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Newspapers Clippings

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Press Information Bureau
Government of India

Prime Minister's Office

Wed, 17 Nov 2021 2:00PM

PM to visit UP and give a significant boost to Aatmanirbhar Bharat in defence sector at 'Rashtra Raksha Samparpan Parv' in Jhansi on 19th November

PM to formally hand over indigenously designed and developed Light Combat Helicopter, Drones and Advanced Electronic Warfare suite for naval ships to Armed Forces Service Chiefs

PM to lay foundation stone of Rs 400 cr project at Jhansi node of UP Defence Industrial Corridor to produce propulsion systems for Anti-Tank Guided Missiles

PM - a former NCC cadet - to be enrolled as the first member of NCC Alumni Association being launched

PM to dedicate to the nation facility to pay virtual tribute to martyrs at National War Memorial

During his visit to Jhansi, Uttar Pradesh on 19th November 2021, at around 5:15 PM, Prime Minister Shri Narendra Modi will launch and dedicate to the nation multiple initiatives of the Defence sector at 'Rashtra Raksha Samparpan Parv', which is being held in Jhansi from 17-19 November as part of 'Azadi Ka Amrit Mahaotsav' celebrations.

To give a thrust to Aatmanirbhar Bharat in the defence sector, the Prime Minister will formally hand over indigenously designed and developed equipments to Armed forces Service Chiefs. These include handing over of Hindustan Aeronautics Limited (HAL) designed and developed Light Combat Helicopter (LCH) to Chief of the Air Staff; drones/UAVs designed and developed by Indian startups to Chief of the Army Staff; and DRDO designed and Bharat Electronics Limited (BEL) manufactured Advanced Electronic Warfare suite for naval ships to the Chief of Naval Staff. The LCH incorporates advanced technologies and stealth features for effective combat roles. The deployment of Indian UAVs by Indian Armed Forces is also a proof of the growing maturity of the Indian drone industry ecosystem. The Advanced EW suite will be used in different naval ships including destroyers, frigates etc.

Prime Minister will lay the foundation stone of the Rs 400 crore project at Jhansi node of UP Defence Industrial Corridor. The project is being executed by Bharat Dynamics Ltd for setting up a plant to produce propulsion systems for Anti-Tank Guided Missiles.

Prime Minister will launch the NCC Alumni Association with the objective to provide a formal platform to enable NCC Alumni to reconnect with NCC. The Association will further the aims of NCC and assist in nation-building. It will witness enrolling the Prime Minister, a former NCC cadet, as the first member of the Association.

Prime Minister will launch the National programme of Simulation Training for NCC cadets with the aim to scale up simulation training facilities for all the three wings of NCC. It includes setting up of Rifle Firing Simulators for the Army Wing of NCC, Microlight flying simulators for Air Wing and Rowing simulators for Naval wing.

Prime Minister will dedicate to the nation augmented reality powered electronic kiosks at the National War Memorial which will enable visitors to pay floral homage to martyrs through the simple click of the button.

https://pib.gov.in/PressReleasePage.aspx?PRID=1772545

पत्र सूचना कार्यालय
भारत सरकार

प्रधानमंत्री कार्यालय

Wed, 17 Nov 2021 2:00PM

प्रधानमंत्री श्री नरेन्द्र मोदी उत्तर प्रदेश का दौरा करेंगे और 19 नवंबर को झांसी में 'राष्ट्र रक्षा समर्पण पर्व' पर रक्षा क्षेत्र में आत्मनिर्भर भारत को महत्वपूर्ण बढ़ावा देंगे

प्रधानमंत्री स्वदेशी रूप से डिजाइन और विकसित किए गए हल्के लड़ाकू हेलीकॉप्टर, ड्रोन और नौसेना के जहाजों के लिए उन्नत इलेक्ट्रॉनिक वारफेयर सूट सशस्त्र बल सेवा प्रमुखों को औपचारिक रूप से सौंपेंगे

प्रधानमंत्री टैंक रोधी निर्देशित मिसाइलों के लिए प्रणोदन प्रणाली का उत्पादन करने के लिए उत्तर प्रदेश रक्षा औद्योगिक गलियारे के झांसी खंड में 400 करोड़ रुपये की परियोजना की आधारशिला रखेंगे

एनसीसी पूर्व छात्र संघ के पहले सदस्य के रूप में प्रधानमंत्री को एक
पूर्व एनसीसी कैडेट के रूप में नामांकित कर इस संघ का शुभारंभ किया जाएगा

प्रधानमंत्री राष्ट्रीय समर स्मारक पर शहीदों को वास्तविक रूप से श्रद्धांजलि देने की सुविधा राष्ट्र को समर्पित करेंगे

प्रधानमंत्री श्री नरेन्द्र मोदी 19 नवंबर, 2021 को उत्तर प्रदेश में झांसी की अपनी यात्रा के दौरान, शाम को लगभग 5:15 बजे, 'राष्ट्र रक्षा समर्पण पर्व' में रक्षा क्षेत्र की कई पहलों का शुभारंभ करेंगे और राष्ट्र को समर्पित करेंगे। यह कार्यक्रम झांसी में 17 से 19 नवंबर तक 'आजादी का अमृत महोत्सव' समारोह के हिस्से के रूप में आयोजित किया जा रहा है।

रक्षा क्षेत्र में आत्मानिर्भर भारत को बढ़ावा देने के लिए, प्रधानमंत्री औपचारिक रूप से स्वदेशी रूप से डिजाइन और विकसित किए गए उपकरणों को सशस्त्र बलों के सेवा प्रमुखों को सौंपेंगे। इनमें हिंदुस्तान एयरोनॉटिक्स लिमिटेड (एचएएल) को डिजाइन और विकसित लाइट कॉम्बैट हेलीकॉप्टर (एलसीएच) को वायु सेना प्रमुख को; थल सेनाध्यक्ष को भारतीय स्टार्टअप द्वारा डिजाइन और विकसित किए गए ड्रोन/यूएवी; और डीआरडीओ द्वारा डिजाइन किया और भारत इलेक्ट्रॉनिक्स लिमिटेड (बीईएल) द्वारा नौसेना के जहाजों के लिए निर्मित उन्नत इलेक्ट्रॉनिक वारफेयर सूट को नौसेनाध्यक्ष को सौंपना शामिल है। एलसीएच में प्रभावी लड़ाकू भूमिकाओं के लिए उन्नत तकनीकों और चालबाज़ सुविधाओं को शामिल किया गया है। भारतीय सशस्त्र बलों द्वारा भारतीय यूएवी की तैनाती भी भारतीय ड्रोन उद्योग इकोसिस्टम की बढ़ती परिपक्वता का प्रमाण है। उन्नत ईडब्ल्यू सूट का उपयोग विभिन्न नौसैनिक जहाजों में किया जाएगा, जिनमें विध्वंसक, युद्धपोत आदि शामिल हैं।

