े में करेंगे शामिल

बाडमेर और जैसलमेर दौरे के दौरान रक्षा मंत्री राजनाथ सिंह एमआरसैम मिसाइल को जंगी बेड़े में शामिल करेंगे। इस मिसाइल के शामिल होने से वायुसेना की ताकत में बढ़ोतरी होगी।

By: नीरज राजपूत

जयपुर: गुरुवार को अपने बाडमेर और जैसलमेर दौरे के दौरान रक्षा मंत्री राजनाथ सिंह एमआरसैम मिसाइल को वायुसेना के जंगी बेड़े में शामिल करेंगे। मध्यम दूरी की जमीन से आसमान में मार करने वाली एमआरसैम मिसाइल भारत ने इजरायल की मदद से तैयार की है। इस मिसाइल का नेवल-वर्जन, बराक-8 भारतीय नौसेना पहले से इस्तेमाल करती आ रही है।



राजनाथ सिंह जंगी बेड़े में शामिल करेंगे एमआरसैम मिसाइल

मीडियम रेंज सर्फस टू एयर मिसाइल यानि एमआरसैम की रेंज 70-100 किलोमीटर तक की है। इसका इस्तेमाल आसमान में दुश्मन के ड्रोन, हेलीकॉप्टर और फाइटर जेट्स को मार गिराने के लिए किया जाता है। इजरायल की आईएआई यानि इजरायल एयरो इंडस्ट्री की मदद से डीआरडीओ और बीडीएल यानि भारत डायनेमिक्स लिमिटेड ने एमआरसैम मिसाइल को तैयार किया है। डीआरडीओ थलसेना के लिए भी इस एमआरसैम मिसाइल का निर्माण कर रही है और हाल ही में इसके सफल परीक्षण भी किए गए थे।

भारत को पास फिलहाल शॉर्ट रेंज के लिए आकाश मिसाइल है और मीडियम रेंज के लिए एमआरसैम हओ गई है। लॉन्ग रेंज यानि 400 किलोमीटर के लिए भारत रूस से एस-400 मिसाइल खरीद रहा है, जो इस साल के अंत तक वायुसेना को मिलने की संभावना है।

वहीं देश में पहली बार हाईवे पर इमरजेंसी लैंडिंग के लिए मिलिट्री ट्रांसपोर्ट को उतारा जाएगा। खास बात ये है कि जब ये लैंडिंग-ड्रिल कराई जाएगी, तो उस विमान में खुद देश के रक्षा मंत्री और सड़क परिवहन मंत्री नितिन गडकरी मौजूद रहेंगे। पाकिस्तान से सटी राजस्थान सीमा से सटे बाडमेर में ये लैंडिंग होगी।

मिली जानकारी के मुताबिक भारतीय वायुसेना के सी-130जे सुपर-हरक्युलिस विमान में रक्षा मंत्री राजनाथ सिंह और सड़क परिवहन मंत्री नितिन गडकरी इमरजेंसी लैंडिंग की ड्रिल में हिस्सा लेंगे। ये नया हाईवे केंद्र सरकार की महत्वाकांक्षी 'भारतमाला-प्रोजेक्ट' का हिस्सा है।

<https://www.abplive.com/news/india/increase-in-the-strength-of-the-air-force-defense-minister-rajnath-singh-will-include-the-mrsam-missile-ann-1965427>

Thu, 09 Sept 2021

Eye on China: In-house tech will surprise enemies in next conflict, says IAF Chief Bhadauria

IAF chief RKS Bhadauria spoke about the need to enhance India's defence technology in the wake of the Chinese threat and said this would be a surprise for adversaries in the next conflict

By Abhishek Bhalla

New Delhi: Indian Air Force chief RKS Bhadauria spoke about the need to enhance India's defence technology in the wake of the Chinese threat and said this would be a surprise for adversaries in the next conflict.

"Looking at the northern neighbours, we need niche technology that is built in-house. This is what will give us maximum results and spring surprises in the next conflict," Air Chief Marshal Bhadauria said.

He was speaking at the 'Energising Indian Aerospace Industry: Challenges for Aatmanirbhar Bharat' seminar. The Atmanirbhar mission has been the mantra to ensure India's dependence on foreign manufacturers in defence reduces while the domestic industry flourishes.



IAF chief RKS Bhadauria spoke about the need to enhance India's defence technology. (PTI)

The Air Force chief further said that the Light Combat Aircraft (LCA) Tejas has redefined and generated confidence among the forces to take up any project.

He said that over the next two decades, the Indian Air Force is looking at having 350 fighter aircraft, including the 83 Tejas jets.

"Atmanirbharta needs to become the strongest pillar of national security and national pride," the Air Force chief said. Out of the 83 jets, 73 will be the upgraded version of Mark 1A in addition to the 40 Mark 1 ordered before.

With a total fleet of 123 jets comprising LCA Mark 1 and Mark 1A soon, the IAF is hopeful of filling up its depleting numbers as these will account for six more squadrons.

The manufacturing of 73 LCA Mark 1A Tejas jets will not only be a boost for the 'Make in India' mission but also help in filling the gaps as the IAF's current fleet is down to 30 squadrons, way below the sanctioned strength of 42.

Each squadron comprises 18-20 fighter jets and the IAF is short of nearly 200 fighter aircraft.

Next in line is the Tejas Mark 2 and the IAF has plans to induct 170 of these, which will be a better version of the Mark 1A. But for that to happen soon, HAL has to speed up productivity and get to the next phase that will ensure the IAF has a potent indigenous fleet in the years to come.

The Advanced Medium Combat Aircraft (AMCA) is planned as a fifth-generation twin-engine fighter craft that the IAF aspires. The first flight of a prototype is expected by 2025. The Air Force chief said AMCA is also at an advanced stage.

Speaking about the drone warfare and the challenges posed after the attack on Jammu airbase, where unmanned aerial vehicles were used to drop bombs, the Air Chief Marshal said, "Lot of orders have been placed including of drones, counter-drone systems, jammers."

<https://www.indiatoday.in/india/story/air-force-chief-in-house-tech-will-surprise-enemies-in-next-conflict-1850547-2021-09-08>

Thu, 09 Sept 2021

CCS clears two IAF projects worth over Rs 30,000 crore; 6 AEW&C planes, 56 C-295 transport aircraft approved

New Delhi [India], September 8 (ANI): In a major boost for the Indian Air Force, the central government has cleared two mega projects including the six new made in India airborne early warning and control aircraft (AEW&C) and 56 C-295 aircraft, forty of which are to be built in India by Airbus with Tata.

The six AEW&C aircraft have been cleared by the Cabinet Committee on Security and they would be built on the Airbus 319 aircraft to be provided by the state-owned Air India, government sources told ANI.

The government had earlier in the day announced the clearance of the Avro replacement project to be built under the Make in India scheme.

Sources said that the six aircraft to be built by the DRDO will further improve Air Force's surveillance capabilities along borders with China and Pakistan.

AEW&C Block 2 aircraft are to be developed by the DRDO under Rs 11,000 crore project.

The six aircraft would be modified to fly with a radar that will give 360-degree surveillance capability to the defence forces.

The project to build the AEW&C system on existing aircraft from the Air India fleet may also mean that India may not buy the six Airbus 330 transport aircraft planned to be acquired earlier from the European firm.

The C-295 aircraft deal was required to be signed as the IAF has 56 Avro transport aircraft which are in urgent need of replacement. Sixteen aircraft will be delivered in flyaway condition from Spain within 48 months of the signing of the contract.

The aircraft would be giving a capability of carrying five to 10 tonnes of load and would bridge the gap between An-32s and the C-130Js. (ANI)



<https://aninews.in/news/national/general-news/ccs-clears-two-iaf-projects-worth-over-rs-30000-crore-6-aewc-planes-56-c-295-transport-aircraft-approved20210908224107/>

THEWEEK

Thu, 09 Sept 2021

After US Navy, LCA trainer variant offered to Australia: HAL

HAL is continuing to pursue other avenues to sell the Tejas LCA

Since it clinched a Rs 48,000 crore deal to manufacture 83 LCA Tejas fighters for the Indian Air Force, HAL has been confident about the indigenous jet's prospects on the export market.

In August, HAL chairman R. Madhavan claimed India stood a "good chance" of bagging a deal from Malaysia to supply 18 Tejas fighters to fulfil the Southeast Asian country's requirement for light fighters. In Malaysia, HAL is competing with offerings from manufacturers in the US, China, Russia and Europe.

HAL is continuing to pursue other avenues to sell the Tejas. At the end of August, HAL released its annual report for 2020-21.

In the section dealing with 'exports', HAL mentions that it had offered the LCA in a "lead-in fighter trainer (LIFT) configuration" to the Australian Department of Defence in July 2020.

The section also mentions the trainer variant of the Naval LCA was offered to the US Navy in July 2020.

In December last year, it was reported that HAL had responded to the US Navy's request for information for a new trainer to replace its fleet of Boeing T-45 Goshawks. The T-45 is a variant of the British Hawk trainer that was developed specifically for operating off aircraft carriers. LIFT is a niche category of trainer aircraft, which has more advanced electronics and greater manoeuvrability than offered by older advanced jet trainers. LIFT trainers can also offer training in air-to-air, missile defence and strike missions.

LIFT aircraft offer more realistic performance for trainee pilots who will graduate on to complicated multi-role fighters like the Rafale or F-35.

In December last year, Madhavan told *The Economic Times* HAL had done considerable work on the LCA LIFT version. "The same platform can be used to mimic any other platform. All that needs to be done is put in the flying characteristics, and things will change to the selected aircraft.



Representational image | Sanjay Ahlawat

For example, if... Rafale characteristics, to the pilot it will seem like he is flying Rafale, which will help in the advanced training process," Madhavan then told *The Economic Times*.

Australian requirement

The Royal Australian Air Force currently operates a fleet of around 30 'Hawk MK-127' LIFT aircraft. The Hawk MK-127 is a variant of the Hawk trainer equipped with more advanced electronics to make it suitable for the LIFT role. The RAAF began inducting the Hawk MK-127 in 2001.

In August last year, the RAAF issued a request for information from companies to supply a new aircraft to replace the Hawk MK-127.

Boeing confirmed it had offered its T-7A Red Hawk trainer for the RAAF. The T-7A Red Hawk, developed with Sweden's Saab, is widely considered the newest trainer aircraft in development. The US Air Force will acquire around 350 T-7A jets. Italian company Leonardo also confirmed it was offering its M-346 trainer for the Australian requirement, while Korea Aerospace Industries was expected to pitch its T-50 trainer, which was co-developed with assistance from Lockheed Martin.

The T-50 and M-346 can fulfil the roles of both jet trainer and LIFT given their more advanced designs and electronics.

Interestingly, T-7A, T-50 and LCA Tejas all share a common engine: The F404 built by GE.

