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Indian Army Demonstrates Drone Swarms during Army Day Parade

The Indian Army carried out a live demonstration of Drone Swarming capability using 75 indigenously designed and developed drones which executed an array of Artificial Intelligence (AI) enabled simulated offensive missions and close support tasks during the Army Day Parade held at Delhi Cantt on 15 January 2021.

This demonstration is a recognition of the Indian Army's steady embrace of emerging and disruptive technologies to transform itself from a manpower intensive to a technology enabled force to meet future security challenges. The Indian Army is investing heavily into Artificial Intelligence (AI), Autonomous Weapon Systems, Quantum Technologies, Robotics, Cloud Computing and Algorithm Warfare in order to achieve a convergence between the Army's warfighting philosophies and military attributes of these technologies.

The Indian Army has undertaken a wide array of technology initiatives in coordination with Dreamers, Startups, MSMEs, Private Sector, Academia, Defence Research and Development Organisation (DRDO) and Defence Public Sector Undertakings (DPSUs). One such project is the Artificial Intelligence (AI) Offensive Drone Operations which has been incubated with an Indian Start Up. This project symbolises the beginning of the Indian Army's tryst with autonomy in weapon platforms and showcases the Army's commitment towards merging the cutting edge of digital technologies with its human resource.

https://pib.gov.in/PressReleasePage.aspx?PRID=1688807

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Fri, 15 Jan 2021 4:10PM

भारतीय सेना ने सेना दिवस परेड में अपने ड्रोन्स का शानदार प्रदर्शन किया

भारतीय सेना ने आज 15 जनवरी 2021 को दिल्ली कैंट में आयोजित सेना दिवस परेड के दौरान अपने 75 स्वदेशी डिजाइन से विकसित ड्रोन्स का उपयोग करते हुए इनकी हवा में उड़ने की क्षमता का लाइव प्रदर्शन किया। आर्टिफिशिल इंटेलिजेंस तकनीक से इन ड्रोन्स को नमूने के तौर पर तैयार किया गया, दुश्मन के कृत्रिम मिशन और ठिकानों तक पहुंचाया गया जिसकी तमाम जानकारियां इनके जरिए एकत्र हुईं।

इस प्रदर्शन के पीछे भारतीय सेना का मकसद भविष्य के लिए अपनी सेना को नई प्रौद्योगिकी से लैस करना है ताकि सुरक्षा संबधी किसी भी बड़ी चुनौती का सामना कुशलता से किया जा सके। भारतीय सेना आर्टिफिशियल इंटेलिजेंस, ऑटोनॉमस वेपन सिस्टम, क्वांटम टेक्नोलॉजीज, रोबोटिक्स, क्लाउड कंप्यूटिंग और अल्गोरिदम वॉरफेयर जैसी नवीन और प्रभावी प्रौद्योगिकियों के इस्तेमाल पर भारी निवेश कर रही है ताकि सेना अपने युद्ध संबंधी दर्शन और इन विशेषताओं वाली तकनीकों के इस्तेमाल में आपसी सामंजस्य बिठा सके।

भारतीय सेना ने ड्रीमर्स, स्टार्टअप्स, सूक्ष्म, लघु और मध्यम उद्यम मंत्रालय (एमएसएमई), निजी क्षेत्र, शैक्षणिक समुदाय, रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) और रक्षा मंत्रालय के सार्वजनिक क्षेत्र उपक्रमों के साथ मिलकर प्रौद्योगिकी से जुड़ी पहलों की एक लंबी श्रृंखला शुरू की है। ऐसी ही एक परियोजना है आर्टिफिशियल इंटेलिजेंस ऑफेंसिव ड्रोन ऑपरेशंस, जिसे एक भारतीय स्टार्ट-अप के साथ मिलकर चलाया जा रहा है। यह परियोजना भारत को हथियारों के लिए अपने प्लेटफॉर्म तैयार करने में स्वायत्त बनाने की एक कोशिश का हिस्सा है। ये पहल भारतीय सेना के इसी प्रयास की शुरुआत का प्रतीक है जो अपने मानव संसाधन को साथ लेकर दुनिया की नवीनतम डिजिटल प्रौद्योगिकियों के इस्तेमाल के लिए प्रतिबद्ध है।

https://pib.gov.in/PressReleasePage.aspx?PRID=1688857

Press Information Bureau
Government of India

Ministry of Defence

Fri, 15 Jan 2021 2:33PM

73rd Army Day celebrated

Indian Army celebrated its 73rd Army Day today. Every year Indian Army celebrates 15th January as 'Army Day' to commemorate the day when General (later Field Marshal) K M Carriappa took over the command of Army from General Sir FRR Bucher, the last British Commander-in-Chief in 1949 and became the first Commander-in-Chief of Indian Army post Independence.

The celebrations commenced with wreath laying ceremony at National War Memorial where CDS Gen Bipin Rawat and the three Service Chiefs paid homage to the Martyrs.

General MM Naravane, Chief of the Army Staff reviewed the Army Day Parade at the Cariappa Parade Ground, Delhi Cantonment and awarded 15 Sena Medals (including five posthumously) for individual acts of Gallantry and 23 COAS Unit Citations for commendable performance of their respective units. The Army Day parade was commanded by Maj Gen Alok Kaker, Chief of Staff, Delhi Area. The leading contingent of the parade was formed of the recipients of the Param Vir Chakra and Ashok Chakra awardees. This was followed by army contingents which included T-90 tank BHISHMA, infantry combat vehicle BMP II, BRAHMOS missile system, PINAKA Multiple Launch Rocket System, upgraded SCHILKA Gun System, Bridge Layer Tank, international sports awardees and seven marching contingents including mounted horse cavalry.

The Indian Army also carried out a live demonstration of Drone Swarming capability using 75 indigenously designed and developed drones which executed an array of Artificial Intelligence (AI) enabled simulated offensive missions and close support tasks.

https://pib.gov.in/PressReleasePage.aspx?PRID=1688778

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Fri, 15 Jan 2021 2:33PM

भारतीय सेना ने अपना 73वां सेना दिवस मनाया

भारतीय सेना ने आज अपना 73वां सेना दिवस मनाया। भारतीय सेना हर साल 15 जनवरी को 'सेना दिवस' के रूप में मनाती है। वर्ष 1949 में आज के दिन जनरल के.एम. करियप्पा (बाद में फील्ड मार्शल) ने अंतिम ब्रिटिश कमांडर-इन-चीफ जनरल सर एफ.आर.आर. बुचर से सेना की कमान संभाली थी। वे स्वतंत्रता के बाद भारतीय सेना के पहले कमांडर-इन-चीफ बने थे।

समारोह की शुरुआत राष्ट्रीय युद्ध स्मारक पर माल्यार्पण के साथ हुई जहां सीडीएस जनरल बिपिन रावत और तीनों सेनाओं के प्रमुखों ने शहीदों को श्रद्धांजलि दी।

सेना प्रमुख जनरल एम.एम. नरवणे ने करियप्पा परेड ग्राउंड, दिल्ली छावनी में सेना दिवस परेड का निरीक्षण किया और वीरता के व्यक्तिगत कार्यों के लिए 15 सेना पदक (पांच मरणोपरांत सहित) और अपनी-अपनी इकाइयों के लिए सराहनीय कार्य प्रदर्शन के लिए 23 सी.ओ.ए.एस. यूनिट प्रशस्ति-पत्र प्रदान किए। सेना दिवस परेड की कमान दिल्ली एरिया के चीफ ऑफ स्टाफ मेजर जनरल आलोक केकर ने संभाली थी। परेड के प्रमुख दल में परमवीर चक्र और अशोक चक्र पुरस्कार विजेता शामिल हुए। इसके बाद सेना के दस्ते आए जिनमें टी-90 टैंक भीष्म, पैदल सेना इन्फेन्ट्री कॉम्बैट वाहन बीएमपी II, ब्रह्मोस मिसाइल सिस्टम, पिनाका मल्टीपल लॉन्च रॉकेट सिस्टम, उन्नत चिल्का गन सिस्टम, ब्रिज लेयर टैंक, अंतर्राष्ट्रीय खेल पुरस्कार विजेता और 7 घुड़सवार दस्ते तथा माउंटिड होर्स केवेलरी शामिल थे।

भारतीय सेना ने 75 स्वदेशी रूप से डिजाइन और विकसित ड्रोनों का उपयोग कर के ड्रोन स्वार्मिंग क्षमता का एक लाइव प्रदर्शन किया, जिसमें आर्टिफिशियल इंटेलिजेंस (एआई) युक्त कृत्रिम आक्रमण मिशनों और नजदीकी सहायक कार्यों की श्रृंखला का निष्पादन भी किया गया।

https://pib.gov.in/PressReleasePage.aspx?PRID=1688828

INDIA TODAY

Sat, 16 Jan 2021

Indian Army gets ready for 'swarm' drone attacks | Know all about the aerial warfare tactic

The Indian Army has enhanced its drone capabilities, inducting 75 indigenous unmanned aerial vehicles (UAVs) that can also be used for combat missions to target enemy positions. Read on to know all about the combat drones that were part of the 'swarm technology' display at the Army Day Parade on January 15

By Abhishek Bhalla

New Delhi: The Indian Army has enhanced its drone capabilities, inducting 75 indigenous unmanned aerial vehicles (UAVs) that can also be used for combat missions to target enemy positions.

Representative graphics by Tanmoy Chakraborty.

The combat drones that were part of the 'swarm technology' display at the Army Day Parade on January 15 have been inducted in phases since August 2020, boosting army's surveillance capabilities and also bringing in an element of surprise to carry out targeted strikes to assist troops on the ground.

Initially, only five of these drones were bought in August 2020 but in the last few months, as tensions escalated with China in Ladakh and spiking ceasefire violations by Pakistan at the Line of Control (LoC), more of these were purchased, officials said.

What are swarm drones?

The drones being unleashed in a bunch is a tactic called swarm drone technology. Not only are these drones light weighted and low cost but the high-tech artificial intelligence enables these to be crucial in future warfare.

Swarm drones can create havoc as it is part of deception warfare with radars or air defence systems often unable to pick up the multiple drones but see it as one big object.

The technology is used worldwide. In 2018, two Russian military bases were attacked using swarm drones in Russia.

Drone formations such as these employed to take down multiple targets simultaneously are often referred to as "Kamikaze missions". Drones are expected to play a huge role in future wars; recently what we saw in the conflict between Azerbaijan and Armenia.

Drones offer highly stealthy capabilities that can be matched with very few other devices. It was the go-to option for the Iranians when they planned an attack on Saudi's Abqaiq oil facilities in 2019. The Iranians targeted the oil facilities with delta wing drones apart from other long-range missiles, but it was these drones that did the most damage. The most damning fact of this attack was that the targets were all hit by drone attacks launched from Saudi territory, possibly inside the range of Saudi air defences.

Key features

With a range of 50 km, these drones can make deep inroads behind enemy lines with a capability to hit targets from a distance of 500 metres. The UAV has a mother drone that has an attached child drone meant to fire and self-destroy after hitting the target.

These drones were out on a public display as the Indian Army carried out a live demonstration of Drone Swarming capability using 75 indigenously designed and developed drones which executed an array of Artificial Intelligence (AI) enabled simulated offensive missions and close support tasks during the Army Day Parade held at Delhi Cantt on Friday.

"This demonstration is recognition of the Indian Army's steady embrace of emerging and disruptive technologies to transform itself from a manpower-intensive to a technology-enabled force to meet future security challenges. The Indian Army is investing heavily into Artificial Intelligence (AI), Autonomous Weapon Systems, Quantum Technologies, Robotics, Cloud Computing and Algorithm Warfare in order to achieve a convergence between the Army's warfighting philosophies and military attributes of these technologies," Indian Army said in a statement.

These drones carry out automated, randomised sonic missions to the target area with the use of artificial intelligence and onboard adaptive computers. It is driven by continuous satellite feeds.

These drones can also be pressed into action for airdropping food, medicine, ammunition or any other essential needs for soldiers in forward locations cut away from supply lines.

The Indian Army has undertaken a wide array of technology initiatives in coordination with Dreamers, Startups, MSMEs, Private Sector, Academia, Defence Research and Development Organisation (DRDO) and Defence Public Sector Undertakings (DPSUs).

One such project is the Artificial Intelligence (AI) Offensive Drone Operations which has been incubated with an Indian start-up. This project symbolises the beginning of the Indian Army's tryst with autonomy in weapon platforms and showcases the Army's commitment towards merging the cutting-edge of digital technologies with its human resource, the army said.

These are not the only drone technologies Indian Army is looking to procure indigenously. Recently the army ordered more than 100 drones costing around Rs 140 crore for high-altitude areas. These are aimed at enhancing surveillance capabilities at more than 15,000 feet just like the friction areas of the current India-China standoff in Ladakh.

https://www.indiatoday.in/india/story/indian-army-gets-ready-for-swarm-drone-attacks-1759493-2021-01-15

नवभारत टाइम्स

Sat, 16 Jan 2021

Army Day parade 2021: पहली बार आर्मी डे पर दिखा किस तरह मिलकर अटैक कर सकते हैं ड्रोन

आर्मी डे परेड के दौरान कई ड्रोन ने मिलकर दुश्मन के टैंक, आतंकी कैंप, हैलीपैड, फ्यूल स्टेशन सहित कई जगहों को निशाना बनाने का प्रदर्शन किया। इसमें 75 ड्रोन शामिल थे। इंडियन आर्मी ने स्वदेशी कंपनियों के साथ मिलकर ड्रोन स्वॉर्मिंग सिस्टम का प्रदर्शन किया। इसमें मदर ड्रोन सिस्टम को भी दिखाया गया।

पूनम पाण्डे

हाइलाइट्स:

- ***75 ड्रोन ने मिलकर दिखाया किस तरह हो सकता है दुश्मन पर हमला***
- ***आर्मी डे परेड के दौरान दिखी सेना की तकनीकी ताकत***
- ***स्वदेशी कंपनियों के साथ मिलकर ड्रोन स्वॉर्मिंग सिस्टम का प्रदर्शन***

नई दिल्ली: आर्मी डे पर शुक्रवार को पहली बार इंडियन आर्मी ने ड्रोन अटैक का नजारा पेश किया। आर्मी डे परेड के दौरान दिखाया कि किस तरह ड्रोन बिना किसी मानवीय हस्तक्षेप के दुश्मन के ठिकानों को सटीक निशाना बना सकते हैं। कई ड्रोन के मिलकर एक मिशन को अंजाम देने के इस सिस्टम को ड्रोन स्वॉर्मिंग कहते हैं। यह नई टेक्नॉलजी भविष्य में युद्ध के पूरे सीन को ही बदलने की क्षमता रखती है और नो कॉन्टेक्ट वॉरफेयर यानी बिना कॉनटेक्ट से युद्ध में यह बेहद अहम साबित होगी।

50 किमी अंदर आकर टार्गेट को किया नष्ट

आर्मी डे परेड के दौरान कई ड्रोन ने मिलकर दुश्मन के टैंक, आतंकी कैंप, हैलीपैड, फ्यूल स्टेशन सहित कई जगहों को निशाना बनाने का प्रदर्शन किया। इसमें 75 ड्रोन शामिल थे। इसमें दिखाया गया कि आर्टिफिशियल इंटेलिजेंस के जरिए यह ड्रोन बिना किसी मानव हस्तक्षेप के दुश्मन के इलाके में 50 किलोमीटर तक अंदर दाखिल हुए और टारगेट की पहचान कर उन्हें नष्ट किया। इस सिस्टम में सारे ड्रोन एक दूसरे से कम्युनिकेट करते हैं और मिलकर मिशन को अंजाम देते हैं।

मदर ड्रोन से निकले चाइल्ड ड्रोन

इंडियन आर्मी ने स्वदेशी कंपनियों के साथ मिलकर ड्रोन स्वॉर्मिंग सिस्टम का प्रदर्शन किया जो इसका भी प्रदर्शन है कि आत्मनिर्भर भारत की दिशा में कदम तेजी से आगे बढ़ रहे हैं। भविष्य में किस तरह युद्ध होंगे यह इसकी भी एक झलक थी। यह टेक्नॉलजी दुनिया भर में युद्ध के तरीके को बदल रही है।

इसमें मदर ड्रोन सिस्टम को भी दिखाया गया। दिखाया गया कि मदर ड्रोन से चार चाइल्ड ड्रोन निकलते हैं और जिनके अलग अलग टारगेट होते है। फिर यह चाइल्ड ड्रोन अपने टारगेट को सफलतापूर्वक नष्ट करते हैं।

पैरा ड्रॉपिंग में हो सकेंगे इस्तेमाल

ऑफेंसिव ड्रोन ऑपरेशन के जरिए इंडियन आर्मी ने दिखाया कि तरह भारत तकनीक के मामले में आगे बढ़ रहा है। ड्रोन ने सिर्फ दुश्मन के ठिकानों को ही निशाना नहीं बनाया बल्कि यह भी दिखाया कि यह पैरा ड्रॉपिंग के लिए भी इस्तेमाल किए जा सकते हैं। ड्रोन से कोई सामान पैराशूट के जरिए ड्रॉप करने के अलावा ये ड्रोन सामान लेकर खुद लैंड हो सकते हैं और लैंड होते ही इनका सिस्टम खुद बंद हो जाएगा।