प्रधानमंत्री उत्तर प्रदेश रक्षा औद्योगिक गलियारे के झांसी खंड में 400 करोड़ रुपये की परियोजना का शिलान्यास करेंगे। टैंक रोधी निर्देशित मिसाइलों के लिए प्रणोदन प्रणाली का उत्पादन करने के लिए एक

संयंत्र स्थापित करने के लिए भारत डायनेमिक्स लिमिटेड द्वारा इस परियोजना को कार्यान्वित किया जा रहा है।

एनसीसी के पूर्व छात्रों को एनसीसी के साथ फिर से जोड़ने में सक्षम बनाने के लिए एक औपचारिक मंच प्रदान करने के उद्देश्य से प्रधानमंत्री एनसीसी पूर्व छात्र संघ का शुभारंभ करेंगे। यह संघ एनसीसी के उद्देश्यों को आगे बढ़ाएगा और राष्ट्र निर्माण में सहायता करेगा। यह संघ प्रधानमंत्री को एक पूर्व एनसीसी कैडेट के रूप में एसोसिएशन के पहले सदस्य के रूप में नामांकित करेगा।

प्रधानमंत्री एनसीसी की तीनों इकाइयों के लिए सिमुलेशन प्रशिक्षण सुविधाओं को बढ़ाने के उद्देश्य से एनसीसी कैडेटों के लिए सिमुलेशन प्रशिक्षण के राष्ट्रीय कार्यक्रम का शुभारंभ करेंगे। इसमें एनसीसी की सैन्य इकाई के लिए राइफल फायरिंग सिमुलेटर की स्थापना, एयर विंग के लिए माइक्रोलाइट फ्लाइंग सिमुलेटर और नेवल विंग के लिए रोइंग सिमुलेटर शामिल हैं।

प्रधानमंत्री राष्ट्रीय समर स्मारक में संवर्धित वास्तविकता संचालित इलेक्ट्रॉनिक कियोस्क राष्ट्र को समर्पित करेंगे जो आगंतुकों को बटन के साधारण क्लिक के माध्यम से शहीदों को पुष्पांजलि अर्पित करने में सक्षम बनाएगा।

https://pib.gov.in/PressReleasePage.aspx?PRID=1772573

Hindustan Times

Thu, 18 Nov 2021

Modi to hand over to Armed Forces Made-in-India defence equipment. Details here

The Prime Minister will directly hand over to all the three service chiefs the latest defence gears, which also includes an advanced electronic warfare suite for naval ships.

By Joydeep Bose, Edited by Avik Roy

New Delhi: Prime Minister Narendra Modi, who will be visiting two districts of Uttar Pradesh on Friday to inaugurate a bunch of developmental projects, will also formally hand over in Jhansi the indigenously developed defence equipment to the three chiefs of the Armed Forces.

Prime Minister Narendra Modi (ANI)

The move is being deemed as a major push to the "Aatmanirbhar Bharat" programme in the defence sector, as the entire set of equipment – including the light combat aircraft (LCA), drones, and unmanned aerial vehicles (UAVs) were built part-by-part in the country by Hindustan Aeronautics Limited (HAL) (in case of the LCA) or Indian startups.

The Prime Minister will directly hand over to all the three service chiefs the latest defence gears, which also includes an advanced electronic warfare suite for naval ships, designed by the Defence Research and Development Organisation (DRDO) and manufactured by Bharat Electronics Limited.

The LCA incorporates advanced technologies and stealth features for effective combat roles, an official statement said, adding the deployment of Indian UAVs by armed forces is also proof of the growing maturity of the Indian drone industry ecosystem. Meanwhile, the advanced warfare suite – which will be received by the Naval chief on part of the Indian Navy – will be used in different ships including destroyers and frigates.

Meanwhile, other developmental projects in Jhansi to be inaugurated by the Prime Minister include the 600 megawatts (MW) ultra-mega solar power park and the Atal Ekta Park.

According to the PMO, the 600MW solar power park, proposed to be set up in Jhansi's Garautha area, is being constructed at a cost of more than ₹3,000 crore. The project will be inaugurated, as per the statement, by the Prime Minister when he participates in the foundation laying ceremony at 5:15pm on Friday. The solar power park is expected to help provide the dual benefits of cheaper electricity and grid stability for consumers.

https://www.hindustantimes.com/india-news/modi-to-hand-over-to-armed-forces-made-in-india-defence-equipment-details-here-101637157508090.html

Hindustan Times

Thu, 18 Nov 2021

DRDO displays drone swarm in offensive role

The capability demonstration came on the opening day of a three-day defence function in Jhansi linked to the ongoing country-wide celebrations to mark the 75th year of independence.

By Rahul Singh

New Delhi: The Defence Research and Development Organisation (DRDO) on Wednesday showcased an indigenous capability to carry out offensive missions in enemy territory with scores of drones working in assorted formations to identify, encircle and strike targets, with the loitering munitions being developed to meet a key military requirement and keep soldiers out of harm's way, officials familiar with the development said.

Defence minister Rajnath Singh during the inauguration of the three-day defence event in Jhansi, Wednesday. (PTI)

Surveillance and armed drone swarm figure on a new list of Make in India projects that the army plans to pursue in partnership with the industry. Army chief General Manoj Mukund Naravane released the list last week while rooting for self-reliance in the defence sector and stressing that indigenous technology was key to victory in wars. The Indian Air Force is also fully backing the indigenous development of swarm drone technologies.

DRDO's Young Scientist Laboratory for Asymmetric Technologies is working on swarm technologies to strengthen the country's military capabilities, the DRDO said in a statement. "DRDO demonstrated a fully operational decentralised swarm of 25 drones flying with minimal human intervention," it said.

The capability demonstration came on the opening day of a three-day defence function in Jhansi linked to the ongoing countrywide celebrations to mark the 75th year of Independence.

The event,which was inaugurated by Union defence minister Rajnath Singh**,** seeks to highlight the government's focus on achieving self-reliance in the defence sector, with Prime Minister Narendra Modi set to hand over locally produced military hardware, including the light combat helicopter, drones and electronic warfare systems, to the armed forces on November 19.

Singh said India was facing several challenges, ranging from border threats to sub-conventional ones such as terror and extremism. "There is a need to create a strong, modern and well-equipped military, along with an equally capable and self-reliant defence industry, which can provide low-cost yet top-quality equipment to our forces in a time-bound manner," the minister added.

The drone swarm showcased capabilities related to distributive sensing, decision making, reconfigurable path planning and autonomous attack, DRDO officials said, adding that swarm algorithms have advanced features for niche and distinctive capabilities.

Unmanned systems are best for "dull, dirty and dangerous missions" that a military may be required to carry out, said Air Marshal Anil Chopra (retd), who heads the Centre for Air Power Studies.

"Reconnaissance for long hours can be dull, exposure to nuclear contaminated zones can be dirty and areas with heavy enemy defences are dangerous. Drone swarms allow you to overwhelm the enemy's sensors and weapons and hit multiple targets," Chopra added.