No real chance in US?

The T-7A, T-50 and M-346 are all competing to replace the T-45 in the US Navy. US experts have said the LCA LIFT variant does not stand a realistic chance of winning the US Navy contract. This could be in part attributed to the fact that HAL lacks orders for the type. In comparison, both the M-346 and T-50 have won several export orders in the past decade.

In addition, the LCA's delta-wing design makes it less suitable for low-speed landing characteristics that naval pilots need on aircraft carriers. Moreover, the lack of US companies as partners is also expected to complicate HAL's bid.

<https://www.theweek.in/news/india/2021/09/08/after-us-navy-lca-trainer-variant-offered-to-australia-hal.html>

ThePrint

Thu, 09 Sept 2021

IAF looks to 'atmanirbhar' start-ups to boost India's swarm drone capability

IAF is set to issue a Request for Proposal for swarm drone contracts to 5 start-ups, selected firms to receive support from air force as well as DRDO

By Snehash Alex Philip

New Delhi: With unmanned aerial vehicles (UAVs) becoming a critical component of modern warfare, the Indian Air Force is set to issue a Request for Proposal (RFP) to five domestic start-ups for swarm drones, which are capable of both punitive action and load-carrying capabilities, ThePrint has learnt.

According to sources in the defence and security establishment, the RFP will be issued for two sets of swarm drones, that will cost about Rs 100 crore in total, and there will be a lot of "handholding".

This means the selected firm or firms will get assistance from select Base Repair Depots, which have the technical expertise and carry out major repair and overhaul of aircraft and other equipment of the IAF. They will also get armament procured from the Defence Research and Development Organisation (DRDO).

The five companies that will be in the fray — NewSpace Research and Technologies, Veda Defence Systems Pvt Ltd, Raphe mPhibr Pvt Ltd, Dhaksha Unmanned Systems Pvt Ltd and Flaire Unmanned Systems Pvt Ltd — were also the top participants of the IAF's Mehar Baba Swarm Drone Competition, which began in 2018.

Named after the legendary Air Commodore Mehar Singh, affectionately called 'Baba' Mehar Singh by his associates and admirers in the IAF, participants competed to build a swarm of 50 drones in the competition that lasted two years.

Two of the top five participants also recently won contracts from the Army for swarm drones.

Sources noted that the firms will be given all the help possible from the IAF so that more complex systems can be developed and the swarm drone capability can be taken to much higher levels than what it is right now.

"Swarm drones work in numerical strength. The more there are, the better it is. The big swarms can itself be divided into multiple smaller swarms, each equipped for a specific target. The world of possibilities with the drones is something that one is still understanding," a source said.

India's swarm drone history

Explaining the origin of swarm drones in India, sources said that when the IAF began the Mehar Baba Swarm Drone Competition in 2018, they had received 154 applicants from across the country.

Of these, 54 were selected in the first round and 20 were selected in the second round.

Sources said that the 20 who were selected were asked to demonstrate 10 drones with 10-km range and 10 medical drops in Pokharan, and were reimbursed Rs 25 lakh each by the IAF.

The top five from them were given a task of demonstrating a 50-km range with 20 drones and 20 medical or emergency aid drops in GPS-denied, rogue drone and anti-drone jamming environment.

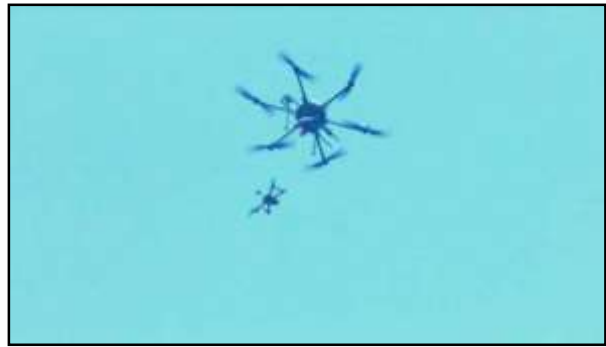
All top five firms of the competition were start-ups and had beaten top defence companies.

The IAF eventually awarded Rs 2.5 crore in the final round to each competitor, sources said, adding that the whole process lasted two years.

They noted that given the success of the competition, a plan was made for possible joint procurement. However, the plan did not go ahead since the requirements for each service was different.

In December 2020, the IAF had put out pictures of its swarm drone capability, noting that the process of their procurement was on.

<https://theprint.in/defence/iaf-looks-to-atmanirbhar-start-ups-to-boost-indias-swarm-drone-capability/729592/>



Swarm drones showcased at Army Day Parade in New Delhi on 15 January 2021 (representational image) | Videograb | YouTube

INS Dhruv to be commissioned on September 10 by NSA Doval: All you need to know about the N-missile tracking ship

Built by Hindustan Shipyard in collaboration with DRDO and NTRO, INS Dhruv is India's first research vessel and missile tracking ship. It is planned to be commissioned by NSA Ajit Doval at Visakhapatnam on 10 September 2021

By Arfa Javaid

India's first research vessel and missile tracking ship, Dhruv, is planned to be commissioned by NSA Ajit Doval at Andhra Pradesh's Visakhapatnam on 10 September 2021.

The launch ceremony will be attended by Chief of Naval Staff Admiral Karambir Singh and NTRO Chairman Anil Dasmana, along with other DRDO and Navy officials.

Key Highlights:

- INS Dhruv is built by Hindustan Shipyard in collaboration with Defence Research and Development Organisation (DRDO) and National Technical Research Organisation (NTRO). It is designed by Vik Sandvik Design India.
- The ship will map ocean beds for research and detect enemy submarines, track incoming nuclear-tipped ballistic missiles and aircraft at long ranges. It will be jointly manned by the Indian Navy, NTRO and DRDO.
- The ship that costs around 1500 crores has a displacement of more than 10,000 tonnes, length of 175 metres, a beam of 22 metres, and a draught of 6 metres.
- It can attain a speed of 21 knots and is powered by two imported 9,000 kilowatts combined diesel and diesel (CODAD) configuration engines and three 1200 kilowatt auxiliary generators.
- The 10,000-tonne ship is housed with long-range radars, dome-shaped tracking antennae and advanced electronics.
- With the induction of INS Dhruv, India joins a select group of countries like the US, the UK, Russia, China and France to have such specialized vessels.



INS Dhruv to be commissioned on September 10 by NSA Doval: All you need to know about the N-missile

The ship will not only help in creating maritime domain awareness for India in the Indian Ocean but will also act as an early warning system for hostiles missiles headed towards the country.

Once an incoming missile is detected by the radars on board the ship, Ballistic Missile Defence (BMD) systems can take over to track and shoot them down.

INS Dhruv will also help in monitoring the flight trajectories and telemetry data of the Agni land-based missiles and 'K' series of submarine-launched ballistic missiles launched by India during trials. The development comes at a time when the era of underwater armed and surveillance drones has dawned. China regularly sends such ships and survey vessels to the Indian Ocean Region (IOR) to map oceanographic and other data useful for navigation and submarine operations, among other purposes.

As India has land disputes with China and Pakistan and both nations have nuclear ballistic missile capabilities, INS Dhruv will enhance India's maritime security architecture as it will be able to project threats to India in real-time.

<https://www.jagranjosh.com/general-knowledge/research-vessel-and-missile-tracking-ship-ins-dhruv-1631107949-1>

Exclusive | Aligarh corridor, probable Brahmos Missiles unit in Lucknow part of big push for defence sector in UP

The UP government has also allotted 74 hectares of land to 22 Defence companies in Aligarh with a confirmed investment of nearly Rs 1250 crore

By Aman Sharma

The Yogi Adityanath government is planning a shubharambh (auspicious start) ceremony of the defence corridor in Uttar Pradesh from Aligarh in the presence of Prime Minister Narendra Modi soon. The state has also shown a 200-acre piece of land in Lucknow, as requested, to the BRAHMOS Aerospace Joint Venture company for setting up a BRAHMOS Missile unit in the state, News18 has learnt.



BrahMos missile (Image: News18)

This will be a major fillip for the defence industry in the state, officials said. BRAHMOS Aerospace has told the UP government that it will start civil construction within three months of getting possession of the land in Lucknow and is slated to manufacture more than 100 BRAHMOS missiles in the next three years. The UP government has also allotted 74 hectares of land to 22 defence companies in Aligarh with a confirmed investment of nearly Rs 1250 crore. The land registry for 20 posts of 19 of those companies has also been completed and infrastructure works there are in full swing, senior UP officials said.

The UP government is inviting the PM for the ceremony in Aligarh. “The PM is laying the foundation stone of Raja Mahendra Pratap State University in Aligarh on September 14. We are trying for the Defence Corridor project to be unveiled the same day in Aligarh by him. The plan is however not final yet,” a senior official said.

The biggest investment in the Aligarh node of the Defence Corridor is proposed by Ancor Research Labs LLP of Rs 550 crore to produce drones and an investment of Rs 150 crore assured by Syndicate Innovations International Ltd to produce small arms and ammunition. Other companies allotted land here will produce precision equipments, optical sights, metallic parts for grenades and explosives.

Brahmos Project

The UP government has also fast-tracked the process of arranging 200 acre of land for the Brahmos project to be set up in the Lucknow node of the Defence corridor project. A delegation of BRAHMOS Aerospace, the joint venture of DRDO and NPO Mashinostroeyenia of Russia, has been shown a 200-acre piece of land in Sarojini Nagar of Lucknow on August 24 for setting up the BRAHMOS production unit, officials said.

The next-generation Brahmos and other missiles will be manufactured here at a modern production facility to be set up with an investment of Rs 300 crore. “BRAHMOS Aerospace has assured to start civil construction within three months of getting possession of the land as it is slated to manufacture more than 100 BRAHMOS missiles in the next three years,” a senior official in UP government told News18.

Defence Minister Rajnath Singh had specially requested CM Yogi Adityanath to allot the 200 acres of land in Lucknow at a Rs 1 lease cost to BRAHMOS Aerospace. On Singh’s push, a delegation from Brahmos Aerospace had met with the CM recently where he assured them that

land would not be a problem for the prestigious project. “The process to acquire/procure the land has begun,” an official said.

<https://www.news18.com/news/india/exclusive-aligarh-corridor-probable-brahmos-missiles-unit-in-lucknow-part-of-big-push-for-defence-sector-in-up-4177406.html>



Thu, 09 Sept 2021

Amrita University among the first to offer M.Tech in Defence Technology, launched by DRDO and AICTE

Since defence technology is a multidisciplinary field, the PG program accepts students from a wide range of engineering streams - from computer science to chemical engineering. • At Amrita University, students can apply for the program under any of the two specializations: “Communication Systems and Sensors” and “Aeronautics Technology”

New Delhi: Amrita Vishwa Vidyapeetham, a leading multi-campus, multi-disciplinary teaching and research institution in the country, has become one of the pioneers in offering M.Tech in Defence Technology, the post-graduate programme jointly developed by Defence Research and Development Organisation (DRDO), the R&D wing of Ministry of Defence, and All India Council for Technical Education (AICTE), a national-level council for technical education, with the objective of meeting the burgeoning skill needs of India’s fast growing defence sector.