टीम में 600 किलो वजन की सप्लाई ड्रॉप करने की क्षमता

जब वहां मौजूद सैनिक वह सामान लेकर कोई दूसरा सामान जो उसमें भेजना है उसे ड्रोन में लोड कर देगा तो फिर ड्रोन ऑटोमेटिक खुद स्टार्ट हो जाएंगे और अपने ठिकाने तक पहुंच जाएंगे। 75 ड्रोन की टीम मिलकर 600 किलो तक की सप्लाई ड्रॉप कर सकती है। भारतीय सैनिक कई ऐसे इलाकों में तैनात हैं जहां पहुंचना बहुत मशक्कत भरा होता है, मौसम भी चुनौती होती है। ऐसे में ड्रोन के जरिए सप्लाई करने के साथ ही एक्सचेंज भी बेहद आसानी से हो सकता है।

https://navbharattimes.indiatimes.com/india/indian-army-first-time-ever-demonstrates-combat-swarm-drones-at-army-day-parade-2021-in-delhi/articleshow/80282575.cms

नवभारत टाइम्स

Sat, 16 Jan 2021

रक्षा में आत्मनिर्भरता

रक्षामंत्री राजनाथ सिंह ने ठीक ही उम्मीद जताई है कि तेजस कार्यक्रम भारत के एयरोस्पेस मैन्युफैक्चरिंग का पूरा इकोसिस्टम बदलने में महत्वपूर्ण भूमिका निभाएगा।

By Ashish Kumar

वायुसेना के लिए 83 हल्के लड़ाकू विमान तेजस की खरीद को सरकार द्वारा दी गई मंजूरी मौजूदा हालात में कई दृष्टियों से महत्वपूर्ण है। देश के अंदर निर्मित तेजस विमान खरीदने का यह 48,000 करोड़ रुपये का सौदा घरेलू रक्षा उद्योग के लिए संजीवनी साबित हो सकता है। देश के अंदर रक्षा खरीद का यह अब तक का सबसे बड़ा सौदा है। रक्षामंत्री राजनाथ सिंह ने ठीक ही उम्मीद जताई है कि तेजस कार्यक्रम भारत के एयरोस्पेस मैन्युफैक्चरिंग का पूरा इकोसिस्टम बदलने में महत्वपूर्ण भूमिका निभाएगा।

ध्यान रहे कि इस ऑर्डर को पूरा करने के क्रम में डिजाइनिंग और मैन्युफैक्चरिंग सेक्टर से जुड़ी देश की करीब 500 छोटी-बड़ी कंपनियां हिंदुस्तान एयरोनॉटिक्स लिमिटेड (हाल) के साथ मिलकर काम करेंगी। स्वाभाविक रूप से यह फैसला इन क्षेत्रों को नए जोश से भर सकता है। रक्षा क्षेत्र में आत्मनिर्भरता के लक्ष्य की ओर तेजी से आगे बढ़ने में भी इससे मदद मिलेगी। हालांकि इस विमान को बनाने में हमारी प्रगति कितनी धीमी रही है, इसका अंदाजा इस तथ्य से लगाया जा सकता है कि देश के अंदर लड़ाकू विमान बनाने का यह प्रॉजेक्ट 50 साल से ज्यादा पुराना है।

पहली बार 1969 में सरकार ने एयरोनॉटिक्स कमिटी की यह सिफारिश मंजूर की थी कि 'हाल' को देश में ही लड़ाकू विमान बनाने चाहिए। इसके बाद अलग-अलग कारणों और प्राथमिकताओं के चलते इस प्रॉजेक्ट पर काम चींटी जैसी रफ्तार से ही आगे बढ़ा। अस्सी के दशक में जब वायु सेना को यह महसूस हुआ कि मिग-21 पुराने पड़ते जा रहे हैं और इनकी जगह भारतीय लड़ाकू विमानों की जरूरत उसे पड़ने वाली है, तब जरूर तेजस प्रॉजेक्ट में कुछ तेजी आई।

खास बात यह है कि पिछले कुछ वर्षों में सरकार रक्षा क्षेत्र में आत्मनिर्भरता को लेकर सचमुच गंभीर हुई है और उसने कई ऐसे फैसले किए हैं जिनसे इस दिशा में आगे बढना आसान हुआ है। वित्तमंत्री निर्मला सीतारमण ने पिछले साल मई में देश के अंदर बने मिलिट्री हार्डवेयर की खरीद के लिए अलग से बजट प्रावधान करने की घोषणा की थी। रक्षा क्षेत्र में प्रत्यक्ष विदेशी निवेश की सीमा भी 49 फीसदी से बढ़ाकर 74 फीसदी कर दी गई थी। इसके अलावा ऐसे हथियारों की सालाना सूची जारी की गई जिनका आयात नहीं किया जाएगा।

इन कदमों की अहमियत इस बात से समझी जा सकती है कि सरकार ने साल 2025 तक डिफेंस मैन्युफैक्चरिंग क्षेत्र का टर्नओवर 1.75 लाख करोड़ रुपये करने का लक्ष्य रखा है। जाहिर है, रक्षा में आत्मनिर्भरता के संकल्प से रोजगार बढ़ाने और अर्थव्यवस्था को गति देने का दोहरा उद्देश्य पूरा हो सकता है। मगर सबसे बड़ी बात यह कि दोतरफा सीमा तनाव के मौजूदा माहौल ने राष्ट्र की सुरक्षा को लेकर जो अतिरिक्त चिंताएं पैदा की हैं, उनका सबसे अच्छा जवाब सैन्य जरूरतों के मामले में अधिक से अधिक आत्मनिर्भरता से ही दिया जा सकता है।

https://navbharattimes.indiatimes.com/opinion/editorial/self-reliance-in-defense/articleshow/80301000.cms

INDIA TODAY

Sun, 17 Jan 2021

Tejas gets wings

The government approves the purchase of 83 Tejas Mark-1A Light Combat aircraft, one of the largest deals placed with the Indian defence industry. Know why this indigenous project could be a game-changer

By Sandeep Unnithan

New Delhi: The Indian government finally walked the talk on supporting the indigenous defence industry when the Cabinet Committee on Security (CCS) on January 13 cleared the purchase of 83 indigenously designed and developed Tejas Mark-1A Light Combat Aircraft (LCA) worth Rs 48,000 crore. A formal contract, among the largest placed with the Indian defence industry, is likely to be inked between the state-owned Hindustan Aeronautics Ltd (HAL) and the Indian Air Force (IAF) at the biannual Aero India air show in Bengaluru this year. The first jets will start rolling out in three years. They will be an advanced version of the Tejas Mark-1 that made its maiden flight exactly two decades ago.

HIGH-FLIER: The Tejas LCA at the Aero India show in Bengaluru, Feb. 2017 (Alamy Stock Photo)

Behind this long-delayed fighter aircraft project is the story of a rare political foresight that could lead to the creation of an indigenous aircraft ecosystem in the country. The IAF, too, has finally come on board to back the programme. In 2017, a presentation to the government by the then IAF chief, Air Chief Marshal B.S. Dhanoa, committed the IAF to buying 18 squadrons of the LCA and its variants-over 300 aircraft-over the next 15 years. IAF officials say the LCA family fits into their plans to reduce the diversity of fighter aircraft to just four by 2035-the other three being Sukhoi, Rafale and Mirage-2000.

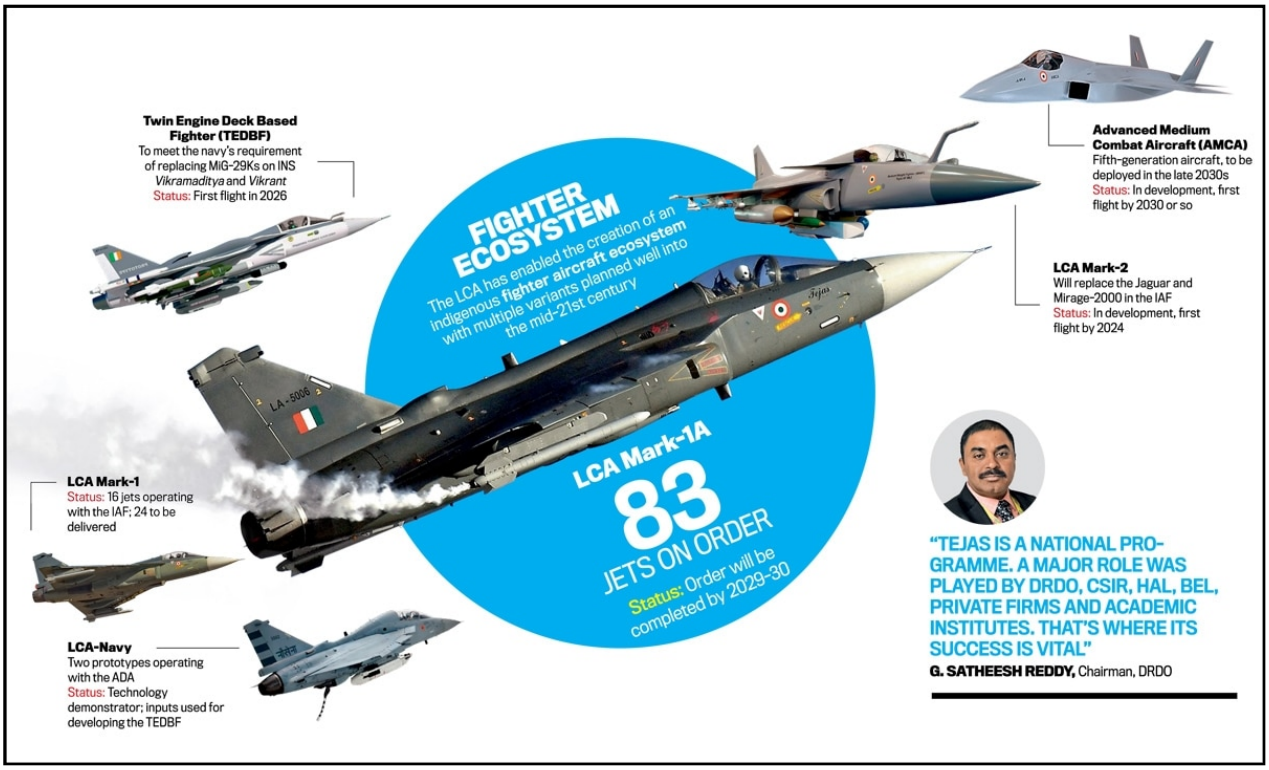
The Parrikar Push

None of this would have happened without a concerted push in 2016 when the then defence minister Manohar Parrikar stepped in to rescue the Tejas from being perpetually trapped in a development cycle. The project had begun as a concept during Indira Gandhi's rule in the early 1980s. The aircraft made its first flight in 2001, during prime minister Atal Bihari Vajpayee's tenure. It was designed as a fourth-generation multirole fighter, one of the world's smallest and lightest supersonic aircraft with a combat radius of 500 km and eight hard points that can carry 5.3 tonnes of weapons and sensors.

The project was at a crossroads in the first term of the Narendra Modi government. The IAF did not want the jet in its existing form, but that required convincing Parrikar first. Parrikar, whose firm had once supplied for a DRDO (Defence Research and Development Organisation) project, was an enthusiastic votary of India developing indigenous defence capability. Here was a technocrat who could slip into the nuts and bolts of weapon acquisitions.

Parrikar saw in the Tejas a ticket to India's fighter aircraft self-sufficiency. He chaired nearly 20 meetings between all stakeholders in the national effort to build a lightweight supersonic fighter that would fill the void left by the fast-depleting MiG-21 squadrons. The participants included HAL, ADA (Aeronautical Development Agency) and the IAF. The IAF felt that Tejas Mark-1 was underpowered, short-legged and lacked an effective radar and sensor suite. It wanted ADA, the DRDO's aircraft design agency, to upgrade the Tejas to a more capable LCA Mark-2, powered by new GE-414 engines.

But that meant extensive redesign and practically a new aircraft, which would delay the induction of the Tejas by another decade. "Why don't you take a Mark-1A?" Parrikar suggested to the IAF during a 2016 technical meeting held at his South Block office. He added that HAL and ADA could deliver a far more capable jet with 43 improvements, including a new-generation Active Electronically Scanned Array (AESA) radar, simultaneous air-to-air and air-to-ground attack capabilities, a new sensor suite and electronic warfare capability. Parrikar's successor, Rajnath Singh, gave the Tejas the ultimate political thumbs-up by donning flying overalls for a half-hour sortie in the jet in September 2019.



Six years on, after fierce cost negotiations between the IAF and HAL, the defence ministry is close to placing the single-largest order for an indigenously designed, developed and produced aircraft. The last time this happened was in the 1960s when the IAF bought over 140 indigenously produced HF-24 Maruts from HAL.

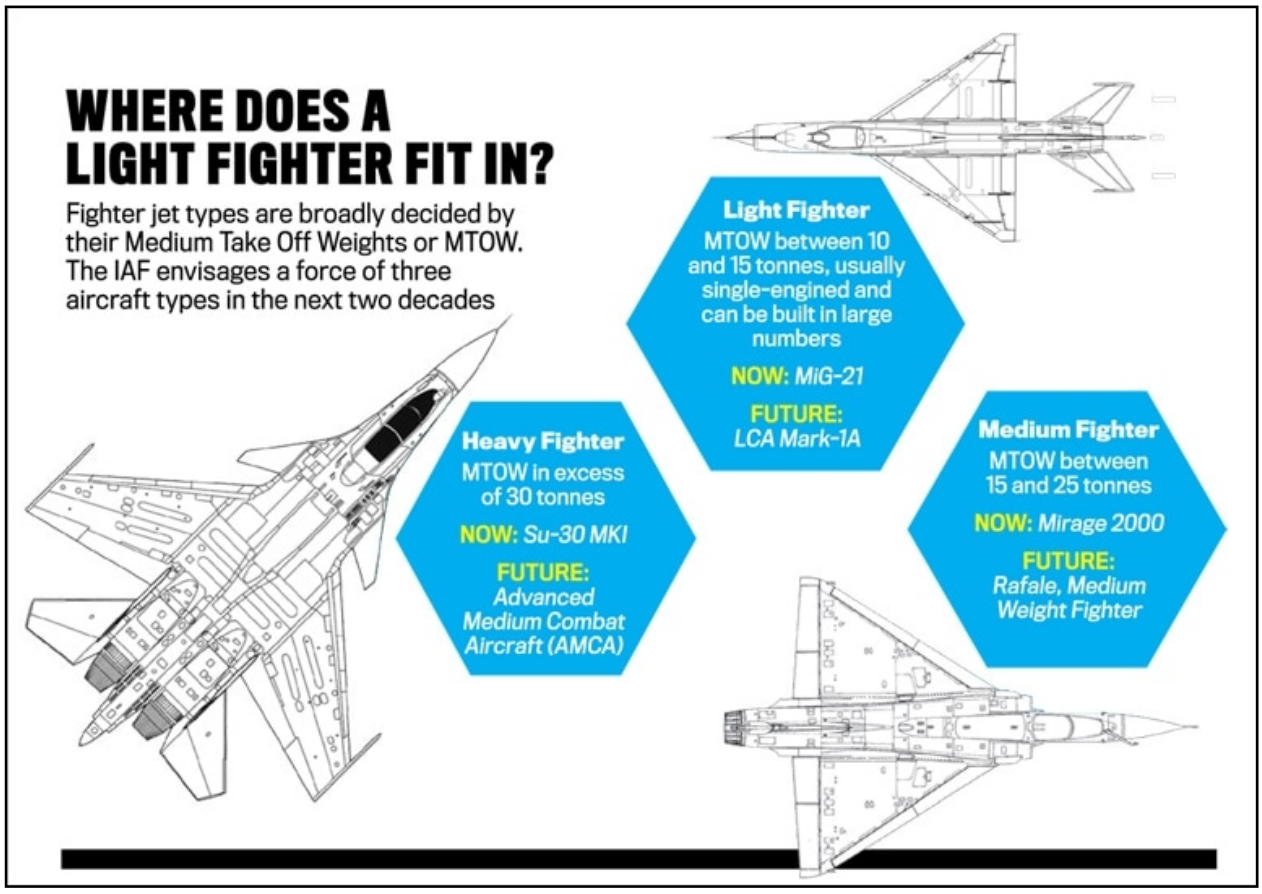
The first LCA Mark-1A aircraft will fly out around 2022. HAL says the aircraft will commence production 36 months after the signing of the contract, with all 83 aircraft to be delivered by 2029-30. These are ambitious timelines for a project that has been bogged down by delays. But if both agencies stick to the deadlines, Tejas Mark-1As could fly in as one-to-one replacements for the last batch of refurbished MiG-21s, the 'Bisons', set to be retired by the end of the decade. It could be the booster shot the IAF needs, as it is down to just 28 squadrons of fighter aircraft (each squadron has 18 warplanes) against the sanctioned strength of 40. This is the leanest it has been in nearly 50 years.