The Indian Army carried out a drone swarm technology demonstration at the Army Day-2021 parade in Delhi on January 15, with 75 locally designed and developed drones buzzing in the skies and simulating a raft of missions including offensive operations.

Drones within a swarm can carry out a wide range of missions including strikes against tanks, infantry combat vehicles, ammunition holding areas, fuel dumps and terror launch pads, officials have said.

The technology demonstrated on January 15 is being developed by the army in partnership with a Bengaluru-based start-up New Space Research and Technologies, with the autonomous drones capable of sneaking 50km into enemy territory and striking targets with high-impact warheads. The drones can strike targets at a range of 100km in a self-destructive assault.

India is investing heavily into artificial intelligence, autonomous weapon systems, quantum technologies and robotics for a convergence between its war-fighting philosophies and military attributes of these technologies, the army previously said.

The government is encouraging self-reliance is the defence manufacturing sector through several policy decisions including increasing foreign direct investment (FDI) limit from 49% to 74%, notifying 209 defence items that cannot be imported and creating a separate budget for buying locally made military hardware.

India has signed contracts and cleared projects worth almost ₹62,000 crore in the last two months to boost military capability with locally produced weapons and systems including transport planes, tanks, helicopters, airborne early warning systems and counter-drone weapons.

India has set aside ₹70,221 crore this year for domestic defence procurement, accounting for 63% of the military's capital budget. Last year, the ministry spent over ₹51,000 crore, or 58% of the capital budget, on domestic purchases.

https://www.hindustantimes.com/india-news/drdo-displays-drone-swarm-in-offensive-role-101637150019067.html

THE HINDU

Thu, 18 Nov 2021

DRDO shows offensive drone swarm capabilities in Jhansi

New Delhi: The Defence Research and Development Organisation (DRDO) demonstrated offensive capabilities of its drone swarms at a three-day 'Rashtra Raksha Samarpan Parv' in Uttar Pradesh's Jhansi on Wednesday, an official statement said.

File photo for representation. | Photo Credit: REUTERS

DRDO Young Scientist Laboratory for Asymmetric Technologies has been working on drone swarm technologies towards strengthening the asymmetric warfare capabilities, its statement noted.

"The DRDO demonstrated fully operational decentralised UAV (unmanned aerial vehicle) swarm comprising of 25 drones flying coherently with minimal human intervention, during Rashtriya Raksha Samarpan Parv during Jhansi Jalsa," it mentioned.

The display showcased the drones' unique capabilities of "distributive sensing, distributive decision making, reconfigurable path planning and autonomous attack formations", it noted.

The swarm enacted real-time scenarios like target encirclement, coordinated attack and many others in Jhansi, it said.

https://www.thehindu.com/news/national/drdo-shows-offensive-drone-swarm-capabilities-in-jhansi/article37546374.ece

अमर उजाला

Thu, 18 Nov 2021

हाथी ग्राउंड में नजर आए आकाश, भीष्म एवं गोफर

झांसी: हाथी ग्राउंड पर सेना के अत्याधुनिक साजो-सामान की प्रदर्शनी लगी। भारतीय सेना की आन समझे जाने वाले आकाश प्रक्षेपास्त्र से लेकर टैंक, मिसाइल समेत दर्जनों आधुनिक सैन्य उपकरण प्रदर्शित किए गए। रक्षा मंत्री राजनाथ सिंह भी प्रदर्शनी स्थल पहुंचे और जायजा लिया। पहले दिन चुनिंदा लोगों को ही प्रदर्शनी देखने का मौका मिला हालांकि जिन्होंने इसे देखा उसने ही भारतीय सेना की तकनीकी कौशल की दिल खोलकर तारीफ की।

हाथी ग्राउंड पर चलने वाली इस तीन दिनी रक्षा उपकरणों की प्रदर्शनी में स्वदेशी तकनीक से बने उपकरणों समेत रूस, इजराइल, सोवियत यूनियन समेत अन्य देशों की मदद से बने कुल करीब चार दर्जन सैन्य उपकरण प्रदर्शित किए गए। सबसे आकर्षक डीआरडीओ से विकसित आकाश प्रक्षेपास्त्र रहा। भारत की स्वदेशी तकनीक पर आधारित इस प्रक्षेपास्त्र से तीस किमी दूरी तक मार किया जा सकता है। यह 18000 मीटर ऊंचाई के टारगेट को भी नष्ट कर सकता है। सोवियत तकनीक से बनी स्ट्रेला-10 एम ने भी भारतीय सेना की दक्षता दिखाई। सतह से हवा में मार करने वाली इस मिसाइल प्रणाली का नाटो नाम गोफर है। इससे अचानक नजर आने वाले दुश्मन के लक्ष्य को चंद मिनट में नष्ट किया जा सकता है। इसी तरह बीएलटी टैंक टी-72 समेत अन्य मिसाइल क्षमता वाले उपकरण भी प्रदर्शन के लिए यहां रखे गए हैं। भारतीय सेना की तकनीकी क्षमता को प्रदर्शित करने वाले लेवल लाइन वेट राडार भी प्रदर्शित किए गए हैं। इनकी मदद से रेगिस्तान से लेकर पहाड़ तक हर गतिविधि पर बारीक नजर रखी जा सकती है। इनके साथ ही बैलेस्टिक मिसाइल जैसे हवाई लक्ष्य भी नष्ट करने की क्षमता है। यहां टी-90 भीष्म वाहन भी रखा गया है। रुस एवं फ्रांस की मदद से इसका निर्माण शुरू हुआ। माइन को नष्ट करने वाला टी-72 भी आकर्षण का केंद्र रहा। नीची उड़ान वाले हवाई खतरों को नष्ट करने वाले बीएमपी टू इंफैट्री कॉम्बैट व्हीकल को भी लोगों ने खूब पसंद किया। प्रदर्शनी के दौरान गरूण फोर्स कमांडो भी नजर आए। कई तरह की पिस्टल भी प्रदर्शनी में रखी गई है। इसमें ग्लॉक पिस्टल, टैवोर, टीएआर आदि शामिल हैं। तंगुस्का जैसी स्वचलित विमान भेदी मिसाइल प्रणाली को लेकर भी लोगों में उत्सुकता नजर आई। इसकी मारक क्षमता 2000 से 4000 मीटर तक है जबकि प्रति मिनट इससे 5000 राउंड फायर किए जा सकते हैं। इसी तरह पहली स्वदेशी आर्टिलरी गन धनुष भी प्रदर्शनी में रखा गया है। कार्यक्रम के दौरान सुरक्षा के तगड़े इंतजाम किए गए थे। सुरक्षा के लिए सेना के जवान भी बड़ी संख्या में वहां तैनात किए गए थे। रक्षा मंत्री के साथ ही वरिष्ठ सैन्य अफसर भी मौजूद रहे।

https://www.amarujala.com/uttar-pradesh/jhansi/weapon-exibhition-hathi-ground-jhansi-news-jhs209017527