The university seeks admission for the academic year 2021-22 from engineering students with undergraduate degrees. Since Defence Technology is a multi-disciplinary domain, students from a wide range of engineering streams – from chemical engineering to computer science, can apply.

M. Tech. in Defence Technology courses has been designed to produce post graduates who will have the necessary theoretical and experimental knowledge, skills and aptitude in various defence systems and contemporary technologies to carry out R&D. The program will be based on class lectures and main thesis work. During the program, the students will be given the opportunity to do their main thesis work at DRDO labs, defence PSUs, and private defence industries.

India’s defence sector is fast expanding with the central government continuing its emphasis on defence-indigenisation to make the country, currently the world’s third largest importer of weapons and defence equipment, self-reliant. Hence, the domestic defence market is booming and the defence industry in the public and the private sector are on the hiring spree. A specialised program like the current one is expected to create a large pool of talented workforce for the defence sector, and to give a fillip to the startup ecosystem in the defence sector.

Commenting about the launch of M.Tech in Defence Technology, Dr. G. Satheesh Reddy, Chairman, DRDO, said, “There is an urgent need to expand the research base for developing advanced technology and for accelerating India’s tech self-reliance in defence. Amrita has been working with DRDO on many of the advanced technologies – particularly in the defense R&D. I am sure that the university will be a fountainhead of talent for the robust defence R&D, and manufacturing ecosystem for the defence industry in the country.”

In his comments, Dr. P. Venkat Rangan, Vice-Chancellor, Amrita University, said, “Our vision is to contribute to nation building by offering quality higher education in the fields of strategic importance to the country in engineering, medicine, education, and social sciences. We are committed to training young professionals in the emerging defence technology arena with the support of DRDO and AICTE. Through the M.Tech in Defence Technology program, students will have an opportunity to dive deep into theoretical and experimental aspects of defence technologies and their applications. They will also have opportunities to interact with top scientists at DRDO labs, and experts in defence PSUs and private industries.”

Aspiring students can apply to this program via www.amrita.edu/mtech

<https://indiaeducationdiary.in/amrita-university-among-the-first-to-offer-m-tech-in-defence-technology-launched-by-drdo-and-aicte/>

COVID 19: DRDO's Contribution

 **The Indian EXPRESS**

Thu, 09 Sept 2021

Ready to tackle possible third Covid wave, claims Mohali administration

Mohali Deputy Commissioner (DC), Girish Dayalan, said that Mohali civil hospital shall be able to accommodate around 300 L-2 patients in case of any emergency and all the arrangements for the same shall be completed by September 15

Mohali: The Mohali district administration on Wednesday claimed that it had put in place ample preparations to tackle the arrival of a possible third wave of Covid-19.

Apart from asking private hospitals to increase the number of beds, the district administration has also almost completed the work of installing six oxygen plants in government health hubs with the help of some private players.

An official told The Indian Express that one such oxygen plant shall be installed with the help of the Defence Research and Development Organisation (DRDO) and the Canadian embassy. The oxygen plants shall come in government hospitals in Kharar, Derabassi and Dhakoli, and Phase VI Civil Hospital.

Mohali Deputy Commissioner (DC), Girish Dayalan, said that Mohali civil hospital shall be able to accommodate around 300 L-2 patients in case of any emergency and all the arrangements for the same shall be completed by September 15.

The DC added that around 30 private hospitals in the district had been told to increase their bed capacities so that in case patients started pouring in from other districts, then the rush could be tackled without inconveniencing local patients.

Speaking further, the Deputy told The Indian Express that at present they are planning to increase 20-25 beds in each government hospital in the district.

Mohali had witnessed around 68,000 Covid-19 cases so far, the highest in the Tricity.

<https://indianexpress.com/article/cities/chandigarh/ready-to-tackle-possible-third-covid-wave-claims-mohali-administration-7497692/>



The DC added that around 30 private hospitals in the district had been told to increase their bed capacities so that in case patients started pouring in from other districts, then the rush could be tackled without inconveniencing local patients (Representative)

Defence Strategic: National/International



Press Information Bureau
Government of India
Ministry of Defence

Wed, 08 Sept 2021 6:27PM

Cabinet approves procurement of 56 C-295MW transport aircraft for Indian Air Force

A major boost to 'Atmanirbhar Bharat'

Key Highlights:

- 16 aircraft to be delivered in flyaway condition from Spain; 40 to be manufactured in India
- Unique initiative to strengthen indigenous capabilities & boost 'Make in India'
- All aircraft to be installed with indigenous Electronic Warfare Suite
- To replace the ageing Avro aircraft of IAF
- Transport aircraft of 5-10 Tonne capacity with contemporary technology

Today, Cabinet Committee on Security approved the procurement of fifty six C-295MW transport aircraft from M/s Airbus Defence and Space S.A., Spain for the Indian Air Force. C-295MW aircraft is a transport aircraft of 5-10 Tonne capacity with contemporary technology that will replace the ageing Avro aircraft of IAF. The aircraft has a rear ramp door for quick reaction and para dropping of troops and cargo.

Sixteen aircraft will be delivered in flyaway condition from Spain within 48 months of signing of the contract and forty aircraft will be manufactured in India by TATA Consortium within ten years of signing of the contract. This is the first project of its kind in which a military aircraft will be manufactured in India by a private company. All fifty six aircraft will be installed with indigenous Electronic Warfare Suite. The project will give a boost to aerospace ecosystem in India wherein several MSMEs spread over the country will be involved in manufacturing of parts of the aircraft.

The programme will provide major boost to the 'Atmanirbhar Bharat Abhiyan' of the Government as it offers a unique opportunity for the Indian Private Sector to enter into technology intensive and highly competitive aviation Industry. The project will augment domestic aviation manufacturing resulting in reduced import dependence and expected increase in exports.

A large number of detail parts, sub-assemblies and major component assemblies of aero structure are scheduled to be manufactured in India. The programme will act as a catalyst in employment generation in the aerospace ecosystem of the country and is expected to generate 600 highly skilled jobs directly, over 3000 indirect jobs and an additional 3000 medium skill employment opportunities with more than 42.5 lakh man hours of work within the aerospace and defence sector of India. It will involve development of specialized infrastructure in form of hangars, buildings, aprons and taxiway. During the process of manufacturing in India, it is expected that all the suppliers of TATA Consortium who will be involved in special processes will



gain and maintain globally recognized National Aerospace and Defence Contractors Accreditation Program (NADCAP) accreditation.

Before completion of deliveries, 'D' Level servicing facility (MRO) for C-295MW aircraft are scheduled to be setup in India. It is expected that this facility will act as a regional MRO hub for various variants of C-295 aircraft.

In addition, the OEM will also discharge its offset obligations through direct purchase of eligible products and Services from Indian Offset Partners giving further boost to economy.

This programme is a unique initiative of Government of India to strengthen indigenous capabilities and boost 'Make in India'.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1753260>



पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Wed, 08 Sept 2021 6:27PM

कैबिनेट ने भारतीय वायु सेना के लिए 56 सी-95एमडब्ल्यू परिवहन विमान की खरीद को मंजूरी दी

'आत्मनिर्भर भारत' को एक बड़ा प्रोत्साहन

प्रमुख बातें:

- 16 विमान स्पेन से फ्लाईअवे हालत में आएंगे; 40 भारत में निर्मित किए जाएंगे
- स्वदेशी क्षमताओं को मजबूत करने और 'मेक इन इंडिया' को बढ़ावा देने के लिए अनूठी पहल
- सभी विमानों को स्वदेशी इलेक्ट्रॉनिक युद्ध सुइट के साथ स्थापित किया जाएगा
- भारतीय वायु सेना के पुराने एवरो विमान को बदलने की पहल
- समकालीन प्रौद्योगिकी के साथ 5-10 टन क्षमता के परिवहन विमान

आज कैबिनेट की सुरक्षा मामलों संबंधी समिति ने भारतीय वायु सेना के लिए मैसर्स एयरबस डिफेंस एंड स्पेस एसए, स्पेन से 56 सी-295एमडब्ल्यू परिवहन विमान की खरीद को मंजूरी दी। सी-295एमडब्ल्यू विमान समकालीन तकनीक के साथ 5-10 टन क्षमता का एक परिवहन विमान है जो भारतीय वायुसेना के पुराने एवरो विमान की जगह लेगा। तेज़ी से प्रतिक्रिया और सैनिकों और कार्गो की पैरा ड्रॉपिंग के लिए विमान में एक रीयर रैंप दरवाजा है।



अनुबंध पर हस्ताक्षर करने के 48 महीनों के भीतर स्पेन से सोलह विमानों की डिलीवरी की जाएगी और अनुबंध पर हस्ताक्षर करने के दस वर्षों के भीतर टाटा कंसोर्टियम द्वारा भारत में चालीस विमानों का निर्माण किया जाएगा। यह अपनी तरह की पहली परियोजना है जिसमें एक निजी कंपनी द्वारा भारत में एक सैन्य विमान का निर्माण किया जाएगा। सभी 56 विमानों को स्वदेशी इलेक्ट्रॉनिक वारफेयर सूट के साथ स्थापित किया जाएगा। यह परियोजना भारत में एयरोस्पेस

पारितंत्र को बढ़ावा देगी जिसमें देश भर में फैले कई एमएसएमई इस विमान के कुछ हिस्सों के निर्माण में शामिल होंगे।

यह कार्यक्रम सरकार के 'आत्मनिर्भर भारत अभियान' को बड़ा प्रोत्साहन देगा क्योंकि यह भारतीय निजी क्षेत्र को प्रौद्योगिकी गहन और अत्यधिक प्रतिस्पर्धी विमानन उद्योग में प्रवेश करने का एक अनूठा अवसर प्रदान करता है। यह परियोजना घरेलू विमानन निर्माण को बढ़ावा देगी जिसके परिणामस्वरूप आयात पर निर्भरता कम होगी और निर्यात में अपेक्षित वृद्धि होगी।