A Trendsetter

Delivering the 83 Tejas aircraft will require a huge change of approach for HAL, the country's only fighter aircraft-maker. For over half a century, the organisation has mainly done licensed production, an arrangement under which Russian, French and British aircraft firms gave HAL the knowhow to assemble aircraft from knockdown kits. Now, HAL will have to master the technology of indigenous production. "In licensed production, you are told what to do. In indigenous production, you have to find out what to do," says Girish Deodhare, director of the Bengaluru-based ADA.

The biggest change in HAL has been outsourcing. From building all components in-house and then assembling them, it wisely outsourced component-building to the private sector. All five major sections of an aircraft are built by private firms spread across south India. Dynamatic

Technologies builds the front fuselage, L&T builds the wings, VEM Technologies the centre fuselage and Alpha-Tocol Engineering Services the rear fuselage. The tail and rudder are built by the National Aerospace Laboratories and Tata Advanced Materials. HAL puts together these sections at its Bengaluru production line, integrates the engine and avionics and rolls out the aircraft.



In the review meetings with Parrikar, HAL had asked for an order of at least 83 more Mark-1A jets. The IAF, which had ordered 40 Mark-1 jets in the initial operation clearance standard, wanted only 40 more 1As. The IAF's anxiety was understandable. It had raised the first LCA squadron in 2016 with just two aircraft. It took HAL nearly four years to achieve its promised production rate of eight jets a year. The IAF agreed to order 83 more aircraft, racking up the total to 123 aircraft. The number, HAL agreed, would make a production line viable. It assured the IAF delivery of at least 16 Mark-1As every year.

The impact of the LCA order on the Indian economy, according to a senior HAL executive, will be phenomenal. "A Rs 48,000 crore order will have a force multiplier effect of seven-eight times on the economy," says the official. "Jobs will be created, work will be outsourced. There will be a tremendous downstream effect on Tier 2 and Tier 3 manufacturing in the high-tech defence aviation sector."

It is important to maintain this momentum. The key to sustaining this ecosystem will be to push the LCA internationally as a cost-effective replacement for the MiG-21. The IAF's huge vote of confidence in an Indian-made fighter aircraft goes a long way in ensuring this. The LCA's first squadron has completed 2,000 accident-free flying hours in Sulur near Coimbatore. Six Tejas aircraft achieved an impressive 80 per cent availability during Gaganshakti 2018, the IAF's largest exercise in three decades. In another milestone, on January 11, 2020, an LCA-Navy prototype carried out the first-ever successful deck-landing on aircraft carrier INS Vikramaditya.

"Now that the intellectual property is with us, integration and advancements become easy. A new display, a new armament or a new missile-it's much easier to integrate them into the aircraft," says Air Vice-Marshal N. Tiwari, former head of the National Flight Test Centre at ADA. A case in point is the Derby air-to-air missile from the navy's fleet of now-retired Sea Harrier aircraft. It

would have taken at least two years and a few million dollars in consultancy fees to foreign vendors to integrate the missile into an imported aircraft. ADA says the Derby's integration into the Tejas and test-firing in 2017 took just three months.

"LCA Tejas is a national programme," says DRDO chief G. Satheesh Reddy. "A major role was played in it by the DRDO, CSIR (Council of Scientific and Industrial Research), HAL, BEL (Bharat Electronics Limited), a number of private industries and academic institutes. That's where the success of the project becomes vital."

ADA has switched to a bouquet of fighter aircraft programmes, with the fifth-generation Advanced Medium Combat Aircraft (AMCA) and Twin Engine Deck-Based Fighter (TEDBF) to replace the navy's MiG-29Ks. The project closest to induction is the LCA Mark-2, briefly called the Medium Weight Fighter (MWF). The extensive redesign and a new engine have created a far more capable aircraft in the Mirage-2000 category. The aircraft was designed in consultation with the IAF to avoid the pitfalls of the LCA Mark-1 project, in which scientists and the IAF worked in silos. "For MWF, we sat down with the IAF every month to understand their requirements," says Deodhare.

The leap to the next generation began in 2015 when the IAF said it did not want a MiG replacement beyond the 123 LCAs ordered-the long-term need was a replacement for the Mirage-2000. ADA did a complete design review and, in 2019, presented the MWF, a much more capable aircraft than LCA Mark-1 despite using the same technologies. The Tejas Mark-2 is a 4.5 generation aircraft that is considered to be bigger, faster and stronger than the LCA. At 17.5 tonnes, it is three tonnes heavier than Mark-1 and carries 900 kg more internal fuel, enabling it to fly further. It can carry six and a half tonnes of weapons and stores, nearly double the Mark-1's capability. The first Mark-2 prototype will fly out in 2024. Deodhare says it's an aircraft in the class of the Rafale. The Mark-2 could well be the Tejas LCA's biggest test yet.

https://www.indiatoday.in/magazine/defence/story/20210125-tejas-gets-wings-1759577-2021-01-17

ThePrint

Sat, 16 Jan 2021

What the Tejas deal means for IAF, and India's chequered history with indigenous fighters

In episode 661 of #CutTheClutter, Shekhar Gupta looked at India's recent Rs 48,000-crore Tejas deal and also delved into the IAF's misadventures with indigenous fighter aircraft

New Delhi: On Wednesday, the Narendra Modi government cleared the Rs 48,000-crore deal for 83 LCA (Light Combat Aircraft) Tejas aircraft, which will see a greater collaboration between state-owned Hindustan Aeronautics Limited (HAL) and private firms as part of 'Make in India'.

Of these 83 aircraft, HAL will deliver 73 Tejas Mk 1A and 10 Tejas Mk 1 trainers by 2026. Tejas will only be the second indigenously built fighter aircraft in India's history.

In episode 661 of *'Cut The Clutter'*, ThePrint's Editor-in-Chief Shekhar Gupta talked about the Tejas aircraft along with India's adventures and misadventures with indigenous fighter aircraft.

Light Combat Aircraft Tejas | Shailendra Bhojak | PTI

Tejas' history

According to Gupta, "1983 was the first time when the Government of India cleared a project to build a new Light Combat Aircraft as a replacement for MiG 21s."

The first prototype of Tejas flew in 2001, 18 years

after the project started.

In the 1970s and 80s, especially after the 1974 Pokhran nuclear tests, India was caught in a terrible environment of technology denial. The West, particularly America, denied India access to any 'sensitive technology', he noted.

While India's strengths included the inherent ability in composite materials, design, math, and metallurgy, India lacked the know-how when it came to complex electronics, especially the engine. India's project to build the engine 'Kaveri' for a Light Combat Aircraft failed, added Gupta.

With time, the "technology apartheid" ended and this helped India put together a complex fighter aircraft. Today, Tejas is 50 per cent indigenous. It has a GE American engine, an Israeli Elta radar, and British aerospace, avionics, and other engines.

The first prototype of Tejas flew in 2001. In December 2013, the first stages got Initial Operational Clearance. In 2019, the IAF was given the first aircraft with Final Operational Clearance.

The Indian Airforce is currently in possession of 20 Tejas Mk1 aircraft, which have got the Initial Operational Clearance. Some have got Final Operational clearance but the IAF hasn't yet disclosed those figures yet.

By the time Tejas Mark1A becomes operational, Gupta said, IAF will have about three squadrons of Tejas Mk1 aircraft and will replace the really obsolete or 'number plated' squadrons.

India's misadventures with fighter aircraft

India has also had a chequered history with fighter aircraft in general.

By the mid-1950s, as India's relationship with Pakistan was tanking, Nehru sought advanced technologies to fight the Pakistanis. India employed Dr Kurt Tank, a leading German aeronautical engineer who built the Luftwaffe aircraft in World War II. This aircraft was copied 20,000 times during the war.

In India, Tank was made the director of Madras Institute of Technology. He and his team built HAL HF-24 Marut, an indigenously built fighter-bomber aircraft.

Marut was supposed to be of supersonic speed but could never surpass the speed of sound. This, Gupta said, is largely because of the 'technology denial' era. Nobody would sell India a decent engine.

India then started fitting two Orpheus engines into one Marut. So the aircraft had two subsonic engines and always remained underpowered. As many as 147 Maruts were produced and they played an essential ground support role in the 1971 war with Pakistan.

By 1975, however, this programme was suspended, and the Maruts were sold for scraps.

Gupta also cited another example of "*jugaad*" that the Indian Air Force had to endure. This was the Canada-made Fairchild Packet Aircraft that could go to high altitudes and land at very short landing grounds. However, this was found to be inadequate for higher Himalayas.

So the Indian Airforce put a jetpack, which was an Orpheus engine, on the aircraft's two piston engines to allow flying at higher altitudes.

https://theprint.in/opinion/what-the-tejas-deal-means-for-iaf-and-indias-chequered-history-with-indigenous-fighters/585874/

ThePrint

Sat, 16 Jan 2021

Tejas, a tale of India's nascent aerospace system with a happy ending

It was in 1983 when India rolled out the project to build a new light combat aircraft as a replacement for Russian MiG 21s, which continue to fly despite being obsolete

By Snehesh Alex Philip

In a boost to India's fledgling domestic aerospace ecosystem, the Cabinet Committee on Security cleared the Rs 48,000-crore deal for 83 Light Combat Aircraft Tejas, which included 73 Mark 1A versions, on 13 January.

The first big order to the state-run Hindustan Aeronautics Limited (HAL) for Tejas, which will become the backbone of the Indian Air Force (IAF) in the coming years, is a landmark in the aircraft's journey of over three and a half decades.

File photo | The Tejas aircraft used by IAF | Wikimedia Commons

It is a culmination of India's effort to build a frontline fighter aircraft, which began in the 1950s. It was in 1961 that HAL's HF-24 Marut, designed by Kurt Tank, the German aeronautical engineer who built the Luftwaffe aircraft in World War II, first flew.

And that's why Tejas is ThePrint's Newsmaker of the Week.

It was in 1983 when the government of India rolled out the project to build a new LCA as a replacement for the Russian MiG 21s, which continue to fly despite the fleet being obsolete.

The plan was to release the first aircraft by 1994. However, the first prototype of LCA flew only in 2001 — 18 years after the project started.

It was then that Prime Minister Atal Bihari Vajpayee christened the LCA as the Tejas.

One of the primary reasons for delay was the fact that India wanted to develop its own jet engine, something which it has not been able to do even today.

As ThePrint's Editor-in-Chief Shekhar Gupta explained, in the 1970s and the '80s, especially after the 1974 Pokhran nuclear tests, India was caught in a terrible environment of technology denial.

The West, particularly America, denied India access to any 'sensitive technology'. Moreover, the US imposed sanctions after India conducted the nuclear tests in May 1998.

In December 2013, the Tejas got Initial Operational Clearance and in 2019, the IAF was given the first aircraft with Final Operational Clearance.

How different is Tejas Mk 1A

The new aircraft comes with four major capabilities over the current variant of LCA, which is known as the Tejas Mk 1.

These improvements include mid-air refuelling, enhancing the combat ability, and maintainability improvements through incorporation of Active Electronically Scanned Array (AESA) Radar, Electronic Warfare (EW) suite and Beyond Visual Range (BVR) missile capabilities.

The aircraft will give a big boost to the domestic aviation industry since it involves extensive cooperation between the private industry and the HAL.

The front fuselage of the latest version of the Tejas will be built by Dynamatic Technologies, while the middle section has been outsourced to Hyderabad-based VEM Technologies, and the rear

section to Alpha Design Technologies, Bengaluru. The wings for Tejas Mk 1A will be manufactured by Larsen and Toubro.

There are over 70 Indian suppliers involved in manufacturing various parts of the aircraft.

In all, about 500 Indian companies, including MSMEs, will be working with HAL in this deal for 83 new Tejas.

Capabilities and future plans

The new aircraft has inbuilt capability to fire Beyond Visual Range missiles such as Derby missile and is already integrated on the current Tejas itself.

Indigenously developed BVR missile (ASTRA Mk 1) will also be integrated into the Mk 1A, which will be a weapon of choice of the IAF, HAL officials said. This weapon will give an edge to LCA Tejas over its contemporaries such as the Chinese-Pakistan joint venture JF 17 in BVR warfare.

With the introduction of podded Self-Protection Jammer (SPJ) and AESA radar in LCA Mk 1A, the survivability of the aircraft gets further enhanced.

The AESA radar is capable of tracking 16 targets at a time in air-to-air, air-to-ground and air-to-sea modes.

The IAF is also looking at procuring the next generation of Tejas, which will be known as Tejas Mk 2.

However, instead of being an LCA, it would be in the medium weight category.

The Aeronautical Development Agency, a lab of the Defence Research and Development Organisation (DRDO), is working with the HAL to develop a fifth-generation fighter aircraft called the Advanced Medium Combat Fighter Aircraft (AMCA).

The contract for Tejas is the best development for the Indian defence industry. The HAL and the ADA should ensure timebound delivery as well as manufacturing of future versions as per schedule.

This is because indigenous defence systems are the way forward for strategic independence.

(Views are personal.)

https://theprint.in/opinion/newsmaker-of-the-week/tejas-a-tale-of-indias-nascent-aerospace-system-with-a-happy-ending/586417/

FINANCIAL EXPRESS
Read to Lead

Sat, 16 Jan 2021

More strength to the Indian Air Force; 83 indigenous fighters will soon join IAF

The state-owned Hindustan Aeronautics Limited (HAL) is expected to ramp up production by harnessing both the Bangalore and Nasik factories towards this purpose and complete the deliveries by 2026

By Huma Siddiqui

The Light Combat Aircraft `Tejas' Mk 1A, a potent lightweight fighter is an excellent replacement for the venerable MiG-21 fighter which the IAF fielded for over 5 decades and is a capable 4th Gen aircraft. Besides the UAE, Malaysia, countries like the US too could be interested in these indigenous fighters.

The state-owned Hindustan Aeronautics Limited (HAL) is expected to ramp up production by harnessing both the Bangalore and Nasik factories towards this purpose and complete the deliveries by 2026.

Views of a former Chief Test Pilot

"From the first test flight of the Tejas on 04 Jan 2001 till today, exactly 20 years later, indigenously designed and developed by HAL, the Tejashas steadily matured in the past decade and is all set to be the lightweight fighter backbone of the IAF for the next 25 years," says Group Captain Badhrish Narasimha Athreya (Retd).

Besides the UAE, Malaysia, countries like the US too could be interested in these indigenous fighters.

According to the former chief test pilot, "The indigenous content will increase from 50 per cent presently to 60 per cent by the end of delivery schedule. The biggest imported content continues to be the engine (GE 404), the radar (ELTA 2052) and a considerable amount of avionics. This could see an improvement with the success of the UTTAM AESA radar project of DRDO."

"Though presently integrated with imported weapons such as the R-73 &Derby A-A missiles, the Tejas will be on priority to be integrated with the Astra (India's indigenous BVR), SAAW (Smart Anti Airfield Weapon) and a host of indigenous weapons being developed by DRDO."

"The humble beginnings of the `Tejas' will pave the way for HAL & India's ambitious indigenous aircraft capability consisting of the HTT-40 (Ab Initio turboprop trainer), IJT (Intermediate Jet Trainer), MWF (Medium Weight Fighter-Tejas Mk 2), a replacement for the Jaguar, Mirage & MiG-29s of the IAF, the ORCA (Omni Role Combat Aircraft), a competitor to the Rafale and AMCA, India's own 5th gen stealth fighter," he opines.

"The rising capability and the confidence of the D&D and Flight Test team at HAL can be borne by the fact that UAE and Malaysia have expressed interest in the Tejas and most recently, HAL has responded to the US Navy's jet training requirements by pitching the `Tejas LIFT' (Lead-In Fighter Trainer) offering the Tejas trainer variant as a contender in December 2020, something which will surely make our hearts swell with pride," he adds.

The Made in India fighter is the latest variant of the Tejas designated Mk 1 A.

"It features an improvement over the previous 40 supplied to the IAF consisting of an AESA (Active Electronically Scanned Array) Radar, a podded EW (Electronic Warfare) suite, AAR (Air to Air Refuelling) capability and BVR (Beyond Visual Range) missiles," the former test pilot concludes.

https://www.financialexpress.com/defence/more-strength-to-the-indian-air-force-83-indigenous-fighters-will-soon-join-iaf/2171574/

Hindustan Times

Mon, 18 Jan 2021

Bike ambulance developed by CRPF, DRDO set to launch tomorrow

The bike has been developed after the CRPF noticed a need for such bikes to reach fast to the narrow roads in tensed areas, especially in the Naxalite zones

New Delhi: The Central Reserve Police Force (CRPF) and the Institute of Nuclear Medicine & Allied Sciences (INMAS), DRDO, have developed 'RAKSHITA' - a bike ambulance to attend urgent evacuation needs of security force personnel in event of a medical emergency or battle injury in conflict zones. It will be launched tomorrow in Delhi.

Sources claimed that these bikes will give assistance to CRPF jawans and paramedics in case of any injuries during encounters. "These bikes will be more useful in areas like Bijapur, Sukma, Dantewada etc., as it is tough for the force to take big vehicles or ambulances inside the jungle," a CRPF official said.

The ambu-bikes are equipped with kits, three beacons - two in front, one at the rear - a a siren and a GPS-enabled tablet.(Sonu Mehta/HT Photo)

The bike has been developed after the CRPF noticed a need for such bikes to reach fast to the narrow roads in tensed areas, especially in the Naxalite zones. There have been instances where medical facilities couldn't reach on time and a delay in medical assistance ended up making the patients' situation more critical.