अमर उजाला

Thu, 18 Nov 2021

रानी की धरती पर सेना की धाक, जमीन से आसमान तक बिखरे देशभक्ति के नजारे

झांसी। तिरंगे की शान और सेना की आन-बान के जज्बे से सजे राष्ट्र रक्षा समर्पण पर्व के तहत बुधवार को झांसी के एलवीएम स्कूल के मैदान पर तीन दिवसीय झांसी जलसा पर्व का शुभारंभ किया गया। इस कार्यक्रम का उद्घाटन विधायक रवि शर्मा ने महारानी लक्ष्मीबाई की प्रतिमा पर माल्यार्पण और दीप जलाकर किया।

हाथी ग्राउन्ड में लगी सेना के हथियारों की प्रदर्शनी में लगे भारतीय सेना के टैंक व तोपें। अमर उजाला

देश की तरक्की और सेना के बढ़ते कदमताल से सजे इस कार्यक्रम में सेना की ओर से डॉग शो, हॉर्स जंपिंग, स्काई डाइविंग, लड़ाकू विमान, डीआरडीओ के स्वार्म ड्रोन और हॉट एयर बलून के प्रदर्शन को सभी ने खूब सराहा। प्रदर्शन के साथ मेरा रंग दे बसंती चोला और ताकत वतन की हमसे है..., देशभक्ति गीत लोगों में देशभक्ति का खूब जज्बा भर रहे थे। बच्चे हो या बड़े सभी लोग हर प्रदर्शन पर भारत माता की जय... और वंदे मातरम का जयघोष कर रहे थे।

इस दौरान पैरा मोटर की ऊंचाई और माइक्रोक्राफ्ट की उड़ान रोमांच से भरी रही। कार्यक्रम में भारतीय वायुसेना की 'आकाश गंगा' के कमांडो ने अपना बेहतरीन हुनर दिखाया। कार्यक्रम के अंत में सेना के बैंड ने शानदार प्रदर्शन किया। लोगों ने भी बैंड को सलामी दी। कार्यक्रम का कुशल संयोजन एवं संचालन लेफ्टीनेंट प्रखर तिवारी और शिक्षिका आसमा खान ने किया।

डॉग शो में एक्सपर्ट डॉग ने ढूंढे आतंकी निशाने

झांसी। बीएसएफ के डॉग शो में मैदान में अपने कमांडो संग उतरे डॉग ने लोगों को अपना हुनर दिखाया। डॉग ने अपनी सूंघने की शक्ति से बेहतरीन प्रस्तुति दी और नाटकीय रूप से मैदान में छिपे आतंकी को ढूंढ निकाला। मैदान में यहां-वहां छिपाये गए सामान को डॉग ने फटाफट ढूंढ निकाला। डॉग के दौड़ने, सर्किल और स्टैंड की बाधाओं को पार करने और उसकी कार्य कुशलता को देख लोगों ने उनकी कड़ी ट्रेनिंग का अंदाजा लगाया। उन्होंने जवानों के साथ मैदान के चक्कर लगाए और शो में बेहतरीन प्रस्तुति दी। डॉग शो देख बच्चे खूब गदगद हुए।

सानिया, सुल्तान, ब्रेव, शेरा, चकोरी और नूरा के कायल हो गए झांसी वाले

झांसी। एलवीएम के मैदान पर सेना के घुड़सवारों और उनके तेज-तर्रार घोड़े सुल्तान, ब्रेव, शेरा, सानिया, चकोरी और नूरा के झांसी वाले कायल हो गए। बीएसएफ के हॉर्स जंपिंग शो में घुड़सवार सौरभ चौधरी ने जूलियट पर, हरबंश ने घोड़े ब्रेव पर बैठकर जो हुनर दिखाया उसे देखकर झांसी वाले वाह-वाह कर उठे। तेज गति से दौड़ते हुए तलवार के जरिए जमीन से पेपर उठाना बेहद रोमांचक था। इसके अलावा हरबंश लाल के घोड़े की गति देख लोग अपनी सीट से उठ खड़े हुए। जसविंदर सिंह ने अपने घोड़े शेरा पर बैठकर जो गति भरी और तलवार, चाकू व नान ने जिस तरह रास्ते में रखे पेपर उठाए, वह देखकर लोग देर तक तालियां

बजाते रहे। जंपिंग शो में घोड़े पर सवार तेज प्रताप जोशी, संजीव सिंह, गोविंद राणा के पैंतरे देख लोगों का रोमांच और भी बढ़ गया। बाधा जंपिंग में घोड़े का हुनर देखने लायक था।

स्काई डाइविंग में रस्सी के सहारे मैदान में उतरे कमांडो

झांसी। कार्यक्रम में कमांडो रस्सी के सहारे हेलीकॉप्टर से जमीन पर उतरे तो पूरा मैदान देर तक तालियों की गड़गड़ाहट से गूंजता रहा। जैसे-जैसे कमांडो उतर रहे थे एनसीसी कैडेट्स और बाकी लोग खड़े होकर उनका हौसला बढ़ाने को भारत माता की जय, जयहिंद का जयघोष करने लगते थे। कमांडो भी बारी-बारी से लोगों को अभिवादन स्वीकार करते रहे।

लड़ाकू विमानों की स्पीड और स्वार्म ड्रोन की तकनीकी देख लगाए जयहिंद के नारे

झांसी। राष्ट्र रक्षा समर्पण पर्व के तहत एलवीएम के मैदान के ऊपर से जब लड़ाकू विमान मिग और मिराज गुजरे तो तिरंगे की शान आसमान में नजर आई। इनकी तेज गर्जना और स्पीड देख लोग देखते ही रह गए। वहीं, डीआरडीओ द्वारा स्वदेशी तकनीकी से तैयार किए गए 'स्वार्म ड्रोन' में से 25 ड्रोन खूब पसंद किए गए। इनकी खास तकनीकी इतनी कमाल की है कि यह बिना पास जाए काफी दूर से चीजों को परख सकता है। किसी आपातकाल में पूरी चतुराई से एक साथ (झुंड में)और अलग-अलग व पिरामिड रूप में अपना काम कर सकते हैं। नई तकनीकी से इस ड्रोन को कुछ इस तरह से बनाया गया है कि यह विषय परिस्थिति में भी पूरी तरह काम करेगा और दुश्मन व अपने हर टारगेट पर नजर रखेगा। एलवीएम के मैदान पर जब यह 25 ड्रोन एक साथ जमीन से ऊपर अपने टारगेट की ओर बढ़े तो इनका संचालन बेहतरीन रहा। आपातकाल में एक साथ और अलग-अलग ग्रुप में ड्रोन ने बेहतर प्रदर्शन किया। झांसी के लोगों ने इसे सलाम किया और जय हिंद के नारे लगाए।