भारत में बड़ी संख्या में डिटेल पार्ट्स, सब-असेंबली और एयरो स्ट्रक्चर की प्रमुख कंपोनेंट असेंबलियों का निर्माण किया जाना है। यह कार्यक्रम देश के एयरोस्पेस पारितंत्र में रोजगार सृजन को बढ़ावा देने में कार्य करेगा और उम्मीद है कि इससे 600 उच्च कुशलता वाले रोजगार सीधे, 3000 से अधिक अप्रत्यक्ष रोजगार और इसके अतिरिक्त 3000 मध्यम कौशल रोजगार के अवसर के साथ 42.5 लाख से अधिक काम के घंटे भारत के एयरोस्पेस और रक्षा क्षेत्र में पैदा होंगे। इसमें हैंगर, भवन, एप्रन और टैक्सीवे के रूप में विशेष बुनियादी ढांचे का विकास शामिल होगा। भारत में निर्माण की प्रक्रिया के दौरान यह उम्मीद की जाती है कि टाटा कंसोर्टियम के सभी आपूर्तिकर्ता जो विशेष प्रक्रियाओं में शामिल होंगे, वे विश्व स्तर पर मान्यता प्राप्त राष्ट्रीय एयरोस्पेस और रक्षा अनुबंध प्रत्यायन कार्यक्रम (एनएडीसीएपी) की मान्यता प्राप्त करेंगे और उसको बनाए रखेंगे।

डिलीवरी के पूरा होने से पहले, भारत में सी-295एमडब्ल्यू विमानों के लिए 'D' लेवल सर्विसिंग सुविधा (एमआरओ) स्थापित करने की योजना है। यह उम्मीद की जाती है कि यह सुविधा सी-295 विमान के विभिन्न रूपों के लिए एक क्षेत्रीय एमआरओ हब के रूप में कार्य करेगी।

इसके अलावा ओईएम भारतीय ऑफसेट पार्टनर्स से योग्य उत्पादों और सेवाओं की सीधी खरीद के माध्यम से अपने ऑफसेट दायित्वों का निर्वहन भी करेगा, जिससे अर्थव्यवस्था को और बढ़ावा मिलेगा।

यह कार्यक्रम स्वदेशी क्षमताओं को मजबूत करने और 'मेक इन इंडिया' को बढ़ावा देने के लिए भारत सरकार की एक अनूठी पहल है।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1753334>

India begins theaterisation of military, unified commands will take 2-3 years to create

Services have been told to dual-task commander-in-chief rank officers to work on structures of 4 identified theatres — 2 led by Army, 1 each by Air Force & Navy

By Snehesh Alex Philip, Edited by Poulomi Banerjee

New Delhi: India has kickstarted the process for the theaterisation of its military, which will see multiple unified commands being created over the next “two-three years” to fight battles in the future, top government sources said Wednesday.

Under the process of theaterisation, the current 17 individual commands of the three services will be brought under four or five joint commands, which will focus on specific borders and roles.

Sources said the three services have been asked to “dual-task” one commander-in-chief rank officer for working on the structures of the four theatres that have been identified — two led by the Army, and one each by the Air Force and the Navy.

The sources said that the Army’s South Western Commander, Lieutenant General Amardeep Singh Bhinder, has already been dual-tasked to work out the structures of the Western Theatre Command, which will be based in Jaipur and will look after the border with Pakistan.

Similarly, the Air Force and the Navy have also been instructed to nominate one C-in-C rank officer to work on the structures of the Maritime Theatre Command and the Air Command.

“The officers will be dual-tasked and will not be designated as theatre commanders. This is part of the progressive transformation, so that there is no operational vacuum created in the near future. This means that in case of any security development, the officers can easily go back to doing what they are currently doing,” a source explained.

The source added that once the structures are in place, they would be studied and further clearances would be taken from the government, following which, the raising of the unified commands will start.

“The theaterisation process will take anywhere between two to three years,” the source said. “It is a misnomer that theaterisation would start immediately. There are a number of things that have to be kept in mind. The structures have to be formed first and then the raising happens.”

The initial target for the rollout of the theatre concept was 2022, but there have been multiple inputs that it could happen earlier. However, ThePrint had, on 17 June, reported that theaterisation could get delayed since stakeholders were yet to be on the same page.

‘There will be winners and losers’

Asked about the differences among the three services over the proposed theaterisation plans, the source said whenever changes are brought in, “there will be winners and losers”.

While the military assets would get divided between the theatres, allocation can be moved through the Joint Chiefs of Staff Committee, headed by the Chief of Defence Staff (CDS), a source explained.

The source said once the theatre commands come into action in about three years, they will first take over the operational role of the 17 individual commands of the three services.



Representational Image of Indian Army soldiers patrolling the Line of Control in Poonch district, Jammu and Kashmir | File photo: ANI

The current C-in-Cs will continue to look after other duties and the theatre commands will take over as and when each process stabilises.

Sources said the Northern Command of the Army, which looks after both the Line of Control with Pakistan and the Line of Actual Control with China, is not being touched as of now.

<https://theprint.in/india/india-begins-theaterisation-of-military-unified-commands-will-take-2-3-years-to-create/730247/>

नवभारत टाइम्स

Thu, 09 Sept 2021

सेना में जल्द होगा बड़ा बदलाव, शुरू हुई थिएटर कमांड के लिए 'कमांडर इन चीफ' बनाने की प्रक्रिया

Indian Army Theatre Command: सूत्रों के मुताबिक, यह तय कर लिया गया है कि कुल चार थिएटर कमांड बनेंगी। इसमें आर्मी की दो कमांड होंगी। एक वेस्टर्न थिएटर कमांड और दूसरी ईस्टर्न थिएटर कमांड। नेवी की एक थिएटर कमांड बनेगी और एक एयर डिफेंस कमांड बनेगी।

By पूनम पाण्ड, Edited by अशोक उपाध्याय

हाइलाइट्स

- इंडियन मिलिट्री में सबसे बड़ा बदलाव- अभी है 17 कमांडर, रह जाएंगे सिर्फ 4
- एक साल में बन जाएगा नए ऑर्गनाइजेशन का ढांचा
- सरकार के अप्रूवल के बाद बनेंगे चार थिएटर कमांडर

नई दिल्ली: इंडियन आर्म्ड फोर्सिस में सबसे बड़े बदलाव की प्रक्रिया में तेजी आई है। आर्मी, नेवी और एयरफोर्स की 17 कमांड को मिलाकर चार थिएटर कमांड बनाने के लिए चार कमांडर इन चीफ (सीएनसी) नॉमिनेट करने के लिए कहा गया है। जो एक साल के भीतर थिएटर कमांड के लिए सांगठनिक ढांचा तैयार करेंगे।

बनेंगी चार थिएटर कमांड

सूत्रों के मुताबिक यह तय कर लिया गया है कि कुल चार थिएटर कमांड बनेंगी। इसमें आर्मी की दो कमांड होंगी। एक वेस्टर्न थिएटर कमांड और दूसरी ईस्टर्न थिएटर कमांड। नेवी की

एक थिएटर कमांड बनेगी और एक एयर डिफेंस कमांड बनेगी। आर्मी के नॉर्डर्न कमांड को (जो जम्मू-कश्मीर और लद्दाख का इलाका देखती है) और एयरफोर्स के एओसी (एयर ऑफिसर कमांडिंग) जम्मू-कश्मीर को इससे अलग रखा जाएगा और वह अपने मौजूदा स्वरूप में ही रहेंगी।

जल्द होंगे सीएनसी नियुक्त

सूत्रों के मुताबिक आर्मी, नेवी और एयरफोर्स से कहा गया है कि वह थिएटर कमांड के लिए सीएनसी (कमांडर इन चीफ) नियुक्त करें और तीनों सर्विस के साथ मिलकर वे थिएटर कमांड के लिए सांगठनिक ढांचा तैयार करने का काम करें और एक साल के वक्त में रिपोर्ट दें। इसके बाद सरकार के अप्रूवल से थिएटर कमांडर नियुक्त किए जाएंगे। वह 2-3 साल के भीतर थिएटर कमांड तैयार करेंगे। कुल मिलाकर थिएटर कमांड के हकीकत का रूप लेने करीब 3-4 साल लगेंगे।



सीएनसी का होगा डबल टास्क

आर्मी, नेवी और एयरफोर्स जो सीएनसी नियुक्त करेंगे उनका डबल टास्क होगा। वह थिएटर कमांड के लिए ढांचा तैयार करने का काम करेंगे साथ ही अपनी मौजूदा कमांडर की जिम्मेदारी भी संभालेंगे। अगर थिएटर कमांड बनाने की प्रक्रिया में कुछ रुकावट आती है या कुछ गड़बड़ होती है तो कमांडर अपने पुराने रोल में जा सकते हैं और हर वक्त फोर्स ऑपरेशनल रेडी रह सकती है।

...तो मौजूदा 17 कमांडर्स का क्या होगा

अभी आर्मी की सात कमांड हैं, एयरफोर्स की भी सात कमांड और नेवी की 3 कमांड हैं। कुल मिलाकर अभी 17 कमांड और 17 कमांडर हैं। थिएटर कमांड बनने के बाद कुल 4 कमांडर होंगे। तो अभी के कमांडर्स का क्या रोल होगा? सूत्रों के मुताबिक कमांडर का जो मौजूदा रैंक है वह थिएटर कमांड में डिप्टी कमांडर बनेंगे और स्टाफ ऑफिसर हो जाएंगे।

शुरू में सिर्फ ऑपरेशन रोल होगा थिएटर कमांडर का

सूत्रों के मुताबिक थिएटर कमांड बनने के बाद थिएटर कमांडर शुरू में ऑपरेशनल जिम्मेदारी संभालेंगे और बाकी चीजें मौजूदा कमांडर देखेंगे। फिर धीरे धीरे एक एक जिम्मेदारी थिएटर कमांडर के पास जाएगी।

कहां बनेंगे थिएटर कमांड के बेस

आर्मी की दो थिएटर कमांड में से वेस्टर्न थिएटर कमांड का बेस जयपुर होगा और ईस्टर्न थिएटर कमांड का बेस कोलकाता या लखनऊ हो सकता है। नेवी की जो थिएटर कमांड बनेगी उसका बेस कारवार हो सकता है क्योंकि यह नेवी की पहली पसंद है। वैसे कोच्चि भी एक विकल्प है। एयर डिफेंस कमांड के बेस के लिए जोधपुर, गांधीनगर और इलाहाबाद, इन तीन विकल्पों पर विचार हो रहा है।

<https://navbharattimes.indiatimes.com/india/there-will-be-a-big-change-in-the-army-soon-process-of-making-commander-in-chief-for-theatre-command-begins/articleshow/86039679.cms>

 **Hindustan Times**

Thu, 09 Sept 2021

India's 1st emergency landing strip on highway to be inaugurated in Barmer today

In October 2017, fighter jets and transport planes of the Air Force conducted mock landings on the Lucknow-Agra Expressway to show that such highways can be used by the IAF planes for landing in case of an emergency

By Amit Chaturvedi

Union ministers Rajnath Singh and Nitin Gadkari will inaugurate an emergency landing strip at Gandhav Bhakasar section on National Highway-925 in Barmer, Rajasthan, on Thursday for Indian Air Force (IAF) planes.