The INMAS works in the area of biomedical and clinical research with reference to radiation, neurocognitive imaging and research. It functions under the Defence Research and Development Organisation (DRDO), it is the Research and Development (R&D) wing of Ministry of Defence Government of India.

https://www.hindustantimes.com/india-news/bike-ambulance-developed-by-crpf-drdo-set-to-launch-tomorrow-101610876803470.html

DEFENCE AVIATION POST

Your Connect To The World Of Defence And Aviation

Sat, 16 Jan 2021

IAF announces induction of Astra, Its most potent Air-to-Air Missile

The Indian Air Force (IAF) on January 13 announced the induction of the indigenous, 110-km range Beyond Visual Range (BVR) air-to-air-missile, Astra.

While detailing its show of strength in the forthcoming Republic Day Parade, the IAF declared that the “Astra has been integrated with Sukhoi-30MKI and will be integrated with the Mirage-2000, Tejas and MiG-29 (fleets) in the future”.

The Astra fills up the critical air-to-air missile gap vis-a-vis Pakistan, which was exposed during the post-Balakot aerial confrontation over the Line of Control on February 27 last year.

Against the Pakistan Air Force (PAF) AIM-120 AMRAAMs with a range of 110 km, the maximum air-to-air reach of the IAF was under 80 km with the R-77. As a result, IAF's frontline Su-30 MKIs were forced into defensive manoeuvres when the AMRAAM-armed PAF F-16s attacked India in retaliation to India's cross-border air strike on the Jaish-e-Mohammad terrorist camp at Balakot in Pakistan on February 26.

The 110-km range of the Astra neutralises Pakistan's advantage over India in air-to-air weaponry. The Astra is capable of engaging "both short-range targets at a distance of 20 km and long-range targets up to a distance of 80-110 km" at varying altitudes, an IAF spokesperson elaborated.

The Astra is India's first indigenous air-to-air missile. The features of this all-weather BVR include mid-course inertial guidance with terminal active radar homing.

https://www.defenceaviationpost.com/2021/01/iaf-announces-induction-of-astra-its-most-potent-air-to-air-missile/

mint

Mon, 18 Jan 2021

DRDO develops India's first indigenous 9mm Machine Pistol: Key things to know

- ***The weapon is aptly named 'Asmi' meaning 'Pride', 'Self-Respect' and 'Hard Work'***

Defence Research and Development Organisation (DRDO) today said that it has developed the country's first indigenous machine pistol ASMI.

The pistol which is developed by DRDO along with the help of Indian Army is set to replace the 9mm pistols in the defence forces.

India's first indigenous 9mm Machine Pistol

Here are the key things:

- Infantry School, Mhow and DRDO's Armament Research & Development Establishment (ARDE), Pune have designed and developed this weapon using their respective expertise in the complementary areas.
- The weapon has been developed in a record time of four months. The Machine Pistol fires the in-service 9mm ammunition and sports an upper receiver made from aircraft grade Aluminium and lower receiver from carbon fibre.
- 3D Printing process has been used in designing and prototyping of various parts including trigger components made by metal 3D printing.
- The weapon has huge potential in Armed forces as personal weapon for heavy weapon detachments, commanders, tank and aircraft crews, drivers/dispatch riders, radio/radar operators, closed quarter battle,counter insurgency and counter terrorism operations etc. This is also likely to find hug employability with the central and state police organizations as well as VIP protection duties and Policing.
- The Machine Pistol is likely to have production cost under rupees 50000 each and has potential for exports. The weapon is aptly named "Asmi" meaning "Pride", "Self-Respect" & "Hard Work".

https://www.livemint.com/news/india/drdo-develops-india-s-first-indigenous-9mm-machine-pistol-key-things-to-know-11610878646930.html

Defence News

Defence Strategic: National/International

Press Information Bureau
Government of India

Ministry of Defence

Fri, 15 Jan 2021 7:01PM

Raksha Mantri Shri Rajnath Singh reviews Aero India-21 at the Apex Level: Bengaluru skies set to dazzle during World's First Hybrid Aerospace and Defence Exhibition; Aero India-21 mobile app launched

Raksha Mantri Shri Rajnath Singh, reviewed the preparation for Aero India - 21 during the Apex Committee Meetingon 15th January 2021 in Bengaluru. Aero India 2021 is a keenly anticipated event which is now being conducted as a Business event from 03rd to 05th February 2021. Thisthreeday event is unique as it will be the World's first Hybrid exhibition wherein the Business element of the event will be both physical as well as virtual.

During the meeting, Raksha Mantri emphasised on the Safe conduct of the event and making it inclusive for the world A&D industry. He said that the hybrid model of Aero India - 21 should be the template for the world to emulate conduct of Business in the new normal till the concerns of the pandemic are addressed. Aero India-21 is now being held simultaneously as a Physical Exhibition and a Virtual Exhibition with Stalls being provided in both the physical and virtual realms which will result in greater engagement and the exhibitors will experience a greater outreach catering to those who could not join the event physically. The Raksha Mantri noted that the attendees joining the event virtually could participate in Seminars, interact with the exhibitors and representatives, hold B2B meetings and could also view the product details and supporting videos.

Aero India being one of the Major International Aerospace andDefence (A&D) exhibitions, requires active participation, shared responsibility and synchronised efforts at all levels. Towards defining the roles and responsibilities, an MoU was signed on the margins of the meeting between Government of India and Government of Karnataka. The theme of the event is "Runway to a Billion Opportunities", in keeping withPrime Minister Shri Narendra Modi's vision for Atmanirbhar Bharat. In a first-of-its-kind initiative, the event itself will showcase India's resolve to be first amongst first. The indigenous technological and logistic prowess will be at the fore and the event will embolden our Aerospace and Defence industry, Start-ups, MSMEs to forge partnerships with Foreign OEMs who are also keen to attend.

The meeting was attended by Chief Minister of Karnataka Shri B. S. Yediyurappa and Chief Secretary of Karnataka Shri P. Ravi Kumar, Chief of Defence Staff General Bipin Rawat and Secretary of the Department of Defence Production Shri Raj Kumar, AOC in C Southern Command Air Marshal RK Mathur, GoC in C Southern Command Lt Gen CP Mohanty and other senior officials.

Aero India-21 abides by International norms for conduct of such events and incorporates additional precautions for social distancing, crowd control wherein the total exhibition area count has been reduced to 15000 PAX and Air Display Visual Area to 3000 PAX, safe social behaviour such as compulsory wearing of facemask, non-contact interactions etc, brochures and literature

would be predominantly in digital format, contactless experience for registration and booth visits, negative RT-PCR test 72 hrs prior 03 February 2021, entry screening, and restricting entry of people with symptoms to ensure safety for all attendees.

Raksha Mantri also Launched the Aero India-21 mobile app today which will be the handy interactive interface for all issues related to the event and promises to provide a hassle free entry to the venue.The app will be available on the Apple App Store/Google Play Store and is a holistic app with features to support exhibitors, attendees, and the media – pre, during and post the event.

As the countdown for the megaAeroshow has begun, 576 exhibitors and 35+ Foreign delegations have registered thus far with the event being a complete Sell out, reposing their faith in the Ministry of Defence to further their A&D Business interests. Aero India 2021 is symbolic of India's resolve to further its Business interests as also take global initiatives towards furthering peace and security in the region.

Raksha Mantri complimented the host State's preparedness and efforts and expressed confidence for the conduct of a safe Aero India-21 during the prevailing pandemic situation. Shri Rajnath also highlighted a giant step in self-reliance through the order of 83 Light Combat Aircraft (LCA) to HAL valued at over Rs 48000 crores which will prove a boon to Karnataka in general and Bengaluru in particular in terms of generation of more than 50,000 jobs with extensive participation of MSMEs and private sector.

https://pib.gov.in/PressReleasePage.aspx?PRID=1688859

THE TIMES OF INDIA

Sun, 17 Jan 2021

Indian Army has boosted country's morale during border standoff with China: Rajnath Singh

Lucknow: Defence minister Rajnath Singh on Saturday said the Indian Army has boosted the morale of the country and also enabled the people to hold their heads high during the border standoff with China.

He said this while addressing a gathering here during the 'bhoomipujan' and foundation stone laying ceremony of the new Command Hospital.

"The charismatic (karishmaayi) performance by the Army during the India-China standoff has boosted the morale of the country and also enabled the citizens to hold their heads high," he said, drawing a thunderous applause from the crowd.

The military face-off had erupted on May 5 following violent clashes between the Indian Army and the PLA in the Pangong lake area.

"The entire world is facing Covid-19. pandemic No one had thought that with the onset of the pandemic, celebrating festivals such as Holi, Eid and Diwali will be without much fanfare (dhoomdhaam). No one had imagined that trains will come to a halt, and schools and markets will remain closed. However, the good thing was that under the leadership of Prime Minister Narendra Modi, efforts to deal with the crisis started with courage and understanding (of the issue)," he said. He added that the biggest challenge at the time of the pandemic was testing. "There were barely two laboratories, but today there are over 1,000 laboratories. There was a shortage of masks, ventilators and PPE kits. But the swiftness and understanding of the issue which India displayed, masks, PPE kits and ventilators are now being exported. This has been done in 4-6 months," Singh said.

Hailing the doctors and healthcare workers, he said, "Had our doctors, para-medical staff, whom we know as warriors, not taken the risk, we could not have fought the challenge. It is for this reason that doctors are considered as second God on earth. The threat of Covid-19 was on doctors,

para-medical staff, sanitation workers. They stayed away from their families, ate food outside their homes, and then left for the hospital. These warriors have rendered charismatic performance. The doctors, para-medical staff, sanitation workers have worked as frontline soldiers and I salute their commitment and dedication."

He also informed that besides the two indigenous anti-COVID vaccines used in the nationwide vaccination drive that began on Saturday, four more vaccines are coming soon.

"These vaccines will not only be administered to people in India, but will also be exported to other countries. Because, India does not think about itself alone, but is also concerned about the entire world. Seers here gave the message of Vasudhaiva Kutumbakam -- the whole world is a family. Since the Vedic era, the medical treatment system here has not only thought about human beings, but also of other creatures. During the reign of Ashoka, there were provisions for treatment of cows, buffaloes, cats and bats."

Singh said the construction of the New Command Hospital building addresses a long standing need of the people and commended the authorities for relocating rather than cutting trees while clearing land for it.

He assured the gathering that any obstacle to the project will be resolved in coordination with state and civil authorities. He said he was confident of the full cooperation of Uttar Pradesh Chief Minister Yogi Adityanath in this regard.

He also remembered Mahatma Gandhi's philosophy Swachh Bharat which preached equal concern for all life and has been focused upon by the current government.

Highlighting the government's focus on health he said it has taken care to scale up medical infrastructure. He added that the government is also increasing government expenditure on health and has undertaken several measures.

Singh said Ayushman Bharat has fulfilled a great need for healthcare and mentioned that more than 1.5 crore people have been benefited by the scheme which is unparalleled across the world. Ending his address, Singh congratulated the entire nation for the ongoing 'Swarnim Vijay Varsh' celebrations, which commemorate India's great victory in the 1971 Indo-Pak War.

He said the courage and valour of defence forces in the 1971 war a source of immense pride for the entire country.

Adityanath appreciated the close coordination between the armed forces and civil authorities in Covid management. He said this was essential in protecting Uttar Pradesh in the wake of the crisis. He assured full support of the state authorities in providing better health services through projects like this hospital.

Army chief General MM Naravane was also present at the programme.

The new building of Command Hospital is spread over 40 acre of land and will be built at an estimated cost of Rs 425 crore.

The building will have six blocks of four wings varying from three to nine storeys. All blocks are inter-connected with skyways independent of the main patient activity areas. The building complex will also have space for parking of 750 cars in addition to vertical circulation in the form of adequate numbers of elevators and ramps.

It will house state-of-the-art facilities with all specialties and sub-specialties notably cardiology with a modern Interventional Catheterisation Lab, Modular Operation Theatres with one hybrid Operation Theatre, State of the Art Nephrology and Dialysis Centre and Composite Oncology Centre.

The hospital was raised in 1859 and designated as Command Hospital (Central Command) in 1967. The building of the new Command Hospital was approved by the Chief of the Army Staff in 2018.

https://timesofindia.indiatimes.com/india/indian-army-has-boosted-countrys-morale-during-border-standoff-with-china-rajnath-singh/articleshow/80304600.cms

FRONTLINE
INDIA'S NATIONAL MAGAZINE

Sat, 16 Jan 2021

General Bipin Rawat's proposals to increase retirement age and slash pension benefits for armed forces face criticism

The Department of Military Affairs' new proposals to increase the retirement age of officers and lower the stipulated pension of officers opting for premature retirement to contain the booming pension bill has been widely criticized

By Ravi Sharma

The fastest growing component of India's defence budget is the defence pension bill and not expenses on the procurement of military hardware. The Indian Army, with 1.3 million soldiers, is the world's second largest armed forces and the only major fighting force in the world that keeps recruiting personnel instead of downsizing its strength.

General Bipin Rawat, Chief of Defence Staff, during the launch of the stealth frigate INS Himgiri in Kolkata on December 14. Photo: Swapan Mahapatra/PTI

According to the report of the Parliamentary Standing Committee on Defence (2019-20), the Government of India provides pension to approximately 32,35,730 retired defence personnel, of whom 26,33,947, or 81 per cent, are military pensioners, or their dependants, 6,01,783, or 19 per cent, are defence civilian pensioners or their dependants, and around 46,869 pensioners, or 1.4 per cent, are not classified in either category. To this burden, around 55,000 pensioners are added every year.

While the bulk of civilian pensioners are from the Ordnance Factory Board (OFB) and the Defence Research and Development Organisation (DRDO), military organisations such as the Military Engineer Services (MES), the Army Ordnance Corps (AOC), the Army Service Corps (ASC), the naval dockyards, the Base Repair Depots (BRD), equipment depots and army base workshops also contribute to the overall number of civilian pensioners. Besides these, as of 2020, about 73,700 personnel have superannuated from various defence establishments such as the Defence Accounts Department (DAD), the Borders Roads Organisation (BRO), the Jammu and Kashmir Light Infantry (JKLI) and the Coast Guard. Their pensionary benefits come from the Ministry of Finance's civil defence pension budget. In short, the total number of defence pensioners is 33,09,430, accounting for more than half of all Central government pensioners (65,36,469).

Although the initial increase in India's defence pension bill was because of changes in the colour service of a vast majority of personnel below officer rank (PBOR) resulting in almost every retiree becoming eligible for a pension, implementation of the Sixth Central Pay Commission (CPC) in 2008 more than doubled the pension budget in a period of two years. The defence pension bill went up further with the Seventh Central Pay Commission recommendations in 2015 and the government decided in November 2015 to implement OROP (One Rank, One Pension) irrespective of the date of retirement. This resulted in a quantum increase of 46 per cent in pension expenditure in just a year.

The defence pension bill has more than doubled from Rs.55,000 crore in 2015 to Rs.1,33,825 crore in 2020-21 and is expected to go up by Rs.8,000 to 10,000 crore every year if the government implements its promise of revising defence pensions every five years. While the need to contain the steady rise in the defence pension bill cannot be emphasised enough, any methodology or means that is short-sighted, unimplementable, or affects the armed forces as a career option should be eschewed. A recent proposal of the Department of Military Affairs (DMA) to lower the

stipulated pension of officers opting for premature retirement (PMR) appears to fall in this category. The DMA, which was established on January 1, 2020, functions under the aegis of the Ministry of Defence (MoD) and is headed by the Chief of Defence Staff (CDS) General Bipin Rawat. Gen. Rawat proposed a simultaneous increase in the retirement age for colonels (and equivalent ranks in the Indian Navy and the Indian Air Force) from 54 to 57 years, brigadiers from 56 to 58 and major generals from 58 to 59.

It is also proposed to increase the retirement age of the PBOR, the bulk of whom serve for a minimum of 15 years and are released depending on the rank and cadre vacancies in their stream and are compulsorily retired when they reach 35 years of age. The general opinion is that the PBOR of noncombat and specialised arms and services will be the biggest gainers of retirement age enhancement as these soldiers will now be able to serve until the age of 60. The Army will be able to better utilise this trained pool of personnel, who otherwise retired in their prime. The PBOR of combat arms will not gain as the Army needs younger and fitter men up front. Also, there will be no benefit for them on the pension front as they already come under the OROP scheme.

'Untenable, ill-conceived'

While the proposal to increase the age of superannuation had some supporters, the proposal to slash the pension of officers who retire was greeted with derision, with both serving and retired officers calling it ludicrous, unimplementable and legally untenable, since it would mean changing/altering mid-stream the terms and conditions of service in the armed forces. Pensionary benefits, which are worked out "at 50 per cent of emolument or average of emoluments drawn during the last 10 months period preceding the date of retirement, whichever is beneficial", actually attract many youths to join military service. A colonel retiring either prematurely (after completing 20 years of service) or on attaining superannuation will receive a monthly pension of around Rs.1 lakh for life.