हॉट एयर बलून ने बच्चों ने की आसमान की सैर

झांसी। एलवीएम के मैदान पर गाड़ी से जब पीले रंग का हॉट एयर बलून जमीन पर उतारा गया तो लोगों ने ज्यादा ध्यान नहीं दिया लेकिन जैसे ही बलून में हवा भरकर उसे फुलाया गया और प्रेशर से आग छोड़ी गई तो बलून जमीन से आसमान की ओर उठने लगा, यह देख बच्चे खुश होकर तालियां बजाने लगे। बड़े भी बलून से नजर नहीं हटा पाए। जब बलून पूरी तरह से फूल गया तो वह आसमान में उड़ने लगा। इसके बाद तो तमाम बच्चे मैदान की ओर दौड़ पड़े। सेना के जवानों ने भी कई बच्चों को बलून में बैठाकर आसमान की सैर कराई।

पैरा मोटर की ऊंचाई और माइक्रोक्राफ्ट की उड़ान रही जबरदस्त

झांसी। एलवीएम के मैदान पर पैरा मोटर की उड़ान जबरदस्त रही। 80-90 किमी की रफ्तार से उड़ान भरने वाले पैरा मोटर जब आसमान में तेज गति से निकलते तो लोग खड़े होकर गर्दन को घुमाते हुए आसमान का नजारा देखने में खो जाते। इसके अलावा माउंटेन ईगल के नाम से प्रसिद्ध माइक्रोक्राफ्ट लोगों को खूब पसंद आए। वहीं, ईगल-1 रेड एयर क्राफ्ट में कमांडो मनकवलजीत, ईगल-2 व्हाइट एयर क्राफ्ट में लेफ्टिनेंट एबी टीएन ने और एलो एयर क्राफ्ट में नायक सी.ए ने अपनी दक्षता दिखाई। ईगल के जरिए तिरंगे की शान और इंडियन फोर्स के जय का उद्घोष मैदान में देर तक होता रहा।

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FINANCIAL EXPRESS
Read to Lead

Thu, 18 Nov 2021

Malaysia's Air Force to get India's Tejas LCA? Kuala Lumpur looking to buy 36 jets

Highly placed sources have confirmed to the Financial Express Online that, "Presently the ASEAN nation Malaysia is in the midst of evaluating the Request of Proposal (RfP) it had floated earlier this year for getting the light fighter jets for its Air Force."

By Huma Siddiqui

India's indigenous Light Combat Aircraft "Tejas'' is in the forefront of Malaysia's requirement of 36 low cost light fighter aircraft for its Air Force.

Highly placed sources have confirmed to the Financial Express Online that, "Presently the ASEAN nation Malaysia is in the midst of evaluating the Request of Proposal (RfP) it had floated earlier this year for getting the light fighter jets for its Air Force."

In a couple of months, the RMAF will decide which fighter jet it wants to add to its fleets.

HAL's LCA had its first international exposure was in the Bahrain International Air Show which was in 2016. (Credit: India Air Force from Dubai)

Who all received the RfP?

As was reported earlier, the Royal Malaysian Air Force (RMAF) Malaysia had floated a global tender for acquiring light fighter aircraft. The RfP had been sent to various competitors including: M-346FA Fighter Attack aircraft variant which has been developed by Leonardo, of Italy; FA-50 light attack aircraft developed by Korea Aerospace Industries (KAI); Yak-130 combat trainer aircraft developed by United Aircraft Corporation of Russia; and JF-17 of China.

Out of the five who responded to the RfP, only India's indigenous Light Combat Aircraft (LCA) Tejas, JF-17 joint venture of China and Pakistan and FA- 50 of Korean Aerospace Industries were down selected.

India's state-owned Hindustan Aeronautics Limited (HAL) had responded to Malaysia's proposal. "The proposal sent from HAL is expected to make the cut as it meets all the parameters and is low cost," a top officer explained to Financial Express Online on condition of anonymity.

Earlier this year, talking about the price of the LCA, on the sidelines of the Aero-India in Bengaluru, the HAL's CMD R Madhavan, "Per aircraft is pegged at a vanilla price of just Rs 309 crore. However, the export version of the aircraft is going to be different than those being produced for the Indian Air Force."

Globally, the LCA export version is the cheapest fighter jet globally and there will be extra charges for the services that HAL will provide outside India and it can be customized.

When did Malaysia reach out for LCA?

In 2019, the RMAF had expressed interest in the LCA when the aircraft had participated for the first time in the Langkawi International Maritime and Aerospace Exhibition (LIMA) in the ASEAN nation Malaysia.

HAL's LCA had its first international exposure was in the Bahrain International Air Show which was in 2016.

Will it be Tejas, FA-50 of KAI or Chinese JF-17?

The RMAF is assessing all the specifications and the features of the three down selected competitors.

More about Tejas

This has been manufactured in India by HAL and designed by Aeronautical Development Agency (ADA) for IAF and Navy. And the IAF has recently placed an order for 83 fighters from HAL. This is according to HAL the world's lightest supersonic fighter and has the capability to carry Beyond Visual Range Weapons (BVR), air-to-surface, air-to-air, precision-guided and standoff weapons.

An advanced Fly-by-Wire (FBW) fighter can be refueled mid-air. And it is a 4+ generation fighter and comes with a glass cockpit with Satellite aided Inertial Navigation System.

It also has the capability to carry air to ground munitions and attack system which can be used to hit targets over land or sea. With a maximum speed is supersonic at all altitudes and has 'g' limits +8/-3.5 and a service ceiling of 50,000 feet.

With a wingspan of 8.20 meter, its length is 13.20 meter, and height 4.40 meter.

JF-17 jointly built by China and Pakistan

It is a single engine, multi-role fighter. According to Pakistan Air Force (PAF) it can carry highly agile imaging infrared short-range missile, beyond visual range active missile, air-to-sea missiles, anti-radiation missiles, runway penetration bombs, laser-guided weapons. JF-17 has a height of 15.5 feet, length of 49 feet, and a wingspan of 31 feet. It will have a helmet-mounted display and sight system.

FA-50 of KAI

This aircraft is based on the T-50 supersonic advanced trainer platform, and is being offered as an efficient and affordable supersonic advanced light fighter jet.

The weapon systems on board the aircraft are all made in South Korea.

Export of LCA

If and when the LCA gets exported, the programme will get the much needed boost. It will also help HAL get international recognition globally for its capabilities and the product will also get validated.

https://www.financialexpress.com/defence/malaysias-air-force-to-get-indias-tejas-lca-kuala-lumpur-looking-to-buy-36-jets/2371179/

Business Standard

Wed, 17 Nov 2021

Eye on export markets, Tejas debuts in Dubai

Malaysia, Argentina, Egypt - the three countries that have evinced interest in the Indian light fighter

By Ajai Shukla

Bengaluru: The Indian Air Force (IAF) and Hindustan Aeronautics Ltd (HAL) are making a splash at the Dubai Air Show, which began on Sunday and will run through Thursday.