An IAF plane, carrying the two ministers, will conduct a mock emergency landing on the national highway. Singh, the Union defence minister, will also visit Jaisalmer where he will interact with IAF personnel.

"Raksha Mantri Shri @rajnathsingh will be visiting Barmer and Jaisalmer in Rajasthan tomorrow. He will review the operations, attend the MRSAM induction ceremony and also interact with



A fighter jet of the Indian Air Force performed landing on Agra-Lucknow Expressway in 2017.(PTI File Photo)

the IAF personnel stationed in Jaisalmer," Singh's office posted on Twitter on Wednesday.

This is the first time that a national highway (NH-925) will be used for emergency landing of IAF aircraft.

The National Highways Authority of India (NHAI) has developed a 3-km section of Satta-Gandhav stretch of NH-925A, as an emergency landing facility (ELF) for the IAF. It is part of a newly developed two lane paved shoulder of Gagariya-Bakhasar and Satta-Gandhav section having a total length of 196.97 km. The project will cost ₹765.52 crore under the Bharatmala Pariyojana.

In October 2017, fighter jets and transport planes of the IAF had conducted mock landings on the Lucknow-Agra Expressway to show that such highways can be used by the IAF planes for landing in case of an emergency.

The Lucknow-Agra Expressway is a state highway and comes under the Uttar Pradesh government.

Apart from the Emergency Landing Strip, 3 helipads (size 100 x 30 metres each) have been constructed in Kundanpura, Singhania and Bakhasar villages in this project, according to the requirements of the Air Force/Indian Army, which will be the basis for strengthening the Indian Army and security network on the western international border of the country.

<https://www.hindustantimes.com/india-news/indias-1st-emergency-landing-strip-on-highway-to-be-inaugurated-in-barmer-today-101631151180602.html>



Thu, 09 Sept 2021

पाकिस्तान बॉर्डर के पास आज गरजेंगे भारतीय सेना के फाइटर प्लेन, पहला 'टच एंड गो' ऑपरेशन

Emergency air strip will be inaugurated today: भारत पाक बॉर्डर के पास राजस्थान के जालोर जिले में बनाई गई देश की पहली इमरजेंसी एयर स्ट्रिप का आज उद्घाटन किया जायेगा। हवाई पट्टी पर एयरक्राफ्ट ऑपरेशन और फाइटर विमानों का फ्लाई पास्ट होगा।

By श्याम विश्‍नोई

जालोर: भारत-पाकिस्तान बॉर्डर (India-Pakistan border) पर राजस्थान के जालोर जिले के अगड़ावा और सेसावा गांव के बीच बनी देश की पहली इमरजेंसी एयर स्ट्रिप (Emergency air strip) का उद्घाटन आज रक्षा मंत्री राजनाथ सिंह और सड़क परिवहन एवं राजमार्ग मंत्री नितिन गडकरी करेंगे। बुधवार को यहां रिहर्सल के तौर पर तीन फाइटर प्लेन (Fighter plane) उतारे गए थे। रक्षा मंत्री राजनाथ सिंह और केंद्रीय सड़क परिवहन एवं राजमार्ग मंत्री नितिन गडकरी सुबह 8.30 बजे पालम एयरपोर्ट नई दिल्ली से रवाना होंगे। वे सीधे अगड़ावा जालोर इमरजेंसी हवाई पट्टी पर उतरेंगे। सुबह 11 से 12.30 बजे तक दोनों मंत्री इमरजेंसी हवाई पट्टी पर एयरक्राफ्ट ऑपरेशन और फाइटर विमानों का फ्लाई पास्ट देखेंगे।



पाकिस्तान बॉर्डर से सटी देश की यह पहली हवाई पट्टी है।

इस दौरान एसयू-30 एमकेआई एंड जगुआर फाइटर विमानों का फ्लाई पास्ट होगा। दोनों मंत्री इमरजेंसी लैंडिंग फील्ड का उद्घाटन करेंगे। इसके लिये हवाई पट्टी के पास में 8100 वर्ग फीट का एक डोम तैयार

किया गया। इस डोम में दोनों मंत्रियों का कार्यक्रम होगा। इस दौरान वे एयरफोर्स के अधिकारियों और जवानों का हौसला अफजाई भी करेंगे। राजनाथ और गडकरी दोनों का हवाई पट्टी से करीब 12.30 बजे रवाना होकर दोपहर 1.15 बजे जैसलमेर एयरपोर्ट पहुंचने कार्यक्रम प्रस्तावित है। उद्घाटन की सभी तैयारियां पूरी कर ली गई है। गाधव से बाखासर चलने वाले ट्रैफिक को डायवर्ड कर दिया गया है। ट्राफिक को सिवाड़ा, चितलवाना, होतीगांव होते हुये डाइवर्ट किया गया है।

अंतरराष्ट्रीय बॉर्डर के नजदीक पहला 'टच एंड गो' ऑपरेशन

देश की पहली [आपातकालीन](#) हवाई पट्टी पर आज करीब डेढ़ घंटे तक वायुसेना के बेड़े में शामिल कई लड़ाकू विमान तेज गर्जना के साथ उतरेंगे और उड़ान भी भरेंगे। रक्षा मंत्री राजनाथ सिंह और सड़क परिवहन व राजमार्ग मंत्री नितिन गडकरी इस हवाई पट्टी पर लड़ाकू विमानों के ट्रायल के साक्षी बनेंगे। इस दौरान सुखोई SU-30, मिग और जगुआर जैसे लड़ाकू विमान तेज गर्जना के साथ आपातकालीन हवाई पट्टी पर लैंडिंग करेंगे। पाकिस्तान बॉर्डर से सटी देश की यह पहली हवाई पट्टी है।

सुरक्षा के पुख्ता इंतजाम

प्रशासन और पुलिस ने कार्यक्रम को लेकर सुरक्षा के पुख्ता इंतजाम किये हैं। हवाई एयर स्ट्रिप के चारों तरफ बाइमेर और जालोर के पुलिस के जवान मौजूद रहेंगे। एयरफोर्स अधिकारियों की निगरानी में सुबह सबसे पहले हरक्यूलिस प्लेन को उतारा गया। इसके बाद सुखोई और मिग के साथ अगस्ता हेलिकॉप्टर की भी लैंडिंग हुई। यहां दोपहर 2 बजे तक आवागमन को बंद कर दिया गया है। लैंडिंग के पहले से ही एयरफोर्स और पुलिस के अधिकारी पहुंच गए थे।

<https://hindi.news18.com/news/rajasthan/jalore-indian-army-fighter-plane-will-land-near-pakistan-border-today-know-full-schedule-rjsr-3733939.html>



Thu, 09 Sept 2021

Uttar Pradesh's defence corridor to have small arm units along with tanks and missiles

By Rashmi Sharma

Lucknow: The defence corridor in Uttar Pradesh would have manufacturing units for small arms also besides drones, tanks and missiles. The corridor in UP stretched from Jhansi in Bundelkhand region to Lucknow, Kanpur and Aligarh has proposals from the small arm manufacturers also.

According to the officials of UP Industrial and Express Ways Authority (UPIEDA), the nodal agency for defence corridor, two companies have been investing Rs 215 crore on the units to manufacture assault rifles and carbine cartridges. Both these units would come up in the Jhansi node of corridor. Delta Combat Systems Limited (Delta) and Very Win Defence Private Limited have submitted proposals for setting up units in UP's defence corridor. The state government has allotted land to both these companies. Besides land has been allotted to DRDO for Brahmos missile units in Lucknow and Aligarh node of defence corridor.



Brahmos missile | Photo credit: ANI

Officials informed that Delta has been investing Rs 150 crore on the unit that would manufacture cartridges for assault, carbine, INSAS and sniper rifles in Jhansi for the army. The

UPIEDA has allotted 15 hectares of land to it. In Jhansi, another unit is likely to come up that would manufacture polymer frames of pistols and other security equipment.

It may be mentioned that the Prime Minister Modi had announced setting up a defence corridor in UP during the investor's meet held in Lucknow in the year 2018. After this, the state government had identified land in Lucknow, Chitrakoot, Kanpur, Jhansi, Agra and Aligarh for this corridor. During the defence expo held in Lucknow several domestic and overseas companies had signed MOU worth Rs 50000 crores for setting up units in defence corridor.

According to officials, a maximum of 29 MOUs have been signed for Aligarh node in the defence corridor. Besides 11 companies have sought land in Lucknow, six in Jhansi, eight in Kanpur node for their units. UPIEDA has so far allotted 55.40 hectares of land to 19 companies in Aligarh node, which would invest Rs 1245.75 crores.

<https://www.freepressjournal.in/india/uttar-pradeshs-defence-corridor-to-have-small-arm-units-along-with-tanks-and-missiles>



Thu, 09 Sept 2021

यूपी के डिफेंस कॉरिडोर में बनाए जाएंगे भारतीय सेना के लिए स्माल आर्म्स

उत्तर प्रदेश के डिफेंस कॉरिडोर में भारतीय सेना की रक्षा के
मुताबिक स्माल आर्म्स का निर्माण किया जाएगा।

उत्तर प्रदेश के डिफेंस कॉरिडोर (Defense Corridor) में भारतीय सेना (Indian Army) की रक्षा जरूरतों के मुताबिक आधुनिक उपकरण और स्माल आर्म्स का निर्माण किया जाएगा। इसके तहत सेना में उपयोग की जाने वाली एसॉल्ट राइफल (Assault Rifle), स्नाइपर राइफल (Sniper Rifles) और सीक्यूबी कार्बाइन के कारतूस डिफेंस कॉरिडोर के झांसी नोड में बनाए जाएंगे। जबकि झांसी नोड में पॉलीमर फ्रेम पिस्टल के फ्रेम एवं सुरक्षा उपकरण आदि बनाए जाएंगे।



डिफेंस कॉरिडोर में डेल्टा कॉम्बैट सिस्टम्स लिमिटेड (डेल्टा) और वेरी विन डिफेंस प्राइवेट लिमिटेड द्वारा किए जा रहे निवेश से यह संभव होगा। यह दोनों

डिफेंस कॉरिडोर में बनेंगे भारतीय सेना के लिए स्माल आर्म्स(फोटो - सोशल मीडिया)

कंपनियां 215 करोड़ रुपए का निवेश कर सेना के लिए स्माल आर्म्स आदि बनाएंगी। सेना के लिए स्माल आर्म्स बनाने वाली कंपनियों को जमीन देने से साथ ही यूपी के डिफेंस कॉरिडोर में ब्रह्मोस मिसाइल के लखनऊ नोड में और ड्रोन का निर्माण करने के लिए अलीगढ़ नोड में सरकार ने जमीन आवंटित की है। जल्दी ही डिफेंस कॉरिडोर में आवंटित की गई जमीनों पर निर्माण कार्य शुरू होगा।