Said a serving Brigadier: "The proposal to reduce the pension of an officer who retires prematurely will amount to change of service conditions retrospectively, and, therefore, will not be legally tenable. Such proposals will have to be implemented prospectively. The CDS is wrong in saying that only 'technically qualified personnel in the armed forces are unhappy' with such proposals. The New Pension Scheme [NPS] should be the norm in the defence services as it is for the rest of the country."

Lieutenant General N.B. Singh (Retd), former Director General of the Indian Army's Corps of Electronics and Mechanical Engineers, said: "The CDS' move on pensions is ill-conceived and against the law of the land. The Supreme Court has in several judgments reiterated that pension is not a bounty but a right for services rendered. You cannot have different service conditions for a homogenous group of people in government service. The move has not found support in the Defence Ministry. The age extension recommended for officers and men is a welcome step, though there is the fear that it will create an ageing army."

A commodore posted at the naval headquarters described the twin proposals as "rubbish". The officer, who recently moved out of a key human resource appointment, told *Frontline*: "Officers who haven't made it to the next rank will naturally love it. Disenchanted and demotivated, they will sit back as guests of the government. This move will also put unnecessary pressure on commanding officers. It also flies in the face of making the armed forces a leaner and meaner machine. Being superseded is synonymous with the pyramidal structure of the armed forces, but the age extension will result in officers staying longer even without promotions, just to claim pension benefits. At least now the armed forces can say no to undeserving personnel getting re-employed. Automatic age extension will result in the armed forces becoming like any other government organisation."

Premature retirement

Under the DMA's proposal, officers seeking PMR after 20 to 25 years of service will receive only 50 per cent of the stipulated pension; those retiring after 26 to 30 years of service will get 60 per cent of pension; those retiring after 31 to 35 years of service will get 75 per cent of the entitled

pension, and only those officers retiring after completing 35 years of full coloured service will receive the full pension. This move is clearly aimed at checkmating and penalising officers, especially the technically qualified specialists and super-specialists, who leave the service to seek a lucrative second career in the corporate world. The DMA proposal states: "The loss of such high-skilled manpower results in a void in the service skill matrix and is counterproductive." However, many defence observers feel that the proposals go against the culture and ethos of the armed forces.

Both the proposals fly in the face of the armed forces' human resource policy, including its steep and narrow pyramidal promotion structure. Out of a course of around 100 commissioned officers, all officers become Lt Col. after completion of 13 years of service, but hardly 30 make it as a selection grade colonel. The number varies marginally from service to service, corps to corps, depending on factors such as number of vacancies. Out of the 30 colonels, less than a third make it to the rank of brigadier, with hardly two or three brigadiers then becoming a two-star major general or three-star lieutenant general. Many officers opine that they should be given an option to leave the forces after 5/10/12/15 years of service, "as and when it becomes super clear as to what the future holds for them". Lt Gen. N.B. Singh voiced a broad swell of opinion when he said that the DMA was not considering organisational realities by advocating these proposals. He said: "Many of the officers who fail to make it to rank of colonel are around 35 to 37 years old, and with no prospects of future promotions. These officers cannot be expected to continue serving for another 18 to 20 years with no incentive. Premature retirement was intended to give these boys an easy way out.

The fact that, combat medics, pilots, combat engineers, signallers and other specialists are doing well after taking PMR, is not palatable to the CDS, as one can make out from his statements. The CDS must realise that nobody likes to change one's profession midstream when family commitments are at maximum."

Kargil panel recommendations

Why does the DMA want an ageing armed forces when the clarion call post Kargil conflict has been for an Army with a younger profile? The Kargil Review Committee (KRC) set up in 1999 under the chairmanship of K. Subrahmanyam had stated: "The Army must be young and fit at all times. Therefore, instead of the present practice of having 17 years of colour service (as has been the policy since 1976), it would be advisable to reduce the colour service to a period of seven to ten years and, thereafter, release these officers and men for service in the country's paramilitary formations.

After an appropriate period of service here, older cadres might be further streamed into the regular police forces or absorbed in a National Service Corps (or a National Conservation Corps), as provided for under Article 51A(d) in the Constitution, to spearhead a range of land and water conservation and physical and social infrastructure development on the model of some eco-development battalions that have been raised with a fair measure of success. This would reduce the age profile of the Army and the paramilitary forces and reduce pension costs and other entitlements such as married quarters and educational facilities."

The KRC had suggested that the manpower requirement of the Army could be met through the paramilitary forces which would "undertake recruitment on the basis of certain common national military standards and then send those selected for training and absorption in the Army for a period of colour service before reverting (them back) to their parent para-military formations". The committee's suggestion of an indirect mode of recruitment and lateral entry were unconventional, but were aimed at reducing colour service, improving the age profile, and, most crucially, reducing pension costs.

A Group of Ministers (GoM) set up in 2000 examined the KRC recommendations of a lower age profile and lateral entry. It noted that "there are problems relating to aspects of retirement age and command profiles in the armed forces" and argued for a reduced number of years of colour service. Implementation of the GoM's recommendations would have reduced the years of colour service, resulting in the retirement of many personnel without a pension, like it was before 1976, and ensured a check on the pension bill.

In 2001, the government set up a committee headed by A.V. Singh to look into the GoM's observations on the need to improve the age, command profile and promotional avenues and lower the pension burden in the armed forces. One of its key recommendations was time-scale promotions for officers up to the rank of lieutenant colonel/equivalent rank and, the creation of nearly 2,650 senior-level posts at the level of colonel and above ranks.

The committee sought to neutralise the financial impact of the move by earmarking 50 per cent of the officer cadre for Short Service Commission (SSC) officers, thereby saving on pensions. But following successive interventions of the Supreme Court all SSC officers, male and female, have now been given permanent commission.

https://frontline.thehindu.com/the-nation/general-bipin-rawat-proposals-to-increase-retirement-age-and-slash-pension-benefits-for-armed-forces-faces-criticism/article33473215.ece

The Tribune

Mon, 18 Jan 2021

Eventful first year for CDS, challenges remain

Tasked essentially with promoting inter-service jointry and giving much-needed fillip to defence modernisation through timely and optimal defence acquisitions, the first incumbent to the post of CDS hasn't performed lackadaisically, however contentious his initiatives have turned out to be in one year. His latest desire to win a war for India by employing indigenous weaponry, though laudable, is easier said than done

By Gp Capt Murli Menon (Retd)

Two decades after the Kargil Review Committee (KRC) and the consequent Group of Ministers recommended the creation of the Chief of Defence Staff (CDS), and eight years after the Naresh Chandra Committee recommended a permanent chairman of the chiefs of staff committee, the Indian government instituted the first CDS in January 2020.

Tasked essentially with promoting inter-service jointry and giving much-needed fillip to defence modernisation through timely and optimal defence acquisitions, the first incumbent to the post, General Bipin Rawat, has not given a lackadaisical performance, however contentious his initiatives have turned out to be so far.

Bugbears: The three areas of prime concern in the charter of General Rawat (left) relate to jointry, acquisitions and administration. PTI

His latest desire to win a war for India by employing indigenous weaponry, though laudable, is easier said than done, given the large gap that exists between the state-of-the-art and homegrown capabilities. Serious limitations exist in our indigenous defence capability, more so in the arena of advanced avionics, aerial weaponry and other cutting-edge technologies, such as aircraft carriers and main battle tanks.

The fact that the government chose to have a 'first among equals' four-star CDS rather than a five-star one as recommended by the KRC, would in the long term impinge on the effectiveness of the new dispensation.

Be that as it may, perhaps it is premature to judge whether the CDS idea was a good one or not. Three areas of prime concern comprising his charter will be analysed herein: jointry, acquisitions and administration.

Jointry has been a bugbear for most modern militaries, with single service rivalries ruling the roost generally. But this is a difficult tree to bark up, which a mere joint doctrine manual cannot

deliver. The career profiles of officers and men have to build in frequent cross attachments to other sister services and mandatory 'maroon' tenures for the leadership for career progression.

Understanding the operating culture and peculiarities of other services is one challenge and 'unified thinking', more importantly, is the crucial bit.

The CDS needs to initiate policy moves in this respect to gradually build up jointmanship over time. We have a big advantage by way of initial joint training at the National Defence Academy, but a lot needs to be done to enhance tri-service jointry and consequent combat-effectiveness.

Realistic international exercises would help, no doubt, but the ultimate challenge will be to evolve as an Integrated Defence Force, wherein meaningful savings in deployment of combat assets and added combat efficiency could be achieved. Ideas of theaterisation, such as the Air Defence Command and Maritime Theatre Command, mooted by the CDS are perhaps a bit ahead of their time, given the situation in the defence forces as of now.

On defence acquisitions, whilst Make in India is a good guiding principle, practicality in technology exploitation has to be kept in mind. A classic example would be that of the Kaveri engine for the LCA, which the Gas Turbine Research Establishment (GTRE) has been struggling to indigenise, but to little avail. Hence, the recourse to the US GE 404/414 engines. There are similar handicaps for helicopter, ship and tank engines and other areas, where import becomes inescapable.

The story is the same for most high-tech weaponry for all three services, such as artillery shells, aerial weaponry like the Spice series bombs and naval anti-ship and anti-aircraft weaponry. The recent government decision to grant Rs 48,000 crore for 83 Tejas jets is another doubtful starter in indigenisation, with a proven prototype of the machine not yet being available!

The third contentious policy matter initiated recently by the Department of Military Affairs under the aegis of the CDS is the proposed modification in colour service and pension criteria. Whilst increasing the retirement age to 60 may be attractive to a section of the uniformed fraternity, it may not really assist in bringing down the defence pension Bill, which at 24 per cent of the defence budget — a whopping Rs 1.12 lakh crore — is worrisome, no doubt.

But let us not forget that the defence budget is a mere 1.15 per cent of the Gross Domestic Product, and not 3 per cent, as is expected to be, as per the recommendations of a Parliamentary Committee on Defence. Were that to be realised, the pension Bill would be 8.86 per cent of the defence budget.

Also, some of the already instituted measures, such as permanency to the short service commission, OROP already sanctioned etc. would find the DMA struggling to control its inflating pension Bill, a virtual drag on modernisation and general funding.

More innovative measures by way of lateral mobility, compulsory military service and reservists need to be put in place to achieve the desired tooth-to-tail ratio and pyramidical age and career profiles demanded by the military. Getting a handle on the often infructuous Defence Industrial Complex under the Defence Research and Development Organisation (DRDO) and meaningful indigenisation through privatisation are other areas the CDS needs to address to improve the overall combat efficiency and cutting of the flab.

The pension of defence civilians is another substantial loadstone that the CDS needs to do something about. Also, increasing the years of service to earn pension (effectively suggesting a reduction in pension to 50 per cent for service up to 35 years) may not go down well with the new entrants to the defence services, even if applied prospectively.

In any event, the malaise of a bloated manpower situation in the military has been the result of flagrant flouting of norms and uncalled-for beefing up of manpower requirements at the stage of government approval over the years.

To rectify this situation, drastic steps for manpower rationalisation would be called for.

https://www.tribuneindia.com/news/comment/eventful-first-year-for-cds-challenges-remain-199981

Hindustan Times

Sat, 16 Jan 2021

Don’t test India’s patience, Army Chief warns China

General Manoj Mukund Naravane, in a media briefing on January 12, said the army was prepared to hold ground in eastern Ladakh “for as long as it takes” to achieve national objectives in case the ongoing military and diplomatic talks with China to reduce tensions are “prolonged”

By Rahul Singh

New Delhi: In a blunt message to China in the midst of a lingering border standoff in eastern Ladakh, army Chief General Manoj Mukund Naravane on Friday said that India was committed to resolving the situation along the contested Line of Actual Control (LAC) through talks, but no one should test India’s patience.

Army soldiers demonstrate a drone attack during the 73rd Army Day parade, in New Delhi on Friday.

The border standoff is in its ninth month, with multiple rounds on military and diplomatic talks failing to break the deadlock. “We are committed to resolving disputes through talks and political efforts. However, no one should make the mistake of testing India’s patience,” Naravane said during his customary Army Day address at a parade in Delhi Cantt, where the force put up a display of its military might including the maiden demonstration of an underdevelopment drone swarming capability.

The army chief added that India had given a fitting response to the [Chinese] conspiracy to unilaterally change the status quo in the Ladakh theatre, where the Indian Army and the Chinese People’s Liberation Army (PLA) have deployed more than 100,000 combat-ready soldiers and advanced weaponry.

He also assured the country that the sacrifice of the Indian soldiers killed in the Galwan valley on June 15, 2020 would not go in vain -- the Chinese PLA also suffered heavy casualties in the brawl but Beijing has kept the figures under wraps. Naravane said the morale of soldiers deployed in forward areas in the Ladakh sector was higher than the mountains they were defending despite the extreme weather conditions. He said India will continue with its efforts to resolve the prevailing situation on the basis of principles of “mutual and equal security”.

The army chief has conveyed to China unequivocally that India is prepared for any eventuality, said former Northern Army commander Lieutenant General BS Jaswal (retd). “The message is clear --- if push comes to shove, India will take the necessary actions in the Ladakh sector,” Jaswal added.

In a separate message published on army day, Naravane said the Indian Army has been “swift and decisive” in its response to counter the PLA’s attempts to unilaterally alter the status quo on LAC.

Naravane, in a media briefing on January 12, said the army was prepared to hold ground in eastern Ladakh “for as long as it takes” to achieve national objectives in case the ongoing military and diplomatic talks with China to reduce tensions are “prolonged,” even as he described a joint threat from China and Pakistan as “very potent”.

On the situation along the Line of Control (LoC) with Pakistan, the army chief said in Friday’s address that 300 to 400 terrorists were present in terror training camps in Pakistan-occupied Kashmir and waiting to sneak into India.

He said ceasefire violations by the Pakistan army along the LoC increased by 44% in 2020 compared to 2019, exposing the neighbour's attempts to help terrorists infiltrate into the country. Ceasefire violations are usually a cover to help infiltrators sneak into Jammu and Kashmir.

He added that the army's operations along the LoC not only caused heavy losses to the enemy but also thwarted many infiltration attempts. He said the army killed 200 terrorists at the LoC and in counterterror operations in the hinterland.

Speaking about capability building at a time when India faces challenges from China and Pakistan, Naravane said the army invoked emergency and fast-track procedures in 38 cases to buy weapons and systems last year to sharper its combat edge. The army also concluded capital procurements worth ₹13,000 crore last year, he said.

On January 12, the army chief said there was no doubt that India faced a collusive threat from China and Pakistan. "There is indeed increased cooperation between China and Pakistan in both military and non-military fields. And a two-front threat is very much something that we have to be prepared for."

https://www.hindustantimes.com/india-news/dont-test-india-s-patience-army-chief-warns-china-101610743297059.html

नवभारत टाइम्स

Sat, 16 Jan 2021

Army Day: आर्मी चीफ की ड्रैगन को कड़ी चेतावनी, हमारे धैर्य की परीक्षा मत लो

Army Chief Naravane and China: आर्मी चीफ मनोज मुकुंद नरवणे ने चीन को कड़ी चेतावनी दी है। सेना दिवस पर नरवणे ने कहा कि भारतीय सेना देश की संप्रभुता पर आंच नहीं आने देगी।

पूनम पाण्डे

नई दिल्ली: इंडियन आर्मी चीफ जनरल एम एम नरवणे ने चीन को चेतावनी की कि वह हमारे धैर्य की परीक्षा लेने की गलती ना करे। आर्मी डे परेड में अपने संबोधन में जनरल नरवणे ने चीन के साथ लाइन ऑफ एक्चुअल कंट्रोल पर तनाव का जिक्र करते हुए कहा कि हम बातचीत के जरिए समाधान के प्रति प्रतिबद्ध हैं लेकिन कोई भी हमारे धैर्य की परीक्षा लेने की गलती ना करें।

आर्मी चीफ की चीन को कड़ी चेतावनी

एकतरफा साजिश को दिया करारा जवाब

उन्होंने कहा कि पिछला साल भारतीय सेना के लिए बहुत चुनौतीपूर्ण रहा है। उत्तरी सीमाओं पर चीन के साथ चल रहे तनाव का जिक्र करते हुए कहा कि देश की सीमाओं पर एकतरफा बदलाव की साजिश का मुंहतोड़ जवाब दिया गया। उन्होंने कहा कि गलवान के वीरों की शहादत व्यर्थ नहीं जाएगी। जनरल नरवणे ने कहा कि भारतीय सेना देश की संप्रभुता और सुरक्षा पर कोई आंच नहीं आने देगी।

हमारे सैनिकों का मनोबल पर्वत की तरह-आर्मी चीफ

स्थिति को नियंत्रण में लाने के लिए भारत और चीन के बीच सीनियर मिलिट्री कमांडर स्तर की अब तक आठ बार बातचीत हो गई है। उन्होंने कहा कि भारी ठंड और कठिन परिस्थितियों के बावजूद हमारे सैनिकों का मनोबल उन पर्वत शिखरों से भी बहुत ऊंचा है जिसकी वह मुस्तैदी से रक्षा कर रहे हैं।

पाक को भी मिल रहा है सख्त जवाब-नरवणे

लाइन ऑफ कंट्रोल (पाकिस्तान सीमा) के बारे में आर्मी चीफ ने कहा कि वहां भी दुश्मन के हर नापाक इरादे का करारा जवाब दिया जा रहा है। पाकिस्तान आतंकियों को पनाह देने की अपनी आदत से लाचार है। सीमा पर ट्रेनिंग कैंपों में करीब 300 से 400 आतंकी घुसपैठ करने की फिराक में बैठे हैं। पिछले साल सीज फायर उल्लंघन में 44 पर्सेंट बढ़ोतरी हुई जो पाकिस्तान के नापाक इरादों का सबूत है।

नई तकनीक से सेना में भी बदलाव

आर्मा चीफ ने सेना के मॉर्डनाइजेशन के बारे में बताया और कहा कि उभरती टेक्नॉलजी जैसे आर्टिफिशिल इंटेलिजेंस, ब्लॉक चेन, क्वांटम कम्प्युटिंग, अनमैन्ड सिस्टम, डायरेक्ट एनर्जी वेपन और ड्रोन स्वॉर्मिंग के क्षेत्र में भी देश की संस्थाएं काम कर रही हैं। उन्होंने इंडियन आर्मी मोबाइल ऐप भी लॉन्च की। यह लोगों को खासकर युवाओं को भारतीय सेना के बारे में विस्तृत जानकारी देगी। साथ ही आर्मी में महिला अधिकारियों को परमानेंट कमिशन मिलने पर फर्स्ट डे कवर भी जारी किया गया।

https://navbharattimes.indiatimes.com/india/army-day-news-general-manoj-mukund-naravane-warning-to-china/articleshow/80282996.cms

INDIA TODAY

Sat, 16 Jan 2021

Army made emergency purchases worth Rs 5,000 crore amid standoff with China

In view of the military tussle with China in Ladakh in June 2020 and increased tensions at LoC, the Indian Army spent Rs 18,000 crore to add to its firepower, including emergency purchases worth Rs 5,000 crore

By Abhishek Bhalla

New Delhi: The Indian Army spent Rs 18,000 crore to add to its firepower, including emergency purchases worth Rs 5,000 crore last year, in the wake of the military tussle with China and increased tensions at the Line of Control (LoC) with Pakistan. In his Army Day address, Indian Army Chief Gen MM Naravane said the procurement worth Rs 5,000 crore was purchased under emergency clauses.