Two IAF aerobatics teams are catching the eye of spectators – the Suryakiran team that performs with nine Hawk advanced jet trainers (AJTs), and the Sarang team that flies four Dhruv helicopters.

In addition to these, the indigenous Tejas light combat aircraft (LCA), built by HAL, screams through the skies several times each day in aerobatics displays, flaunting its performance to possible customers.

The real audience for the Tejas displays, however, is far from Dubai. It is in Kuala Lumpur (Malaysia), Buenos Aires (Argentina) and Cairo (Egypt) -- three countries that have evinced interest in the Indian light fighter.

The most promising potential customer is the Royal Malaysian Air Force (RMAF), which has tendered to buy 18 light fighters with an option for 18 more. This would be an inviting first export order for the Tejas.

According to the Malaysian news media, the other contestants in the fray are: Russia's MiG-35, China's Catic, Korea Aerospace Industries (KAI) FA-50, Turkey Aerospace industries (TAI) Hürjet, and Italy's Leonardo with the M-346.

Also potentially in the fray is the Pakistani-Chinese JF-17 Thunder.

The RMAF's tender requirements includes mid-air refueling, beyond-visual-range (BVR) combat and supersonic flight capabilities. Manufacture must be localised in Malaysia to the extent of 30 per cent of the aircraft and delivery must begin within 36 months of the contract.

Speaking to Business Standard, HAL chief, R Madhavan said that HAL met almost every one of the RMAF's requirements. "The Tejas is technically ahead of the Chinese-Pakistani JF-17 and the other competitors. One or two of the Malaysian parameters that we do not meet can be easily engineered. For example, we can quickly add on the on-board oxygen generating system (OBOGS) they have specified," said Madhavan.

The other competitors are not meeting many of the Malaysian requirements, says the HAL chief. The Chinese-Pakistani JF-17 does not have the active electronically scanned array (AESA) radar that is specified; and its mid-air refueling capability is still being tested.

Turkey does not yet have a flying aircraft, while the Malaysian tender specifies that the fighter offered must have already flown. The Chinese fighter is likely to be treated warily, given Beijing's political assertiveness in the region.

HAL has offered the RMAF the sophisticated Tejas Mark 1A version of the fighter, which comes with mid-air refueling, an AESA radar, electronic warfare (EW) capability and the ability to fire BVR missiles.

Price is an important issue for the RMAF, which is expecting to pay in the region of $900 million for 18 fighters, or $50 million per fighter. It is understood that the Tejas is being offered at that price.

The Korean fighter is understood to be slightly more expensive than the Tejas and the Russian MiG-35 dramatically so. Meanwhile, the Chinese are believed to have slashed the price of the JF-17 by about 30 per cent, a loss it will bear in order to capture the market.

While the contest is believed to be between the South Korean, Chinese-Pakistani and Tejas fighters, there is a perception that the Malaysians will prefer not to buy a Chinese fighter, given Kuala Lumpur's wariness after recent Chinese incursions into disputed waters in the South China Sea.

Argentine interest in Tejas

The Tejas is also on the radar of Buenos Aires, with Argentina in the market for 12 light fighters. HAL is pursuing the case, but there is a UK embargo – dating back to the Falklands War -- on the supply of British defence equipment to Argentina.

Argentina is believed to have gotten only two offers: one from the Chinese and a Letter of Intention from HAL to participate in the tender. This too appears to have become a JF-17 versus Tejas contest.

HAL will be required to replace several systems and sub-systems on the Tejas that are supplied by UK firms such as BAE Systems, Cobham and Martin-Baker.

"We will have to replace more than 50 systems and sub-systems -- such as the Martin-Baker ejection seat. In addition, we will have to test and certify the replacements we fit. There will be a cost attached with this," says Madhavan.

HAL is working out the costs and hopes to inform Argentine before the end of November.

Interest from Egypt

Another reason for fielding the Tejas in the Dubai Air Show is to test the waters in West Asia. One possibility is Egypt, but that will require weaning Cairo off US platforms, which Washington has long supplied at subsidized rates.

"We are going to Egypt for that reason. The idea is to manufacture the Tejas there by setting up a factory for them over there," says the HAL chief.

https://www.business-standard.com/article/economy-policy/eye-on-export-markets-tejas-debuts-in-dubai-121111700015_1.html

asianet news हिन्दी

Thu, 18 Nov 2021

Dubai Airshow: भारत की शान तेजस, सूर्यकिरण और सारंग ने दिखाई ऐसी ताकत कि दुनिया दंग रह गई; 38000 Cr की डील

दुबई: दुबई में चल रहे दुनिया के सबसे बड़े एयर शो(Dubai Airshow) में भारतीय एयरफोर्स(indian air force) के लड़ाकू विमानों तेजस, सूर्यकिरण और सारंग(Tejas,Suryakiran,Sarang) ने अदम्य साहस का ऐसा प्रदर्शन किया कि दुनिया दंग रह गई। दुबई शो में अब तक 5.23 बिलियन डॉलर यानी 38000 करोड़ रुपए के रक्षा सौदे(defense deals) हो गए हैं। बता दें कि Dubai Airshow 14 नवंबर से शुरू हुआ है। यह 18 नवंबर तक चलेगा। इस शो के तहत दुबई वर्ल्ड सेंट्रल और अल मकतूम एयरपोर्ट पर प्रदर्शन चल रहा है।

पहली तस्वीरें इंडियन एयर फोर्स (IAF) ने twitter पर शेयर की हैं। इसमें लिखा कि सूर्यकिरण और सारंग एरोबेटिक्स टीम(aerobatics team) के साथ LCA तेजस ने दुबई एयरशो के उद्घाटन के दिन एक एक सटीक प्रदर्शन किया। दूसरी तस्वीर डेविड ब्रैंको फिल्हो(David Branco Filho) ने खींची है। इसे twitter पर शेयर किया जा रहा है।

बता दें कि यूएई के रक्षा मंत्रालय ने वैश्विक रक्षा आपूर्तिकर्ताओं (global defense suppliers) के साथ कुल 5.23 बिलियन डॉलर (38 हजार करोड़ रुपए) के अनुबंध पर हस्ताक्षर किए हैं।

यह शो पहली बार 1989 में शुरू हुआ था। इसे दुनिया का सबसे बड़ा एयर शो माना जाता है। इसमें 370 से अधिक नए विमान और 150 देशों के प्रतिनिधि हिस्सा ले रहे हैं। इजराइल इसमें पहली बार शामिल हुआ है।

Dubai Airshow में भारतीय कैंप में डीआरडीओ, एचएएल और भारत डायनामिक लिमिटेड के प्रतिनिधि गए हैं। भारतीय डिफेंस इंडस्ट्री की तरफ से एचएएल के विपिन मेनन ने बताया कि भारत सरकार ने स्वदेशी हथियारों को वैश्विक बाजार में उतारने का का अभूतपूर्व फैसला किया है। यहां एक से बढ़कर एक नई टेक्नोलॉजी देखने को मिल रहा हैं।

Dubai Airshow में 140 से अधिक देशों से लोग और सैन्य प्रतिनिधिमंडल पहुंचे हैं। शो में 85,000 से अधिक दर्शकों के आने की उम्मीद है।

https://hindi.asianetnews.com/gallery/world-news/dubai-airshow-incredible-performance-of-tejas-and-surya-kiran-aircraft-of-indian-air-force-kpa-r2pe30#image2

The EurAsian Times

Thu, 18 Nov 2021

Big breakthrough: India's Rustom-2 drone demonstrates critical capabilities using own GPS system

By Aashish Dangwal

India has accelerated trials of the indigenously-developed Rustom-II surveillance drone amid rising border tensions with China.