उल्लेखनीय है कि प्रधानमंत्री नरेंद्र मोदी ने जनवरी 2018 में इन्वेस्टर्स समिट के दौरान यूपी में डिफेंस कॉरिडोर बनाने की घोषणा की थी। जिसके तहत प्रदेश सरकार ने लखनऊ, कानपुर, चित्रकूट, झांसी, आगरा, और अलीगढ़ नोड में डिफेंस कॉरिडोर स्थापित करने की कार्रवाई की गई। इसके के बाद फरवरी 2020 को लखनऊ में आयोजित डिफेंस एक्सपो के दौरान रक्षा उत्पाद से जुड़ी देशी और विदेशी कंपनियां ने कॉरिडोर

में निवेश के लिए 50 हजार करोड़ के एमओयू किए थे। सबसे अधिक एमओयू अलीगढ़ में खैर रोड पर अंडला में बनाए जा रहे कॉरिडोर के लिए हुए।

अधिकारियों के अनुसार अलीगढ़ नोड में फैक्ट्री लगाने के लिए 29 कंपनियों ने अपने प्रोजेक्ट सरकार को सौंपे और फैक्ट्री लगाने के लिए जमीन उपलब्ध कराने का आग्रह किया था। इसी प्रकार लखनऊ नोड में 11, झांसी नोड में छह, कानपुर नोड में आठ कंपनियों ने फैक्ट्री लगाने के लिए जमीन उपलब्ध कराने का आग्रह किया था।

यूपीडा ने विभिन्न कंपनियों से मिले प्रस्तावों पर कार्रवाई करते हुए अलीगढ़ नोड में 19 विख्यात कंपनियों को अब तक 55.40 हेक्टेयर भूमि आवंटित की है। यह 19 कंपनियां अलीगढ़ नोड में 1245.75 करोड़ रुपए का निवेश कर रक्षा संबंधी उपकरण बनाएंगी। इसके तहत ही एलन एंड अल्वन प्राइवेट लिमिटेड और एंकोर रिसर्च लैब एलएलपी कंपनी ने ड्रोन बनाने के लिए निवेश किया है। एलन एंड अल्वन प्राइवेट लिमिटेड ने अलीगढ़ नोड में ड्रोन बनाने के लिए 30.75 करोड़ रुपए का निवेश किया है जबकि एंकोर रिसर्च लैब एलएलपी कंपनी को 10 हेक्टेयर और एलन एंड अल्वन प्राइवेट लिमिटेड को अलीगढ़ नोड में भूमि आवंटित गई है, ये कंपनी 550 करोड़ रुपए का निवेश कर ड्रोन बनाएंगी। यह दोनों कंपनियां सेना के लिए अत्याधुनिक सुविधाओं से युक्त ड्रोन का निर्माण करेंगी।

डिफेंस कॉरिडोर में सेना के लिए स्माल आर्म्स बनाने के लिए झांसी नोड में डेल्टा कॉम्बैट सिस्टम्स लिमिटेड (डेल्टा) 150 करोड़ रुपए का निवेश कर रही हैं। इस कंपनी को 15 हेक्टेयर भूमि आवंटित कर दी गई है। यह कंपनी सेना द्वारा प्रयोग में लायी जा रही एसाल्ट राइफल, स्नाइपर राइफल, इंसास वो राइफल, सीक्यूबी कार्बाइन के कारतूस सहित अन्य शस्त्रों के कारतूस बनाएगी। सीक्यूबी कार्बाइन सेना और सुरक्षाबलों के लिए भी बहुत मुफीद है। यह 200 मीटर तक मार कर सकती है। इंसास वो राइफल है जिसका प्रयोग सेना के साथ ही साथ दूसरे सशस्त्र बल भी करते हैं। इस राइफल को एके-47 की तर्ज पर बनाया गया है। इसे भारत में ही तैयार किया जाता है। कारगिल वॉर में इसका जमकर प्रयोग हुआ।

एसॉल्ट राइफल और स्नाइपर राइफल सेना के लिए बेहद अहम शस्त्र हैं। इनके लिए कारतूस का निर्माण अब यूपी के डिफेंस कॉरिडोर में होगा। जबकि झांसी नोड में पॉलीमर फ्रेम पिस्टल के फ्रेम एवं सुरक्षा उपकरण आदि बनाए जाएंगे। यह पिस्टल संसार भर में प्रसिद्ध है और सेना में इसका खूब उपयोग होता है। एपीडा के अधिकारियों का कहना है कि यूपी के डिफेंस कॉरिडोर में सेना के लिए ब्रह्मोस मिसाइल, ड्रोन और स्माल आर्म्स बनाये जाने से यूपी को नई पहचान मिलेगी। चार साल पहले तक रक्षा क्षेत्र के उपकरण आदि बनाने के मामले में यूपी का कोई नाम नहीं लेता था लेकिन अब रक्षा क्षेत्र की बड़ी-बड़ी कंपनियां यूपी के डिफेंस कॉरिडोर में निवेश करने में रूचि दिखा रहे हैं। जल्दी ही उत्तर प्रदेश रक्षा उत्पाद निर्माण के क्षेत्र में आत्मनिर्भर बनने की ओर तेजी से बढ़ेगा। यही नहीं, जल्दी ही यूपी के डिफेंस कॉरिडोर में कई अन्तर्राष्ट्रीय कंपनियां भी अपनी यूनिट लगाती हुई दिखाई देंगी।

<https://newstrack.com/opinion/covid-19-guidelines-coronavirus-festive-season-state-government-vaccination-r-k-sinha-article-news-in-hindi-latest-286697?infinitemscroll=1>

Head of Indian Air Force's Maintenance Command visits base repair depot in Pune

Air Marshal Choudhary reviewed the tasks executed by the BRD and was briefed about the role played by the depot in supporting various legacy as well as latest ground support systems

Pune: Air Marshal Shashiker Choudhary, Air Officer Commanding-in-Chief, Maintenance Command of the Indian Air Force visited the Base Repair Depot (BRD) in Pune on Tuesday and Wednesday, where he highlighted the importance of engagement with academia, industries and startups. Air Marshal Choudhary reviewed the tasks executed by the BRD and was briefed about the role played by the depot in supporting various legacy as well as latest ground support systems.

“The Air Marshal appreciated the steps taken by the depot towards achieving the goal of ‘Atmanirbhar Bharat’, focused approach adapted



Air Marshal Shashiker Choudhary at BRD in the city. (Express)

towards indigenous developments, addressing complex repair of Avionics components through extensive use of Thermal Imaging Technologies, modern Automatic Test Equipment and Environmental screening. He also lauded efforts towards absorption of newer technologies and harnessing potential of artificial intelligence and blockchain to enhance maintenance and operations preparedness of IAF,” stated a press statement issued through the Defence PRO, Pune.

Air Marshal Choudhary directed the personnel of the depot to strictly follow Covid-appropriate precautions to prevent infection and continue to strive hard to remain true to its name of ‘karmveeras’.

Air Marshal Choudhary was accompanied by his wife Anita, who is president of Air Force Wives Welfare Association (Regional). She was briefed about various initiatives and welfare activities carried out during the pandemic.

<https://indianexpress.com/article/cities/pune/head-of-indian-air-forces-maintenance-command-visits-base-repair-depot-in-pune-7497571/>

Women can join NDA, Centre informs Supreme Court

However, the Centre also sought exemption from allowing female candidates to appear for this year's NDA exam, their first

New Delhi: The Union government on Wednesday informed the Supreme Court that it has decided that women, too, can join the Pune-based National Defence Academy (NDA). The Centre's submission in the top court came as a 2-judge bench took up a plea seeking directions for necessary steps to be taken to allow eligible female candidates to appear in the upcoming NDA examination, which is scheduled to be held on November 14.

"There's some good news. A decision has been taken at the highest level of forces and government that girls will be inducted for permanent commission through the National Defence Academy. The decision was taken late evening yesterday," Additional Solicitor General (ASG) Aishwarya Bhati, appearing for the central government, informed the bench, according to



All women contingent of Indian Army during the rehearsal for the Republic Day parade at Rajpath in New Delhi (PTI File Photo)

breaking" and "generational reform." Live Law. Bhati described it as a "path breaking" and "generational reform."

The Centre, however, also sought an exemption from allowing women candidates for this year's paper. On this, the bench headed by Justice Sanjay Kishan Kaul directed the government to put on record a detailed affidavit by September 20, mentioning details such as steps being mullied, timeline etc. The next hearing in the matter will take place on September 22, it announced.

"Armed forces are so respected in the country. However, on gender equality, they have to do more," Justice Kaul observed.

Wednesday's developments come in the backdrop of interim directions passed by the court on August 18, in which it said that girls can also appear for the NDA exam. "The policy that restricts their entry into the elite institution is based on gender discrimination," the order read.

In doing so, it rejected Centre's arguments that women not being allowed at the NDA does not violate their fundamental rights as male cadets trained at the academy do not enjoy any advantage in future career prospects over women who, at present, can join the Army only on short service commission (SSC) through the Combined Defence Services (CDS) exam.

At present, only male candidates who have cleared class 12th, and are between 16-and-a-half and 19-years-old, can apply for this exam, which is conducted twice every year by the Union Public Service Commission (UPSC). Those who clear the written exam then appear for Services Selection Board (SSB) interviews. Finally, the ones who clear their medical tests are inducted into the NDA, which was established in December 1954.

<https://www.hindustantimes.com/india-news/women-cadets-will-be-allowed-to-join-nda-centre-informs-supreme-court-10163108788411.html>

Ukraine to Supply Propulsion Systems for Indian Navy Frigates

Ukraine's Zorya-Mashproekt will supply M7H2 gas turbines for two Project 11356 frigates under construction at the Indian state shipbuilding company Goa Shipyard Limited (GSL) with Russian assistance for the Indian Navy

By Xavier Vavasseur

Zorya-Mashproekt Gas Turbine Research and Development Complex, a state-owned enterprise, which is a part of Ukroboronprom State Concern, has signed a contract with India's Goa Shipyard Limited for supply of two most up-to-date M7H2 units for the needs of the country's Navy.

Turbo-power units shall be installed at new multi-purpose frigates, which will soon be built at the Indian shipyard. According to the contract, the first unit should be ready in December next year, the second one – in July 2023.

M7H2 units have an upgraded microprocessor control system, 58,000 horsepower and allow for the speed of 30 knots. Goa Shipyard Limited is an Indian Government owned ship building company located on the West Coast of India at Vasco da Gama, Goa.

Over the past two weeks, Zorya-Mashproekt, Ukraine's designer and manufacturer of marine and industrial gas turbine plants, has signed contracts with Indian customers totaling about 100 mln USD.