"We purchased material worth Rs 5,000 crore with 38 deals under emergency and fast track scheme which included arms and other material. Other than this, contracts under capital procurement plans worth Rs 13,000 crore were finalised," Gen Naravane said.

Procurement worth Rs 5,000 crore was purchased under emergency clauses last year (PTI)

Not just emergency purchases for troops to sustain the harsh winter, welfare steps for families were also taken amid the standoff.

The Army chief said the action in Ladakh named 'Operation Snow Leopard' was notified to ensure liberalised family pensions, war injury element and higher ex-gratia to the families of soldiers who were killed or injured in action.

Twenty Indian soldiers were killed in action and several wounded in June 2020 in Galwan Valley when Indian and Chinese troops were involved in an ugly clash.

Many of the emergency purchases were fast-tracked as the Indian Army prepared to grind it out amid the ongoing standoff with China in Ladakh.

Keeping in mind the massive deployment even during cold conditions, the army stocked on clothing, shelters, tents and other logistics that would help sustain temperatures dipping to -40 degrees.

Special winter clothing and material was also brought in from the US as an emergency procurement before the onset of winter.

He said the deals include light machine guns, light special vehicles and personal protective gear for infantry soldiers, infantry carrier vehicles for mechanised infantry and long-range vectors for artillery.

New communication equipment for the Corps of Signals and modern platforms for engineers are also included in these.

Gen Naravane said self-reliance in the armed forces is an integral part of modernisation plans under PM Narendra Modi's flagship 'Make in India'.

"Indian Army has identified 29 modernisation projects worth Rs. 32,000 crore for the future. Along with private industry and academia Indian Army contributing towards building a self-reliant ecosystem. This will promote indigenous technology and we will be less dependent on imports."

https://www.indiatoday.in/india/story/indian-army-emergency-purchases-worth-rs-5000crore-china-standoff-loc-pakistan-1759406-2021-01-15

ThePrint

Mon, 18 Jan 2021

IAF looks to lease mid-air refuellers amid critical shortage, seeks offers from Airbus, Boeing

India's refueller fleet currently comprises six Russian IIyushin-78 tankers, first inducted in 2003, that are facing maintenance and serviceability issues

By Snehesh Alex Philip

New Delhi: The Indian Air Force (IAF) has sought financial quotes from American aviation giant Boeing and the European aerospace major Airbus for leasing of at least two tankers to overcome India's critical shortage of mid-air refuelling capability.

While the IAF has sought leasing quotes for two mid-air refuellers from Airbus, it has requested quotes for only one from Boeing, sources in the defence and security establishment told ThePrint.

This has led to speculation that India might end up leasing three tankers and will go in for a large order of six refuellers based on the experience of using them.

The IAF is in talks with both companies, the sources said, and a decision in this regard could come soon.

In consideration are the A330 multi-role tanker transport (MRTT) aircraft, a derivative of the twin-engine A330 passenger aircraft of Airbus, and the KC-46 tanker, a derivative of the Boeing 767 passenger jet, the sources added.

It was earlier believed that the IAF had made up its mind for the Airbus tanker, and Boeing wasn't among the options.

A Rafale fighter jet of the IAF getting refuelled mid-air | File image | Credit: IAF

When the process is completed, this will be the second major leasing of defence equipment by the Indian armed forces since November last year, when the Navy leased two Sea Guardian drones — unarmed versions of the deadly Predator series — from US firm General Atomics.

The leasing of defence systems is a new option that has been introduced by the Defence Acquisition Procedure of 2020.

'Unprecedented range-enhancing capability'

India's refueller fleet currently comprises six Russian IIyushin-78 tankers, first inducted in 2003, that are facing maintenance and serviceability issues.

Emphasising the importance of mid-air refuellers, the sources said the tankers are a must for any modern air force as they offer unprecedented range-enhancing capability to fighters.

With mid-air refuellers, pilots can carry out strikes at longer ranges and also stay in flight without requiring to land and refuel.

"The Rafale aircraft has long-range capability because it can refuel mid-air. We have now gone in for Tejas Mk 1A, which comes with four major enhancements, including refuelling. There is no point in going for such large number of aircraft if we can't refuel in the air," a source said.

The IAF has been trying to acquire six mid-air refuellers since 2007 with no success due to multiple issues.

IAF chief Air Chief Marshal R.K.S. Bhadauria had said in his annual press conference in October last year that the the force could lease refuellers as plans to acquire the tankers had not materialised for years.

The first lot of the Rafale fighters had flown into the country in July last year accompanied by two A330 MRTT of the French Air Force that provided them with mid-air refuelling as they travelled the 8,500-km journey from Merignac in France.

The French have already moved a proposal to India, offering six A330 MRTT aircraft on a government-to-government basis.

https://theprint.in/defence/iaf-looks-to-lease-mid-air-refuellers-amid-critical-shortage-seeks-offers-from-airbus-boeing/587328/

THE ECONOMIC TIMES

Sun, 17 Jan 2021

India's entire coastline kept under vigil by Indian Navy, Coast Guard in 'Ex Sea Vigil'

Plugging coastal breaches

Exercise Sea Vigil, a two day coastal defence exercise was conducted from January 12-13 2021. The conceptual and geographical expanse of Sea Vigil included the entire coastline and EEZ of the country and contingencies from peace to wartime were exercised. In addition, mitigation measures, on shore, in case of any breach in coastal security were also validated.

Special Ops

The exercise involved deployment of the entire coastal security apparatus and more than 110 surface assets of Indian Navy and Coast Guard participated in the exercise. In addition, a large number of Marine Police and Customs assets were also deployed. The entire coastline was kept under surveillance by the Indian Navy and Coast Guard aircraft, and helicopters were also pressed into service to reinforce Special Operations personnel operating onboard offshore platforms.

Maritime terrorism

As ports form the nerve centre of sea borne trade, security mechanism of ports was also validated during the exercise and the crisis management plans of all ports were assessed for their effectiveness to tackle emergencies. The State Police teams, Indian Navy Marine Commandos and Commandos from National Security Guard were exercised to tackle acts of maritime terrorism.

NC3I and IMAC

This exercise also validated the technical surveillance infrastructure called the National Command, Control, Communication and Intelligence (NC3I) Network. The Information Management and Analysis Centre (IMAC) at Gurugram and its various nodes across Indian Navy and Coast Guard stations were exercised for coordinating the surveillance and information dissemination mechanism.

Enhancing coastal defence

The cooperation and coordination amongst various agencies involved is a reassuring sign of progress made in the realm of Coastal defence and the exercise would go a long way in enhancing coastal defence and national security in the maritime domain.

https://economictimes.indiatimes.com/news/defence/indias-entire-coastline-kept-under-vigil-by-indian-navy-coast-guard-in-ex-sea-vigil/plugging-coastal-breaches/slideshow/80300365.cms

THE ECONOMIC TIMES

Sat, 16 Jan 2021

Hypersonic superweapons are a mirage, new analysis says

By William J. Broad

Synopsis

By definition, hypersonic vehicles fly at more than 5 times the speed of sound — or up to dozens of times faster than jetliners. The warheads rise into space atop a traditional long-range missile but then descend quickly into the atmosphere to bank, careen and otherwise maneuver.

Military experts call hypersonic warheads the next big thing in intercontinental warfare. They see the emerging arms, which can deliver nuclear or conventional munitions, as zipping along at up to 5 miles per second while zigzagging through the atmosphere to outwit early-warning satellites and some interceptors. The superfast weapons, experts say, lend themselves to surprise attacks.

President Donald Trump has bragged about his "super-dupers," even referring to the planned weapon as "hydrosonic," a brand of electric toothbrush. Last year, his budget asked the Pentagon to spend $3.2 billion on hypersonic arms research, up $600 million from the previous year's request. And as President-elect Joe Biden takes command of the nation's military, he will have to consider whether to sustain the defense work undertaken in the Trump years.

An illustration of a prototype warhead known as the Hypersonic Technology Vehicle 2.

Now, independent experts have studied the technical performance of the planned weapon and concluded that its advertised features are more illusory than real. Their analysis is to be published in Science & Global Security.

In an interview, David Wright, a physicist at the Massachusetts Institute of Technology and an author of the new analysis, called the superweapon a mirage.

"There're lots of claims and not many numbers," he said. "If you put in the numbers, you find that the claims are nonsense."

Military officials called the paper insubstantial, saying it was based on outdated data. But they declined to disclose new findings.

“Due to the classified nature of hypersonics technologies, we are not at liberty to publicly discuss current capabilities,” Jared Adams, chief spokesman for the Defense Advanced Research Projects Agency, or DARPA, said in an email.

Richard Garwin, a physicist and longtime adviser to the federal government, called the paper “very good and important.” He added that he had provided his own similar criticisms of hypersonic warheads to defense officials.

James Acton, a nuclear analyst at the Carnegie Endowment for International Peace, called the paper “a serious, credible and important piece of work.”

Wright is affiliated with MIT’s Laboratory for Nuclear Security and Policy and did the analysis with Cameron Tracy, a materials scientist at the Union of Concerned Scientists, a private group based in Cambridge, Massachusetts, that often backs arms control.

By definition, hypersonic vehicles fly at more than 5 times the speed of sound — or up to dozens of times faster than jetliners. The warheads rise into space atop a traditional long-range missile but then descend quickly into the atmosphere to bank, careen and otherwise maneuver. They’re basically stubby gliders. The curved upper surfaces of their wedge-shaped bodies give them some of the lifting power of an airplane wing.

Wright and Tracy based their analysis on the Hypersonic Technology Vehicle 2 — an experimental warhead developed by the Air Force and DARPA. Their findings, they say, also apply to other American prototypes, as well as devices being developed by China, Russia and other countries.

The computer simulations drew on the physics of moving bodies and public disclosures about the Hypersonic Technology Vehicle 2 in order to model its most plausible flight paths. The team zeroed in on signature phases of hypersonic flight — when the vehicle zooms through the atmosphere and then plunges to hit a target.

The two experts say their computer modeling fills in public gaps on the weapon’s overall performance as well as its potential interactions with existing military systems for detecting and defeating weapons launched from distant sites.

In their paper, they see the weapon as essentially failing to outwit early-warning satellites and interceptors. For instance, current generations of space-based sensors, they report, will be able to track the weapon’s fiery twists and turns during most of its flight through the atmosphere.

And surprisingly, given the weapon’s speedy reputation, they say their analysis shows it will fly intercontinental distances more slowly than ballistic missiles and warheads fired on low flight paths known as depressed trajectories. In war, such tactics are seen as a good way for attackers to evade interceptors and lessen warning time.

Wright and Tracy conclude that the envisioned new weapon is, at best, “evolutionary — not revolutionary.”

In their paper, the authors contrast their findings with military claims. For instance, they quote the 2019 Senate testimony of Gen. John Hyten, the Air Force officer then in charge of U.S. Strategic Command, which controls the nation’s nuclear missiles. The time it would take a hypersonic warhead to complete an attack, Hyten said, “could be half” that of a standard missile. “It could be even less,” he added.

The clashes between public views of hypersonic warheads and their actual abilities, the two experts conclude, arise from overstated official claims meant “to justify the expenditure necessary” for their development and deployment.

The U.S. military is currently researching a half dozen hypersonic arms. Wright said the limited amount of public information on their workings and flight data made the better-known Hypersonic Technology Vehicle the best available window into the current status and future potential of the prototype arms.

The team’s analysis, he noted, focuses on an underlying issue of physics that he said casts doubt on the new class of weapons in general.

It's what aeronautical engineers call the lift-to-drag ratio. The esoteric term is a measure of lifting power versus drag. Lift pushes a speeding aerodynamic body up, and atmospheric drag tries to counteract the forward motion, at worst prompting a stall.

Wright said the team's analysis of the hypersonic vehicle used a lift-to-drag ratio of 2.6. In contrast, jetliners and some birds have a ratio approximately 8 times higher. In other words, the warheads at best are unimpressive flyers.

The limited power of the curved, blistering hot surfaces to generate a substantial lifting force without also producing lots of drag undermined claims that the weapon can fly long distances on complex trajectories, he said.

"Unless they've found some magical way to keep these systems up," Wright said, "they're going to have problems."

Policy experts expect the Biden administration to focus on fostering arms control, and it seems likely that the Trump administration's plans for hypersonic warheads will get close scrutiny. Hypersonic arms are among the topics that defense experts see administration officials as addressing in early talks with Russia and China, including the possibility of finding ways to impose restraints.

Ned Price, a spokesman for the Biden transition team, declined to comment on the issue of hypersonic warheads.

"President-elect Joe Biden will have an experienced team to sort through these complicated issues," Hans Binnendijk, a former National Security Council official, wrote last month in suggesting ways to reinvigorate arms control. "But it will take time and creativity to be successful."

https://economictimes.indiatimes.com/news/defence/hypersonic-superweapons-are-a-mirage-new-analysis-says/articleshow/80298234.cms

The EurAsian Times

Sat, 16 Jan 2021

Chinese J-20s will never dominate Asian skies as Indian Rafales can easily overwhelm them — India's top defense expert

By Mansij Assthana

India's acquisition of the French-made Rafales was touted by many as a 'game-changer', but could the emergence of China's fifth-generation J-20 stealth fighters be a spoilsport? Experts have varied opinions.

Even before India's acquisition of the French fighters last year, there had been a lot of talk of the Rafale being pitted against the J-20, considered China's most advanced fighter to date.

Now, in view of the ongoing standoff between the two nations in the Himalayas, there has been speculation as to how the Indian Rafales with their air superiority could probably cause problems for the Chinese defenses.

According to Pakistani Air Vice Marshal Shahzad Chaudhry (retired), it would instead be the Chinese fifth-generation fighter jet, which will carry the biggest threat in the region.

"J-20 is really a big game-changer for our region. It would introduce new technology and induct new capabilities in the region for the first time," said Chaudhry was while speaking to The Express Tribune.

The Chengdu J-20 is a single-seat, twinjet, all-weather multirole stealth fighter, which is considered China's answer to the fifth-generation fighter jets like the Lockheed Martin stealthy pair of F-35 Lightning II and F-22 Raptors.

Developed and manufactured by Chengdu Aircraft Industry Group (CAIG), and flown for the first time in the January of 2011, the J-20 stealth fighter is capable of carrying out air-to-air, air-to-ground combat roles with supersonic cruise speed and features modern avionics.

China's J-20 fighter jets

On the other hand, the French-built Rafale possessed by the Indians is a twin-engine, canard-delta wing, multirole fighter aircraft equipped with a wide range of weapons.

The Rafale is designed to perform air supremacy, interdiction, aerial reconnaissance, ground support, in-depth strike, anti-ship strike, and nuclear deterrence missions.

A Rafale fighter

Chaudhry is of the opinion that the only fighter that the J-20 should be compared to is the US F-35 fighter.

"The only other fighter jet that can be compared with J-20 is the US-made F-35 and whoever in Pakistan and India gets any of these jets first will have an edge over the other," said Chaudhry.

He claimed the Rafale is inferior to the J-20s and carries the same technology onboard fighters like the F-16 and Su-30s.