Recently, India's Defence Research and Development Organisation demonstrated the Rustom II drone's ability to take off and land autonomously which was hailed a big milestone.

In a tweet, the DRDO said – Expanding the envelope of indigenous MALE UAV Rustom II, critical technologies of Autonomous Take-Off and Landing (ATOL) & also using GAGAN Satellite system successfully proven at Bengaluru.

The Rustom-II

The breakthrough was announced by the DRDO on 13 November. During the trial, the Rustom II also demonstrated its ability to utilize India's GAGAN satellite-based navigation system, the DRDO added.

The Rustom II is a twin turboprop-powered drone that has been developed for surveillance, and reconnaissance (ISR) missions. The UAV has an overall length of 9.5 m and a wingspan of 20.6 m. It can carry payloads such as gimballed electro-optical sensors of up to 350 kg.

India Accelerating Drone Development

The war in Nagorno-Karabakh demonstrated the value of unmanned aerial combat vehicles (UACVs) to the entire world where Armenia was left defenseless against Turkish-origin drones.

India, likewise, has paid careful attention to the Armenia-Azerbaijan conflict, with armed forces attempting to draw crucial lessons as they seek to induct UACVs.

The Rustom-II developed by the Defence Research and Development Organisation (DRDO) is a medium-altitude long-endurance (MALE) drone. Its navigation was done using GAGAN satellites through the onboard SATCOM system.

The acronym GAGAN stands for GPS Aided GEO Augmented Navigation, which was developed by the Indian Space Research Organization (ISRO). The evaluations were completed in Bengaluru.

In September 2019, the Rustom-II had crashed near Chitradurga in the southern Indian state of Karnataka during assessments. A year later, the DRDO restarted drone flight testing.

In October 2020, the drone soared for eight hours at a height of 16,000 feet. Rustom-II is also known as Tapas-BH (Tactical Airborne Platform for Aerial Surveillance-Past Horizon 201).

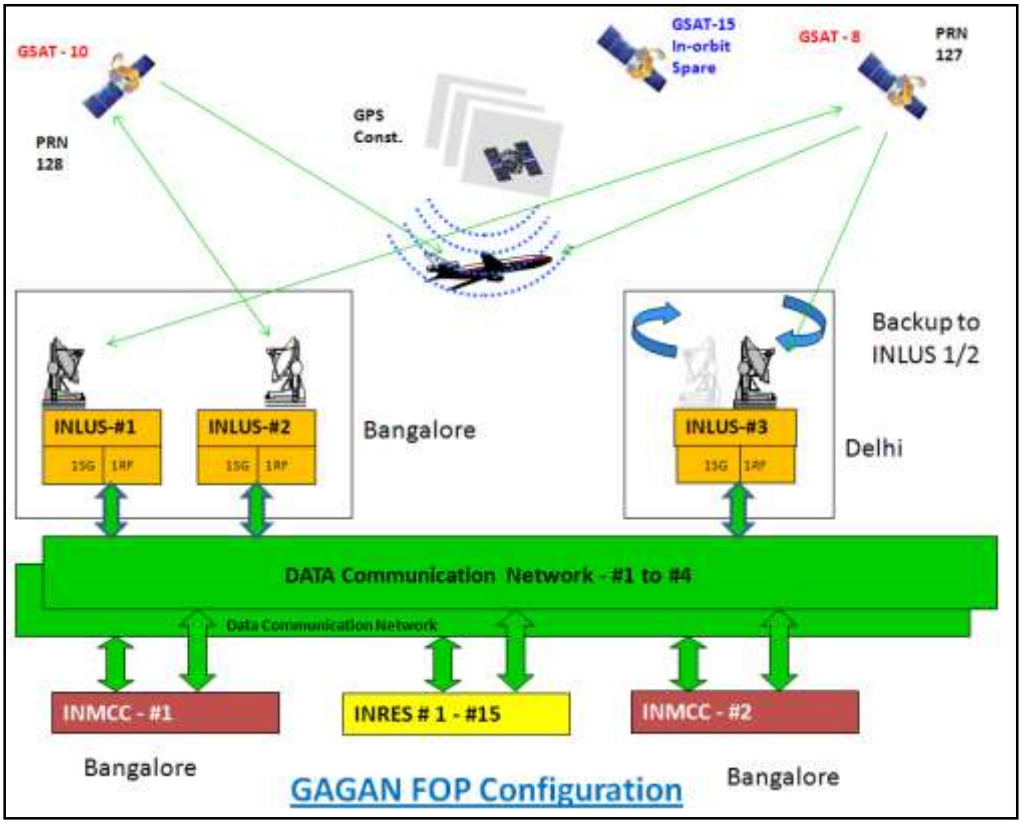
The UAV is part of the Rustom-series of drones, which also includes the Rustom-I, Rustom-H, and Rustom-C. In February 2018, Rustom-II completed its first test flight with a high-power engine.

This UAV can carry a wide range of payloads (up to 350kg) is equipped with artificial aperture radar, digital intelligence programs, and situational awareness programs.

India's MALE Drone

Aeronautical Development Establishment (ADE), a Bengaluru-based premier lab of DRDO, designed and developed Rustom-II, with HAL-BEL as the production partners.

It's also the first R&D prototype UAV to be certified and qualified for the first flight by the Center for Military Airworthiness & Certification (CEMILAC) and the Directorate General of Aeronautical Quality Assurance (DGAQA).



After its induction, the Indian armed forces will use the Rustom-II for surveillance and reconnaissance operations. It can be controlled up to 100 km away via a Line of Sight (LOS) system. Additionally, the aircraft can be commanded by SATCOM beyond 100 km.

The UAV is actually named after Rustom Damania, a former professor at the Indian Institute of Science (IISc), Bengaluru. In the 1980s, he led the National Aeronautical Laboratories' light canard research aircraft (LCRA) program.

The LCRA platform and R&D provide the preliminary drive for DRDO ADE's eventual Rustom-II design, which intends for a high elevation of 35,000-40,000 feet.

The drone will undergo significant structural and engine improvements for its use by all three services — the Army, Navy, and Air Force — and will probably replace the Israeli Heron/Searcher UAVs in service with the Indian armed forces.