Naval News comments:

On November 20, 2018, Rosoboronexport signed a contract with Goa Shipyard Limited (GSL) worth about \$ 500 million to assist in the construction of two Russian Project 11356 frigates at GSL shipyard for the Indian Navy, with the transfer of licenses and technologies by the Russian side. This contract was in addition to the \$ 1.2 billion contract signed in October 2018 by Rosoboronexport for the construction of two Project 11356 frigates in Russia at the Yantar shipyard in Kaliningrad for the Indian fleet.

The steel cutting of the first frigate for India took place at GSL in September 2020. Keel laying for the second ship took place in June this year. The two frigates built in Russia (Yantar Shipyard) are to be handed over to the Indian fleet in 2022 and 2023. These two ships are in fact unfinished frigates originally intended for the Russian Navy – Admiral Butakov (serial number 01360) and Admiral Istomin (serial number 01361). The ships will now be known as Tushil and Tamala.

The Government of India signed a contract with GSL on January 25, 2019 for the construction of the next two frigates of Project 11356. The ships, which are being built with Russian assistance and with partial transfer of technology from Russia, are planned to be transferred to the Indian Navy. in June 2026 and December 2026, respectively.

About 1135.6 frigates

The Indian Navy already operates six Talwar-class frigates. Also as the Project 1135.6, it is a class of guided-missile frigates designed and built by Russia. A modification of the Krivak III-class frigates, the Project 1135.6 Talwar-class is fitted with a number of « Make in India » sub-systems.

The two follow-on Project 1135.6 frigates are to integrate the BrahMos cruise missile system in place of the 3M-54E Klub-N anti-ship missile and "advanced sensors".



INS Teg (F44) Talwar-Class guided missile frigate (credit: Indian Navy)

The Project 1135.6 warships are capable of reaching top speeds of 30 knots, have an endurance of around 30 days. They have a length of 124.8 meters and a displacement of about 4,000 tons. They are fitted with a flight deck to carry a helicopter for anti-submarine warfare missions.

The new frigates will deeply bolster Indian Navy capabilities in the Indian Ocean Region (IOR) as the service is dealing with a shortage of 10 frigates out of the 24 that it needs.

<https://www.navalnews.com/naval-news/2021/09/ukraine-to-supply-propulsion-systems-for-indian-navy-frigates/>



Thu, 09 Sept 2021

India, Australia to hold 2+2 meet

Defence, Foreign Ministers to visit India

By Kallol Bhattacharjee

Delhi: India and Australia will hold the inaugural '2+2' Ministerial meeting here during the upcoming visit of Foreign Minister Marise Payne and Minister of Defence Peter Dutton. The meeting will be part of Australia's engagements with regional partners as the Ministers will visit Indonesia, India, South Korea and the United States for Indo-Pacific consultations.

"These inaugural 2+2 discussions are a cornerstone of the Australia-India Comprehensive Strategic Partnership, which is founded on a shared commitment to a secure, stable and prosperous Indo-Pacific region," said Ms. Payne before starting the four country tour. A statement from the Minister said the bilateral relationship is at a "historic high" and the discussion



Australia's Minister for Foreign Affairs Marise Payne speaks in Sydney, Australia. File | Photo Credit: AP

between Ms. Payne and her Indian counterpart Dr. S. Jaishankar will cover, economic issues, cyber security, climate change, critical technology and supply chains. Mr. Dutton will hold the defence cooperation related meeting with his Indian counterpart Rajnath Singh.

The Sydney Morning Herald has reported that the discussion in Delhi is likely to include a bilateral free trade agreement. India and Australia have been in negotiation over a possible free trade deal, which has so far not yielded a positive result. The Ministerial meetings will be held in the backdrop of the evacuation of western forces from Afghanistan where Australia had a military presence. Australia has evacuated around 4,100 persons from Afghanistan.

India and Australia have increased interoperability in the maritime domain in the recent months. Both sides have signed a 'Joint Guidance for Navy to Navy Relationship Document'. Close cooperation in regional and multilateral fora like Indian Ocean Naval Symposium (IONS), Western Pacific Naval Symposium (WPNS), Indian Ocean Rim Association (IORA) and ASEAN are some of the highlights of the document. The document is aligned to the '2020 Comprehensive Strategic Partnership' agreed by Prime Ministers of India and Australia. Expanding bilateral defence relations, India and Australia signed Mutual Logistics Support Agreement. Australia has also deployed a Liaison Officer at the Indian Navy's Information Fusion Centre for Indian Ocean Region (IFC-IOR) as part of joint maritime efforts.

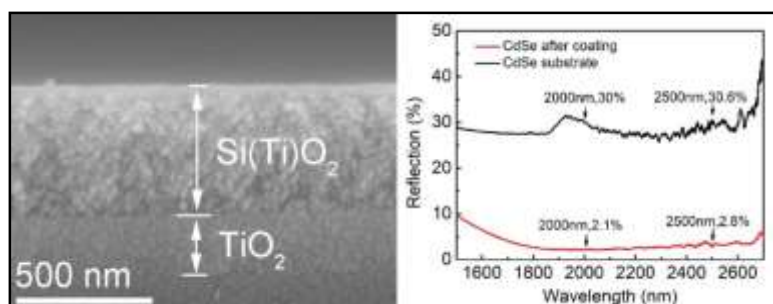
India and Australia also have to deal with the disruption in people to people contacts because of the COVID-19 pandemic. India has been demanding clarity from Canberra on the policy on the large number of citizens who have secured admission in Australian universities but are unable to study on campus as Australia has not yet opened the country for international travel. As of now, Australian citizens and permanent residents alone can travel to Australia.

<https://www.thehindu.com/news/national/india-australia-to-hold-22-meet/article36369867.ece>

Novel AR film developed to maximize the transmission of infrared light

By Xu Shaohui

High refractive index of the substrate material often leads to serious reflection on the surface of infrared optical elements, which will greatly reduce the transmittance of infrared light. To maximize the transmission of infrared light, antireflection (AR) film needs to be plated on the surface of infrared substrate. Sol-gel technology is an effective method for preparing high temperature resistant film. At present, there have been many reports on the preparation of AR film in visible light, however, it is still a challenge to prepare AR film working in infrared band by sol-gel method.



The SEM image of double antireflection film on CdSe substrate and reflection spectrum before and after coating. Credit: Xu Shaohui

Recently, a research team from Hefei Institutes of Physical Science (HFIPS), Chinese Academy of Sciences (CAS) prepared the infrared antireflective films by sol-gel method basing on infrared substrate.

"What we made is two band double-layer infrared AR film coating on CdSe substrate." said Xu Shaohui, who is the first author of the paper, "Thick infrared film is usually not resistant to high temperature annealing, and we solved this problem by reasonably designing the sol composition and adding additives."

The pore size and particle size of the film is uniform and small, which effectively avoid the light scattering. After coating, the reflection can be reduced simultaneously at 2 μm and 2.5 μm , and the reflectivity is 2.1% and 2.8% respectively. At the same time, the film can reduce reflection in a wide band, the average reflectivity in 1.8-2.6 μm is 2.6%, which is 27% lower than that of the uncoated sample. The AR film remains intact after 10 cold and thermal shocks at high temperature of 400 $^{\circ}\text{C}$ and low temperature of -16 $^{\circ}\text{C}$.

"It shows good high and low temperature resistance," said Xu.

This work is very important for further understanding the effects of additives and film structure on thermal stability. It provides valuable guidance for preparing long wavelength AR coating by sol-gel method, which is helpful to promote the development of infrared optical films.

Relevant research results were published on *Colloids and Surfaces A: Physicochemical and Engineering Aspects*.

More information: Shao Hui Xu et al, Preparation of double-layer two wavelength infrared antireflective coating on CdSe substrate, *Colloids and Surfaces A: Physicochemical and Engineering Aspects* (2021). DOI: [10.1016/j.colsurfa.2021.127329](https://doi.org/10.1016/j.colsurfa.2021.127329)

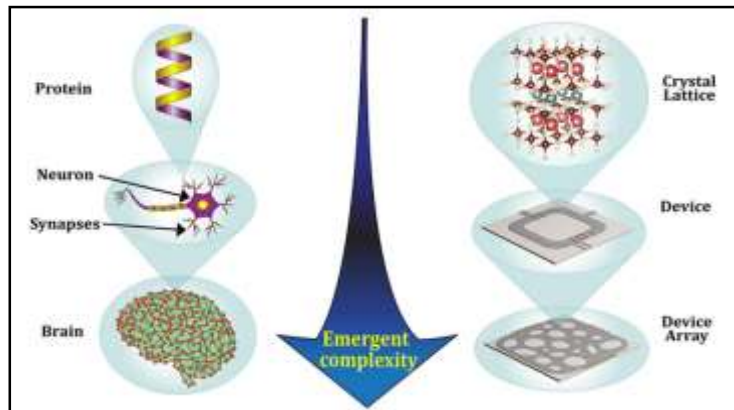
<https://phys.org/news/2021-09-ar-maximize-transmission-infrared.html>

Artificial brain networks simulated with new quantum materials

By Mario Aguilera

Isaac Newton's groundbreaking scientific productivity while isolated from the spread of bubonic plague is legendary. University of California San Diego physicists can now claim a stake in the annals of pandemic-driven science.

A team of UC San Diego researchers and colleagues at Purdue University have now simulated the foundation of new types of artificial intelligence computing devices that mimic brain functions, an achievement that resulted from the COVID-19 pandemic lockdown. By combining new supercomputing materials with specialized oxides, the researchers successfully demonstrated the backbone of networks of circuits and devices that mirror the connectivity of neurons and synapses in biologically based neural networks.



Like biologically based systems (left), complex emergent behaviors—which arise when separate components are merged together in a coordinated system—also result from neuromorphic networks made up of quantum-materials-based devices (right). Credit: University of California - San Diego

The simulations are described in the *Proceedings of the National Academy of Sciences (PNAS)*.

As bandwidth demands on today's computers and other devices reach their technological limit, scientists are working towards a future in which new materials can be orchestrated to mimic the speed and precision of animal-like nervous systems. Neuromorphic computing based on quantum materials, which display quantum-mechanics-based properties, allow scientists the ability to move beyond the limits of traditional semiconductor materials. This advanced versatility opens the door to new-age devices that are far more flexible with lower energy demands than today's devices. Some of these efforts are being led by Department of Physics Assistant Professor Alex Frañó and other researchers in UC San Diego's Quantum Materials for Energy Efficient Neuromorphic Computing (Q-MEEN-C), a Department of Energy-supported Energy Frontier Research Center.

"In the past 50 years we've seen incredible technological achievements that resulted in computers that were progressively smaller and faster—but even these devices have limits for data storage and energy consumption," said Frañó, who served as one of the PNAS paper's authors, along with former UC San Diego chancellor, UC president and physicist Robert Dynes. "Neuromorphic computing is inspired by the emergent processes of the millions of neurons, axons and dendrites that are connected all over our body in an extremely complex nervous system."