"Rafale didn't bring any new technology to the region but the similar tech already existed in F-16 and SU-30," added Chaudhry.

So, how do the two fighters fare against each other?

The J-20 is a clear winner in terms of size when compared to the Rafale, with the Chinese jet measuring up to 20.5 meters in length with a wingspan of up to 13.5metres. The Indian Rafale is 15.3 meters in length, with a wingspan of 10.9 meters and a height of 5.3 meters.

Well, in terms of weight, the J-20 stealth fighter is a heavier combat jet with a total weight of 19,000 kg as compared to Rafale's weight, which can range from 9,900kg to 10,600kg.

The Chinese fighter can carry up to 37,013 kg, while the Rafale can't carry more than 24,500 kg weight, which means that the J-20s have the ability to carry more firepower during combat missions.

In terms of speed, the J-20s outrun the Rafales, with the fifth-generation fighters capable of attaining a top speed of 2,400 km per hour. The Rafales while being fast as well, can only muster a top speed of 2,222.6 km per hour.

At a time when the fighters are involved in dogfights, the pilots often resort to climbing higher in order to avoid surface-to-air missiles. Now, while the Rafales have a service ceiling of 50,000 feet, the J-20s have a much higher service ceiling of 65,620 feet.

In addition, with the J-20 fighter being a stealth fighter, it is much more capable of avoiding detection on enemy radars, according to experts. While the 4.5 generation Rafale is not a stealth fighter, it has been designed for a reduced radar cross-section (RCS) and infrared signature, which means it has some stealth features.

However, according to military analysts, the level of stealth technology in the Chinese J-20s is superior to the Rafales.

Military observers, while speaking to the Chinese state-owned Global Times, said the generation gap between the fighters determines the superiority of J-20 over Rafale.

"It is common knowledge that a generational gap in fighter jets represents a huge difference that cannot be made up by tactics and numbers in combat,"

"China's J-20 is far superior to the Rafale," the military observers told *Global Times*.

What Indian Expert Says

India's top defense expert, Air Marshal Anil Chopra (retired) says that while much is said about the Rafales being inferior to the J-20s, there are lingering doubts over the abilities of the Chinese fighters.

"Comparisons are being drawn with the IAF's newly inducted Rafale. Rafale is a 4.5 generation aircraft. It has partial stealth features but has no internal weapons bays. But aircraft is much smaller than the J-20, literally half the weight and volume,"

"While China downplays Rafale capabilities, but we have reasons to question the J-20 stealth capability in view of the crudely shaped, radar signals reflecting canard controls. J-20 uses older Russian engines, same as Su-30 which are poorly designed to conceal both radar and IR signature."

"There are questions about J-20's inability to super-cruise, which Rafale can already do. J-20 has achieved some Low Observable design goals for enhanced stealth. However, some aspects of the aircraft, such as the round nozzle of earlier models may work against its stealth capabilities," the Air Marshal says.

He also highlights how the fighter's engines have faced issues regarding their maintenance and overall reliability.

"There are also serious issues with J-20 engine maintenance and reliability. The planned Chinese engine WS-15 is still well behind schedule. It is unknown when the WS-15 will be actually ready. The Rafale Snecma M 88 engines are time tested, and better in terms of reliability, longevity, and maintainability,"

"Experts are also questioning the electronic warfare (EW) suite of J-20, which in the case of Rafale is a comprehensive package covering the entire spectrum of threats," says Chopra.

Electronic Warfare (EW) represents the aircraft's ability to use the electromagnetic spectrum waves to either disrupt, intercept, or sabotage enemy electronic systems in offensive operations or to protect interested assets using the same.

The growing use of advanced electronics in 21st-century weapons makes the employment of EW equipment extremely essential for the arsenal of any modern army.

Chopra also stresses how Rafale's impressive combat history as well as its ability to perform different sets of roles, puts it above the J-20s.

"J-20 is still inducting, while Rafale has been combat-proven for 20 years in Iraq, Afghanistan, Mali, Libya, and Syria. Rafale is an Omni-role aircraft. It can carry out at least four missions in one sortie while the J-20 cannot carry out multiple missions in one go. Despite being a smaller aircraft, Rafale has 14 hard-points (all external) vis-à-vis J-20's six internal. Clearly, Rafale will be more than a match for the J-20."

Just like the case of J-20, it is not a surprise to see the Chinese speaking volumes about the capabilities of their homegrown fighter jets, while also taking a swipe at their Western counterparts. And, as per Chopra, the J-20's credentials of being a fifth-generation fighter jet is still open to interpretation.

"China's criteria for defining aircraft generations differ from accepted international standards. China defines aircraft generations based upon when an aircraft was integrated into the air force. Per China's criteria, the J-20 is considered a fourth-generation aircraft. Is J-20 a real fifth-generation aircraft or has just been touted as one is still open to interpretation," the IAF veteran claims.

"Chinese also underplay Western aircraft and call the Rafale a 3rd Generation aircraft. As per their own classifications, J-20 and F-16 are both 4th generation aircraft. China thus does not have a real equivalent of the F-22 or F-35. China's PL-15 is claimed to have a much higher range than most Western missiles, but these are all one-sided Chinese figures, and the missile has yet to be operationally deployed."

https://eurasiantimes.com/chinese-j-20s-will-never-dominate-asian-skies-as-indian-rafales-can-easily-overwhelm-them-indias-top-defense-expert/

जागरण

Sun, 17 Jan 2021

गिलगित बाल्टिस्तान में चीन बनाएगा 800 किमी लंबी नई सड़क, भारत ने की आलोचना

लद्दाख पर और दबाव बढ़ाने के लिए चीन ने पाकिस्तान के साथ मिलकर एक सड़क बनाने का फैसला किया है जो पाकिस्तान में अस्तोर के साथ 800 किलोमीटर के काराकोरम राजमार्ग को गिलगित बाल्टिस्तान से जोड़ेगा। यह पाकिस्तान के एक डिवीजन मुख्यालय स्कर्दू के पश्चिम में है।

By Arun Kumar Singh

नई दिल्ली: लद्दाख पर और दबाव बढ़ाने के लिए चीन ने पाकिस्तान के साथ मिलकर एक सड़क बनाने का फैसला किया है जो पाकिस्तान में अस्तोर के साथ 800 किलोमीटर के काराकोरम राजमार्ग को गिलगित बाल्टिस्तान से जोड़ेगा। उच्च पदस्थ सूत्रों ने एक बेवसाइट को बताया कि चीन यरकंद को एक पूर्व बौद्ध फाउंटेन और बाद में सांस्कृतिक दिल की धड़कन जातीय उइगर संस्कृति से जोड़ना चाहता है, जिसका संबंध काराकोरम राजमार्ग के माध्यम से एस्टोर से है। एस्टोर जिला लद्दाख से ज्यादा दूर नहीं है। यह पाकिस्तान के एक डिवीजन मुख्यालय स्कर्दू के पश्चिम में है, जहां चीन और भारत के बीच सैन्य गतिरोध जारी है।

लद्दाख पर और दबाव बढ़ाने के लिए चीन ने पाकिस्तान के साथ मिलकर एक सड़क बनाने का फैसला किया है जो पाकिस्तान में अस्तोर के साथ 800 किलोमीटर के काराकोरम राजमार्ग को गिलगित बाल्टिस्तान से जोड़ेगा। यह पाकिस्तान के एक डिवीजन मुख्यालय स्कर्दू के पश्चिम में है।

अस्तोर ईदगाह के मुख्यालय के रूप में जाना जाता है। यह गिलगित बाल्टिस्तान के 14 जिलों में से एक है। खराब सड़क वर्तमान में ईदगाह को काराकोरम राजमार्ग से जोड़ती है, जो 43 किलोमीटर दूर है। विश्लेषकों का कहना है कि नई सड़क के निर्माण से चीन और पाकिस्तान के बीच कश्मीर में भारत के खिलाफ दो मोर्चे की लड़ाई शुरू करने की क्षमता बढ़ जाएगी, जब तक कि नई दिल्ली द्वारा प्रभावी रूप से बाधित नहीं किया जाता है।

29 अगस्त को पैंगोंग त्सो झील के दक्षिण में कैलाश रेंज ले जाकर चीनी सामरिक तैनाती के साथ साथ प्रारंभिक रणनीतिक लाभ का मुकाबला करते हुए स्पष्ट संकेत दिया गया है कि भारत हिमालय में नहीं, बल्कि इंडो के जल क्षेत्र में अपने जंगलों को स्थापित करने की तैयारी कर रहा है। जापान और संयुक्त राज्य अमेरिका के साथ साझेदारी में चीन ने हिट करने के लिए महत्वपूर्ण मील के पत्थर पार कर लिए हैं, जहां यह सबसे महत्वपूर्ण है चीनी वाणिज्यिक जहाजों द्वारा उपयोग किए जाने वाले प्रमुख शिपिंग लेन जो अंडमान और निकोबार द्वीप समूह (एएनआई) से गुजरते हैं।

https://www.jagran.com/world/pakistan-china-building-new-road-in-gilgit-baltistan-india-hits-back-in-indo-pacific-21278316.html

THE TIMES OF INDIA

Sun, 17 Jan 2021

Iranian Guard holds anti-warship ballistic missile drill

Tehran: Iran's paramilitary Revolutionary Guard conducted a drill Saturday launching anti-warship ballistic missiles at a simulated target in the Indian Ocean, state television reported, amid heightened tensions over Tehran's nuclear program and a U.S. pressure campaign against the Islamic Republic.

Footage showed two missiles smash into a target that Iranian state television described as ``hypothetical hostile enemy ships'' at a distance of 1,800 kilometers (1,120 miles). The report did not specify the type of missiles used.

In the first phase of the drill Friday, the Guard's aerospace division launched surface-to-surface ballistic missiles and drones against ``hypothetical enemy bases.`` Iranian state television described the drill as taking place in the country's vast central desert, the latest in a series of snap exercises called amid the escalating tensions over its nuclear program. Footage also showed four unmanned, triangle-shaped drones flying in a tight formation, smashing into targets and exploding. Tensions between Washington and Tehran have increased amid a series of incidents stemming from President Donald Trump's unilateral withdrawal from Iran's nuclear deal with world powers. Amid Trump's final days as president, Tehran has recently seized a South Korean oil tanker and begun enriching uranium closer to weapons-grade levels, while the U.S. has sent B-52 bombers, the USS Nimitz aircraft carrier and a nuclear submarine into the region.

In recent weeks, Iran has increased its military drills as the country tries to pressure President-elect Joe Biden over the nuclear accord, which he has said America could reenter. Iran fired cruise missiles Thursday as part of a naval drill in the Gulf of Oman, state media reported, under surveillance of what appeared to be a U.S. nuclear submarine. Iran's navy did not identify the submarine at the time, but on Saturday, a news website affiliated with state television said the vessel was American. Helicopter footage of the exercise released Thursday by Iran's navy showed what resembled an Ohio-class guided-missile submarine, the USS Georgia, which the U.S. Navy last month said had been sent to the Persian Gulf.

Iran has missile capability of up to 2,000 kilometers (1,250 miles), far enough to reach archenemy Israel and U.S. military bases in the region. Last January, after the U.S. killed a top Iranian general in Baghdad, Tehran retaliated by firing a barrage of ballistic missiles at two Iraqi bases housing U.S. troops, resulting in brain concussion injuries to dozens of them. Trump in 2018 unilaterally withdrew the U.S. from Iran's nuclear deal, in which Tehran had agreed to limit its uranium enrichment in exchange for the lifting of economic sanctions. Trump cited Iran's ballistic missile program among other issues in withdrawing from the accord. When the U.S. then increased sanctions, Iran gradually and publicly abandoned the deal's limits on its nuclear development.

https://timesofindia.indiatimes.com/world/middle-east/iranian-guard-holds-anti-warship-ballistic-missile-drill/articleshow/80301124.cms

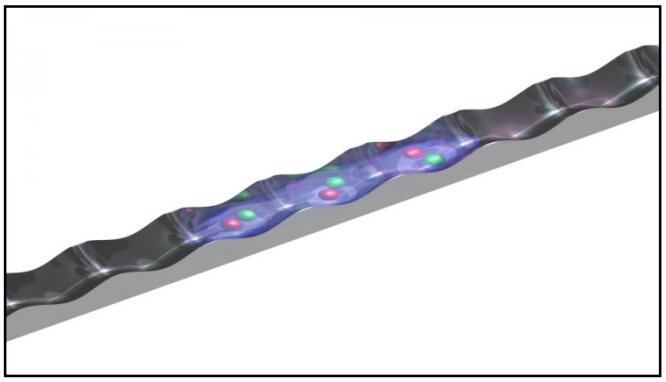
Sat, 16 Jan 2021

Physicists propose a new theory to explain one dimensional quantum liquids formation

Liquids are ubiquitous in Nature: from the water that we consume daily to superfluid helium which is a quantum liquid appearing at temperatures as low as only a few degrees above the absolute zero. A common feature of these vastly different liquids is being self-bound in free space in the form of droplets. Understanding from a microscopic perspective how a liquid is formed by adding particles one by one is a significant challenge.

Recently, a new type of quantum droplets has been experimentally observed in ultracold atomic systems. These ones are made of alkaline atoms which are cooled down to extremely low temperatures of the order of nanokelvins. The main peculiarity of these systems is that they are the most dilute liquids ever experimentally observed. An extraordinary experimental control over the system opens the possibility of unraveling the mechanism leading to the formation of quantum droplets.

In a recent article published in *Physical Review Letters*, researchers from the Institute of Cosmos Sciences of the University of Barcelona (ICCUB) Ivan Morera and the late Prof. Artur Polls led by Prof. Bruno Juliá-Díaz, in collaboration with Prof. Grigori Astrakharchik from UPC, present a microscopic theory of lattice quantum droplets which explains their formation.



One dimensional quantum lattice liquids. Credit: I. Morera et al. Phys. Rev. Lett

The team of researchers has shown that the formation of the quantum droplet can be explained in terms of effective interactions between dimers (bound states of two particles). Moreover, by solving the four-body problem they have shown that tetramers (bound states of four particles) can appear and they can be interpreted as simple bound states of two dimers.

The properties of these tetramers already coincide with the ones of large quantum droplets which indicates that many of the feature properties of the many-body liquid are contained in the tetramer. They also discussed the possibility of observing these strongly correlated droplets in dipolar bosons or bosonic mixtures in optical lattices.

More information: Ivan Morera et al, Universal Dimerized Quantum Droplets in a One-Dimensional Lattice, *Physical Review Letters* (2021). DOI: 10.1103/PhysRevLett.126.023001

Journal information: *Physical Review Letters*

https://phys.org/news/2021-01-physicists-theory-dimensional-quantum-liquids.html

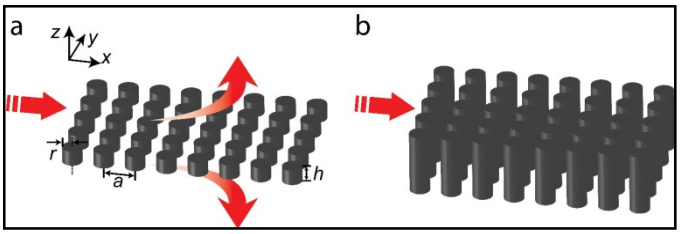
PHYS.ORG

Sat, 16 Jan 2021

Towards applications: ultra-low-loss on-chip zero-index materials

A refractive index of zero induces a wave vector with zero amplitude and undefined direction. Therefore, light propagating inside a zero-index medium does not accumulate any spatial phase advance, resulting in perfect spatial coherence. Such coherence brings several potential applications, including arbitrarily shaped waveguides, phase-mismatch-free nonlinear propagation, large-area single-mode lasers, and extended super radiance. A promising platform to achieve these applications is an integrated Dirac-cone material that features an impedance-matched zero index. However, although this platform eliminates ohmic losses via its purely dielectric structure, it still entails out-of-plane radiation loss (about 1 dB/μm), restricting the applications to a small scale.

In 2018, Professor Shanhui Fan's research group at Stanford University designed a low-loss Dirac-cone zero-index material based on symmetry-protected bound states in the continuum (BICs). However, this Dirac cone is consisted of high-order modes, thus it is challenging to homogenize the photonic crystal slab as a bulk zero-index medium.



a, Zero-index PhC slab without BICs. A photonic dipole mode forming the zero index results in out-of-plane radiation, dramatically increasing the propagation loss of the material. b, Zero-index PhC slab with a BIC. At a particular height, all the upward/downward out-of-plane radiation destructively interferes. Credit: Tian Dong, Jiujiu Liang, Philip Camayd-Muñoz, Yueyang Liu, Haoning Tang, Shota Kita, Peipei Chen, Xiaojun Wu, Weiguo Chu, Eric Mazur, and Yang Li

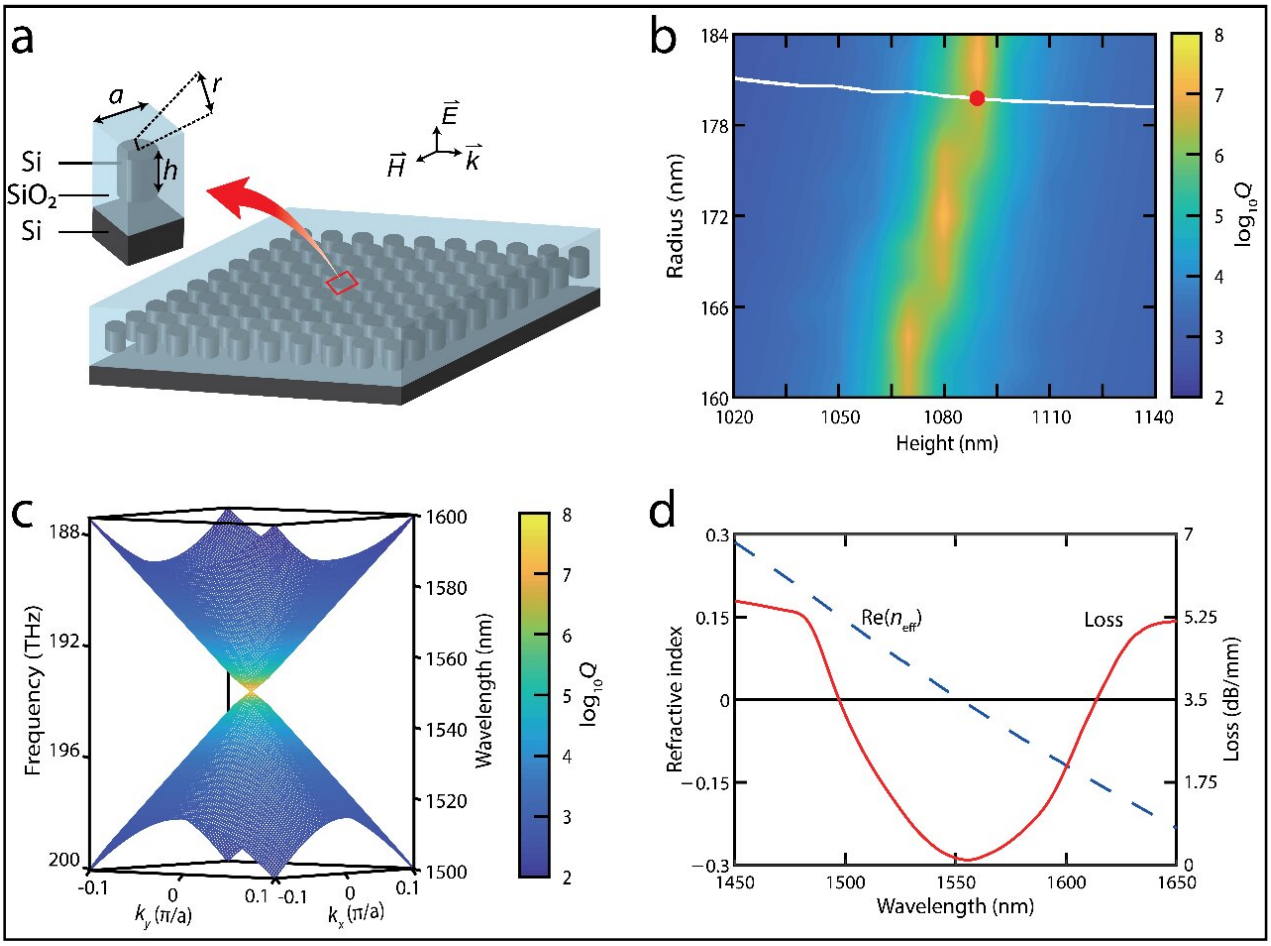
In a new paper published in *Light Science & Applications*, a team of scientists, led by Professor Yang Li from the Department of Precision Instrument at Tsinghua University, China, Professor Eric Mazur from the John A. Paulson School of Engineering and Applied Sciences at Harvard University, the US, Professor Weiguo Chu from Nanofabrication Laboratory at the National Center for Nanoscience and Technology, China, and co-workers achieved a zero-index design based on a purely dielectric photonic crystal slab (PhC slab). This design supports an accidental Dirac-cone degeneracy of an electric monopole mode and a magnetic dipole mode at the center of the Brillouin zone. Such low-order mode-based design can be better treated as a homogeneous zero-index medium.

Their design consists of a square array of silicon pillars embedded in silicon dioxide background matrix, featuring an easy fabrication using standard planar processes. To reduce the radiation loss, they model the top and bottom interfaces of a zero-index PhC slab as two partially reflective mirrors to form a Fabry-Pérot (FP) cavity. Then, they adjust the thickness of this FP cavity to induce destructive interference of upward (downward) radiations in the far field. Inside each pillar, there are axially propagating mode(s) with dipole symmetry showing a round-trip phase of an integer multiple of 2π, therefore becoming resonance-trapped modes. The monopole mode does not radiate in the out-of-plane direction because of its intrinsic mode symmetry.

"Our design exhibits an in-plane propagation loss as low as 0.15 dB/mm at the zero-index wavelength. Furthermore, the refractive index is near zero ($|n_{eff}| < 0.1$) over a bandwidth of 4.9%," Tian Dong declared.

For applications, Yueyang Liu predict: "our on-chip BIC Dirac-cone zero-index PhC slabs provide an infinite coherence length with low propagation loss. This opens the door to applications of large-area zero-index materials in linear and nonlinear optics as well as lasers. For examples, electromagnetic energy tunneling through a zero-index waveguide with an arbitrary shape,

nonlinear light generation without phase mismatch over a long interaction length, and lasing over a large area in a single mode."



a, Three-dimensional schematic of a zero-index PhC slab and its unit cell, consisting of silicon pillars embedded in silicon dioxide. b, Parameter sweep for design of a BIC zero-index PhC slab. Quality factor of the dipole mode (colour map) and degeneracy of monopole and dipole modes at the centre of the Brillouin zone (white line) as a function of pillar radius and height. The red dot indicates the degeneracy of a monopole mode and a high-Q dipole mode. c, Three-dimensional dispersion surfaces showing the Dirac-cone dispersion corresponding to the optimized parameters at the red dot in (b). d, Effective index and propagation loss of the PhC slab. When the real part of the effective index crosses zero, the loss curve reaches its valley (~0.15 dB/mm), indicating an ultra-low-loss zero index. Credit: Tian Dong, Jiujiu Liang, Philip Camayd-Muñoz, Yueyang Liu, Haoning Tang, Shota Kita, Peipei Chen, Xiaojun Wu, Weiguo Chu, Eric Mazur, and Yang Li

"This work can also serve as an on-chip lab to explore fundamental quantum optics such as efficient generation of entangled photon pairs and collective emission of many emitters. Particularly, because the spatial distribution of Ez in each silicon pillar oscillates between a monopole mode and a dipole mode as time elapses, all the quantum emitters within the pillars will experience the same spatial phase in the monopole half cycle. This significantly alleviates the challenge of precise positioning of quantum emitters in a photonic cavity," Yueyang Liu added.

More information: Tian Dong et al, Ultra-low-loss on-chip zero-index materials, *Light: Science & Applications* (2021). DOI: 10.1038/s41377-020-00436-y

Journal information: *Light: Science & Applications*

https://phys.org/news/2021-01-applications-ultra-low-loss-on-chip-zero-index-materials.html

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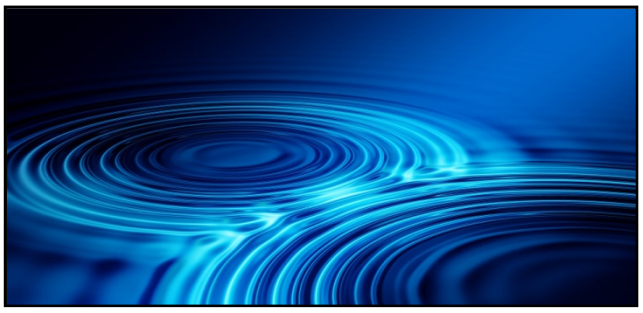
Sat, 16 Jan 2021

Understanding how sound waves travel through disordered materials

A team of researchers lead by the University of Tsukuba have created a new theoretical model to understand the spread of vibrations through disordered materials, such as glass. They found that as the degree of disorder increased, sound waves traveled less and less like ballistic particles, and instead began diffusing incoherently. This work may lead to new heat- and shatter-resistant glass for smartphones and tablets.



Credit: Pixabay/CC0 Public Domain

Understanding the possible vibrational modes in a material is important for controlling its optical, thermal, and mechanical properties. The propagation of vibrations in the form of sound of a single frequency through amorphous materials can occur in a unified way, as if it was a particle. Scientists like to call these quasiparticles 'phonons.' However, this approximation can break down if the material is too disordered, which limits our ability to predict the strength of glass under a wide range of circumstances.

Now, a team of scientists led by the University of Tsukuba have developed a new theoretical framework that explains the observed vibrations in glass with better agreement with experimental data. They demonstrate that thinking about vibrations as individual phonons is only justified in the limit of long wavelengths. On shorter length scales, disorder leads to increased scattering and the sound waves lose coherence. "We call these excitations 'diffusions,' because they represent the incoherent diffusion of vibrations, as opposed to the directed motion of phonons," explains author Professor Tatsuya Mori. In fact, the equations for low frequencies start looking like those for hydrodynamics, which describe the behavior of fluids. The researchers compared the predictions of the model with data obtained from soda lime glass and showed that they proved a better fit compared with previously accepted equations.

"Our research supports the view that this phenomenon is not unique to acoustic phonons, but rather represents a general phenomenon that can occur with other kinds of excitations within disordered materials," co-authors Professor Alessio Zaccone, University of Cambridge and Professor Matteo Baggioli, Instituto de Fisica Teorica UAM-CSIC say. Future work may involve utilizing the effects of disorder in order to improve the durability of glass for smart devices. The work is published in *The Journal of Chemical Physics* as "Physics of phonon-polaritons in amorphous materials" (DOI: 10.1063/5.0033371).

More information: Luigi Casella et al, Physics of phonon-polaritons in amorphous materials, *The Journal of Chemical Physics* (2021). DOI: 10.1063/5.0033371

Journal information: *Journal of Chemical Physics*

https://phys.org/news/2021-01-disordered-materials.html

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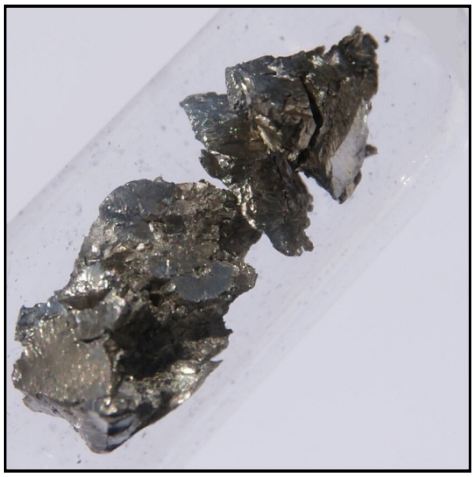
Sat, 16 Jan 2021

Scientists' discovery is paving the way for novel ultrafast quantum computers

Scientists at the Institute of Physics of the University of Tartu have found a way to develop optical quantum computers of a new type. Central to the discovery are rare earth ions that have certain characteristics and can act as quantum bits. These would give quantum computers ultrafast computation speed and better reliability compared to earlier solutions. The University of Tartu researchers Vladimir Hizhnyakov, Vadim Boltrushko, Helle Kaasik and Yurii Orlovskii published the results of their research in the scientific journal *Optics Communications*.

While in ordinary computers, the units of information are binary digits or bits, in quantum computers the units are quantum bits or qubits. In an ordinary computer, information is mostly carried by electricity in memory storage cells consisting of field-effect transistors, but in a quantum computer, depending on the type of computer, the information carriers are much smaller particles, for example ions, photons and electrons. The qubit information may be carried by a certain characteristic of this particle (for example, spin of electron or polarization of photon), which may have two states. While the values of an ordinary bit are 0 or 1, also intermediate variants of these values are possible in the quantum bit. The intermediate state is called the superposition. This property gives quantum computers the ability to solve tasks, which ordinary computers are unable to perform within reasonable time.



Researchers showed that microcrystals, synthesised on the basis of mixed optical fluoride crystal matrices doped with erbium, praseodymium and some other ions of rare earth elements, can work as qubits that enable ultrafast optical quantum computing. Credit: wikipedia.org. Credit: wikipedia.org

Qubits of mixed-ion crystals

Researchers of the Institute of Physics of the University of Tartu showed that microcrystals, synthesized on the basis of mixed optical fluoride crystal matrices doped with erbium, praseodymium and some other ions of rare earth elements, can work as qubits that enable ultrafast optical quantum computing.

Professor Vladimir Hizhnyakov, member of the Estonian Academy of Sciences, says that when selecting the ions, their electronic states of very different properties are of utmost importance. "They must have at least two states in which the ion interaction is very weak. These states are suitable for basic quantum-logic operations on single quantum bits. In addition, a state or states are needed in which the ion interaction is strong—these states enable quantum-logic operations with two or more qubits. All these states must have a long (milli- or microsecond) lifetime and optical transitions must be allowed between these states," Hizhnyakov explained.

He says that so far, finding such electronic states of rare earth ions was not considered possible, and that is why scientists have not looked for such states suitable for qubits among them. "So far, mostly the spin states of atomic nuclei have been studied for the role of qubits. However, their frequency is a million times lower than the frequency of our quantum bits. This is why also quantum computers created on the basis of these qubits would be significantly slower than computers with our electronic states-based quantum bits," he explained.

Higher speed and fewer errors

An ultrafast working cycle would allow, according to Hizhnyakov, to overcome one the major obstacles in the creation of quantum computers. Qubits are namely very sensitive to their environment, which is why any environmental interference may lead to errors in quantum computation. "The coherence time of qubits, i.e. the duration of the pure quantum state, is very short. The faster the computation cycle, the less interference is caused by the surrounding environment in the work of qubits," Hizhnyakov explained.

It has been ascertained that the spectral hole-burning method, previously developed at the Institute of Physics of the University of Tartu can be used for selecting a set of qubits in a microcrystal acting as a computer instance. According to Hizhnyakov, this at present one of most powerful methods of optical spectroscopy, which allows to find those ions in a microcrystal that are the most suitable for use as computer qubits.

Although it is still a long way full of obstacles to an actually working quantum computer, researchers of the laser spectroscopy laboratory of the University of Tartu have started building a pilot prototype of quantum computer based on the new method. According to the researchers, they are on the threshold of presenting the work of the basic elements of the new type of quantum computer.

The completed research study is a part of the joint project "Spectroscopy of entangled states of clusters of rare-earth impurity ions for quantum computing," conducted by the Laboratory of Laser Spectroscopy and the Laboratory of Solid State Theory at the Institute of Physics of the University of Tartu.

https://phys.org/news/2021-01-scientists-discovery-paving-ultrafast-quantum.html

COVID-19 Research News

mint

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Microbiologist says Covid-19 vaccines made after in-depth study, research

- ***Earlier today, AIIMS Director Dr Randeep Singh Guleria along with NITI Aayog member VK Paul were administered the Covid-19 vaccine***
- ***The vaccination drive aims to first vaccinate millions of its healthcare and frontline workers and then reach an estimated 3 crore people by the end of its first phase***

Vaccines are always made with a lot of effort, and Indian Covid-19 vaccines have been made after plenty of study and research, said Dr Nandini Duggal, Head of Microbiology at Delhi's Ram Manohar Lohia Hospital after taking the Covid-19 vaccine shot on Saturday.

Randeep Guleria, director of the All India Institute of Medical Sciences, receives a dose of the Bharat Biotech Ltd. Covaxin (Bloomberg)

Dispelling the misinformation surrounding the safety of the Covid-19 vaccine, Dr Duggal told ANI, "There are certain tolerable reactions (cough and little pain) that people are bound to face. And they are well informed in advance."

Speaking about her experience of getting vaccinated, she said, "I felt no pain. It is unlike any other vaccine. For half an hour I was kept under observation. It took barely 10 minutes. First, the verification was done. Then all other procedures were explained to us."

Talking about his experience after getting vaccinated, Nitin Choudhary, Assistant Professor (Department of Anesthesia) at Atal Bihari Vajpayee Institute of Medical Sciences, said, "Once you come here, they briefly tell you about the vaccination process. Thereafter, they give your consent to tell you what little you might face after the vaccines. Then the vaccine is administered."

"I think everybody is a little apprehensive but looking at all those studies done on the vaccination and the information that has been provided to us, it seems pretty safe," he said.

"Obviously, whenever anything new comes up, there is a bit of anxiety. But since we have been frontline without the vaccine then why not with the vaccine," the Assistant Professor said adding that he is 99 per cent confident.

Earlier today, AIIMS Director Dr Randeep Singh Guleria along with NITI Aayog member VK Paul were administered the Covid-19 vaccine shot at AIIMS Delhi on the inaugural day of the nationwide roll-out of vaccination.

Termed as the world's largest vaccination programme, covering the entire length and breadth of India, the drive aims to first vaccinate millions of its healthcare and frontline workers and then reach an estimated 3 crore people by the end of its first phase.

In the first phase, government and private-sector health care workers, including Integrated Child Development Services workers, will receive the vaccine.

This story has been published from a wire agency feed without modifications to the text.

https://www.livemint.com/news/india/microbiologist-says-covid-19-vaccines-made-after-in-depth-study-research-11610812017775.html