As experimental physicists, Frañó and Dynes are typically busy in their laboratories using state-of-the-art instruments to explore new materials. But with the onset of the pandemic, Frañó and his colleagues were forced into isolation with concerns about how they would keep their research moving forward. They eventually came to the realization that they could advance their science from the perspective of simulations of quantum materials.

"This is a pandemic paper," said Frañó. "My co-authors and I decided to study this issue from a more theoretical perspective so we sat down and started having weekly (Zoom-based) meetings. Eventually the idea developed and took off."

The researchers' innovation was based on joining two types of quantum substances—superconducting materials based on copper oxide and metal insulator transition materials that are based on nickel oxide. They created basic "loop devices" that could be precisely controlled at the nano-scale with helium and hydrogen, reflecting the way neurons and synapses are connected. Adding more of these devices that link and exchange information with each other, the simulations showed that eventually they would allow the creation of an array of networked devices that display emergent properties like an animal's brain.

Like the brain, neuromorphic devices are being designed to enhance connections that are more important than others, similar to the way synapses weigh more important messages than others.

"It's surprising that when you start to put in more loops, you start to see behavior that you did not expect," said Frañó. "From this paper we can imagine doing this with six, 20 or a hundred of these devices—then it gets exponentially rich from there. Ultimately the goal is to create a very large and complex network of these devices that will have the ability to learn and adapt."

With eased pandemic restrictions, Frañó and his colleagues are back in the laboratory, testing the theoretical simulations described in the PNAS paper with real-world instruments.

More information: Uday S. Goteti et al, Low-temperature emergent neuromorphic networks with correlated oxide devices, *Proceedings of the National Academy of Sciences* (2021). DOI: [10.1073/pnas.2103934118](https://doi.org/10.1073/pnas.2103934118)

Journal information: [Proceedings of the National Academy of Sciences](https://www.pnas.org)
<https://phys.org/news/2021-09-artificial-brain-networks-simulated-quantum.html>



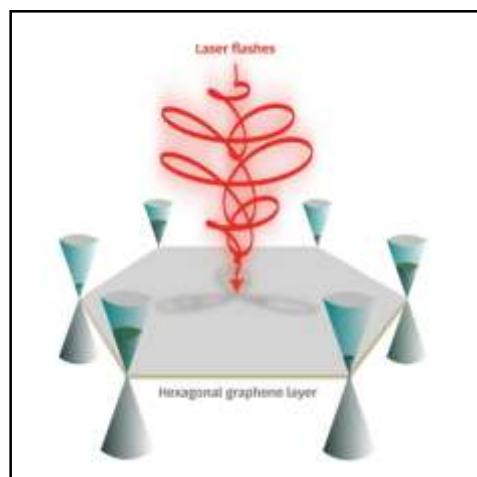
Thu, 09 Sept 2021

Graphene valleytronics: Paving the way to small-sized room-temperature quantum computers

Valleytronics is an emerging field in which valleys—local minima in the energy band structure of solids—are used to encode, process, and store quantum information. Though graphene was thought to be unsuitable for valleytronics due to its symmetrical structure, researchers from the Indian Institute of Technology Bombay, India, have recently shown that this is not the case. Their findings may pave the way to small-sized quantum computers that can operate at room temperature.

From the consumer's side, it's pretty easy to notice the giant strides that the field of electronics has made over the past few decades; with wearable gadgets, smart cities, self-driving cars, improved space missions, robots, holography, and supercomputers, the possibilities of technological advancement seem infinite. However, unbeknownst to most people, this accelerated trend of technological advancement fueled by electronics is rapidly coming to a halt as electronic components reach their practical limits. If we are to keep improving our computing power and capacity, we will need to find new ways to store and process data beyond the simple flow and charge of electrons, which is how modern electronics operates.

So quantum computers have recently become a hot topic. By encoding information in quantum phenomena, quantum computers transcend the binary notion of each bit being either "0" or "1."



Credit: [Indian Institute of Technology Bombay, Mumbai](https://www.iitb.ac.in/)

Instead, quantum bits exist as superpositions of "0" and "1" and can therefore take intermediate values. By exploiting superpositions through carefully designed algorithms, quantum computers could theoretically outperform conventional computers by several orders of magnitude in terms of speed. Sadly, it has proven difficult to find suitable quantum phenomena to encode information at room temperature. Existing computers, such as those owned by Google, IBM, and Microsoft, have to be kept at ultralow temperatures below -196.1 degrees Celsius, which makes them costly and impractical to operate.

Fortunately, there is a very promising approach for encoding quantum information that is actively being explored: valleytronics. Aside from their charge, electrons have another parameter that can be manipulated, namely their "valley pseudospin," which is the valley that the electron occupies. These so-called valleys are local minima in the energy bands of solids, which dictate the energetic state and location of electrons. Valleys, with their occupation state governed by quantum mechanics, can be used to encode, process, and store quantum information at less restrictive temperatures.

Recently, a team of scientists from the Indian Institute of Technology (IIT) Bombay, India, and Max-Born Institut, Germany, achieved a breakthrough in the field of valleytronics. In their latest study, published in *Optica*, they present a way to perform valley operations in monolayer or pristine graphene, which was assumed to be impossible by other researchers in the field. As the poster child of carbon nanomaterials, graphene is made from carbon atoms in a hexagonal pattern and bears a plethora of favorable properties. Atomically thin layers of graphene have electron valleys but, due to the material's inherent symmetry, they were deemed useless for valley operations.

Despite the odds, the team came up with a strategy to break graphene's valley symmetry using light. Associate Professor Gopal Dixit from IIT Bombay, who led the study, explains: "By tailoring the polarization of two beams of light according to graphene's triangular lattice, we found it possible to break the symmetry between two neighboring carbon atoms and exploit the electronic band structure in the regions close to the valleys, inducing valley polarization." In other words, this enables the use of graphene's valleys to effectively "write" information. Dr. Dixit also highlights that the flashes of light can cause electrons to wiggle several hundred trillion times a second. In theory, this means valleytronics at petahertz rates is possible, which exceeds modern computational speeds by a million times.

One of the most attractive aspects of conducting valley operations in graphene is that it's possible to do so at room temperature. "Our work could open the door to miniature, general-purpose quantum computers that can be used by regular people, much like laptops," remarks Dr. Dixit. With the higher computational speeds provided by quantum computers, it will be much quicker to perform molecular simulations, big data analysis, deep learning, and other computationally intensive tasks. In turn, this will accelerate the development of new drugs and the elucidation of molecular structures, which will help in the search for cures to complex diseases including COVID-19.

More information: M. S. Mrudul et al, Light-induced valleytronics in pristine graphene, *Optica* (2021). DOI: [10.1364/OPTICA.418152](https://doi.org/10.1364/OPTICA.418152)

Journal information: [Optica](https://phys.org/news/2021-09-graphene-valleytronics-paving-small-sized-room-temperature.html)
<https://phys.org/news/2021-09-graphene-valleytronics-paving-small-sized-room-temperature.html>

COVID-19 may not impair lung function in young adults, research shows

However, such patients showed slightly lower measurements for the amount of air they could exhale forcibly in one second - known as forced expiratory air volume in one second (FEV1), which is one of the measures of lung function

COVID-19 infection does not appear to impair the lung function of children and adolescents, according to a study presented at the virtual European Respiratory Society International Congress on Tuesday. A team led by researchers at the Karolinska Institute, Sweden, found that even patients with asthma did not show a statistically significant deterioration in lung function.

However, such patients showed slightly lower measurements for the amount of air they could exhale forcibly in one second - known as forced expiratory air volume in one second (FEV1), which is one of the measures of lung function.

A second study presented at the conference on Sunday showed that the lung function in children and adolescents was also unimpaired after COVID-19 infection, apart from those who experienced a severe infection.

"The COVID-19 pandemic has raised questions about if and how the lung is affected after clearance of the coronavirus infection, especially in young people from the general population with less severe disease," said Ida Mogensen, a post-doctoral fellow at the Karolinska Institute.

The first study gathered information from 661 young people with an average age of 22 years who were part of a large research that enrolled children born between 1994 and 1996 in Stockholm, and who have been followed by researchers ever since.

Collected data included measurements of lung function, inflammation and white blood cells called eosinophils, which are part of the immune system.

Of the 661 participants, 178 had antibodies against the SARS-CoV-2 virus, indicating they had been infected.

The researchers measured FEV1, forced vital capacity (FVC) which represents the volume of air in the lungs that can be exhaled after a taking the deepest breath possible, and FEV1/FVC ratio, which is an indicator of narrowed airways.

They calculated the changes in lung function between the period before the and during the pandemic.

The researchers then compared the percentage change with participants who had not been infected.

"Our analysis showed similar lung function irrespective of COVID-19 history," said Mogensen.

When the researchers included 123 participants with asthma in the analysis, the 24 per cent who had had COVID-19 showed a slightly lower lung function, but this was not statistically significant.

There was no difference in lung function among patients who had had COVID-19 with respect to eosinophils, indicators of inflammation, allergy responses or use of inhaled corticosteroids, they said.

The second study, presented by Anne Schlegtendal, from the University Children's Hospital in Germany, looked at the long-term effects of COVID-19 infection between August 2020 and March 21 in 73 children and adolescents aged between five and 18 years.

Schlegtendal and colleagues carried out lung function tests between two weeks and six months following COVID-19 infection and compared the results with a control group of 45 children who had not been infected with the coronavirus but may have had some other infection.

The participants had different severity of disease. An infection was considered severe if patients suffered breathlessness, a fever above 38.5 degrees Celsius for more than five days, bronchitis, pneumonia or stayed in hospital for more than a day.

Nineteen children and adolescents in the COVID-19 group had persistent or new symptoms following SARS-CoV-2 infection, the researchers found.

Eight reported at least one respiratory symptom, six of whom suffered ongoing breathing problems and two had a persistent cough.

Two of these eight patients showed abnormal lung function, they said.

"When we compared the COVID-19 patients with the control group, we found no statistically significant differences in the frequency of abnormal lung function," Schlegtendal said.

The researchers acknowledged some limitations in their study, including the small number of participants.

The participants were recruited at a single hospital, patients reported their symptoms, and a lack of information on long-term outcomes in the control group, they said.

In addition, the COVID-19 group did not include those with severe breathing problems during the acute phase of the infection.

"The findings from these two studies provide important reassurance about the impact of COVID infection on lung function in children and young adults," said Anita Simonds, a professor at Imperial College London, UK, who was not involved in the research.

"We know already that this group is less likely to suffer severe illness if they contract the virus, and these studies, which importantly include comparator groups without COVID-19, show that they are also less likely to suffer long-term consequences with respect to lung function," Simonds added.

<https://health.economictimes.indiatimes.com/news/diagnostics/covid-19-may-not-impair-lung-function-in-young-adults-research-shows/86036366>