The UAV has a 20-meter wingspan and will be deployed using the traditional manner rather than the launcher used in Lakshya and Nishant. Rustom will be able to gaze into enemy territory from a distance of 250 km and will be equipped with a range of sensors for monitoring.

Rustom-II is being designed to acquire real-time, high-quality pictures and signal intelligence from fields of concern at medium to long ranges.

It is worth mentioning that the development of UAVs makes a significant contribution to the 'Make-in-India' and 'Atmanirbhar Bharat' (self-reliant India) initiatives. Many important systems such as the airframe, landing gear, flight control, and avionics subsystems are being built in India with the assistance of private enterprises.

What is GAGAN?

The GPS and geo-augmented navigation system (GAGAN) is India's initiative to develop a regional satellite-based augmentation system (SBAS). It is a system that provides reference signals to increase the accuracy of a global navigation satellite system (GNSS) receiver.

The Airport Authority of India is implementing the project in three phases, with the help of technology developed by the Indian Space Research Organisation (ISRO). The vision is to develop a navigation system that can be used for all stages of flight over Indian airspace and the surrounding area.

It can be used in crisis situations and meets the performance standards set by international civil aviation regulatory authorities.

Wide Area Augmentation System (WAAS) codes for L1 frequency and L5 frequency were secured from the United States Air Force and the United States Department of Defense in November 2001 and March 2005, respectively, to commence building an SBAS across Indian airspace.

The GPS information is received and analyzed at the 15 Indian Reference Stations (INRES) in Ahmedabad, Bengaluru, Bhubaneswar, Kolkata, Delhi, Dibrugarh, Gaya, Goa, Guwahati, Jaisalmer, Jammu, Nagpur, Porbandar, Port Blair, and Thiruvananthapuram.

https://eurasiantimes.com/indias-rustom-2-drone-critical-capabilities-using-own-gagan/

JAGRAN English

Thu, 18 Nov 2021

Jagran Explainer: How India is making Tejas more lethal with French HAMMER missiles

Jagran Explainer: Government sources said that the HAMMER missiles would allow Tejas to hit "bunkers or hardened shelters in any type of terrain including mountainous locations such as Eastern Ladakh".

New Delhi: In order to strengthen the Light Combat Aircraft (LCA) Tejas and increase its capabilities, the Indian Air Force (IAF) has placed order for France's HAMMER (Highly Agile Modular Munition Extended Range) missiles that would allow the indigenously developed aircraft to hit targets and bunkers at stand-off ranges of over 70 kilometres with more accuracy and precision.

(file picture)

Government sources, quoted by news agency ANI, said that the HAMMER missiles would be provided by the French authorities at a short notice due to the "Chinese aggression" at the Line of Actual Control (LAC). The sources said that the HAMMER missiles would allow Tejas to hit "bunkers or hardened shelters in any type of terrain including mountainous locations such as Eastern Ladakh".

"The HAMMER missiles are in the process of being integrated with the LCA Tejas and it will significantly enhance its capability to take out hardened targets from stand-off distances," ANI quoted top government sources as saying.

The IAF currently has two operational squadrons of the LAC Tejas. It is looking to have four more squadrons of Tejas in the next few years to replace the ageing MiG-21. Tejas, a single-engine multirole light fighter designed by Hindustan Aeronautics Limited (HAL), is considered to be far more capable than the Pakistani and Chinese joint venture JF-17 and additions like HAMMER would make it more threatening and capable.

HAMMER, the medium-range precision-guided missile designed by France for Rafale

Armement Air-Sol Modulaire, which is popularly known as 'HAMMER', is a medium-range precision-guided missile developed by France's Safran Electronics and Defense. The missile was developed to use with Rafales and Mirage 2000s. The basic variant of HAMMER, which entered the service in 2007, uses a 250 kg bomb matched to a nose-mounted guidance kit and a rear-mounted range extension kit to hit targets.

HAMMER uses the Global Positioning System (GPS) and the inertial navigation system (INS) unit which allows it to be used in every condition. Another version of HAMMER, however, uses laser guidance to hit targets. So far, this missile has been used in the Afghan war and the Libyan civil war.

Specifications of HAMMER:

HAMMER has a mass of 340 kg and a length of 3.1 metres. It has an operational range of 50 km-60 km at a high altitude of 15 km. It has a unit cost of USD 2.10 lakh.

https://english.jagran.com/india/jagran-explainer-how-india-is-making-tejas-more-lethal-with-french-hammer-missiles-10035100

THE HINDU

Thu, 18 Nov 2021

BDL signs contract with Airbus

To supply its in-house developed 'Counter Measures Dispensing System' to Airbus

Hyderabad: Bharat Dynamics Limited (BDL) has signed an export contract for 'Counter Measures Dispensing System' (CMDS) with aircraft manufacturer Airbus Defense & Space, Spain on Wednesday. Under the contract, BDL will supply its in-house developed CMDS to Airbus.

N.P. Diwakar, director (technical) BDL and Arnal Didier Dominique, senior vice-president Airbus Defense and Space, S.A.U. signing a contract in Hyderabad on Wednesday

The contract, which is valued at US$ 21 million approximately, was signed by BDL director (technical) N.P. Diwakar, and senior vice-president Airbus Defense and Space, S.A.U., Arnal Didier Dominique, at Bengaluru, said a press release.

BDL is expanding its footprints in the global market by offering its products to friendly foreign nations in tune with the policies of the government aimed towards 'ease of doing business' with foreign countries.

It is offering Akash weapon system (surface-to-air missile), Astra weapon system (air-to-air missile), smart anti-airfield weapon & Helina (air-to-surface weapon), light weight torpedo and heavy weight torpedo (underwater weapons), counter measures dispensing system and anti-submarine warfare suite (counter measure systems) and anti-tank guided missiles namely Nag, Konkurs - M & MILAN - 2T, for exports.

https://www.thehindu.com/news/cities/Hyderabad/bdl-signs-contract-with-airbus/article37545665.ece

Defence News

Defence Strategic: National/International

Press Information Bureau
Government of India

Ministry of Defence

Wed, 17 Nov 2021 7:06PM

Raksha Mantri Shri Rajnath Singh inaugurates three-day 'Rashtra Raksha Samarpan Parv' in Jhansi

Key Highlights of RM's speech:

- ***Bolstering national security apparatus is of paramount importance to us***
- ***Government leaving no stone unturned to create a modern & well-equipped military and an equally capable & self-reliant defence industry***
- ***India cannot fulfill its strategic & security needs by relying on other countries***
- ***Government constantly striving to achieve 'Aatmanirbhar Bharat'***
- ***Our focus is 'Make in India, Make for the World'***

Raksha Mantri Shri Rajnath Singh inaugurated the three-day 'Rashtra Raksha Samarpan Parv' in Jhansi on November 17, 2021. The festival will culminate on the birth anniversary of Rani of Jhansi Laxmi Bai on 19th November. Prime Minister Shri Narendra Modi will dedicate/launch several new initiatives of Ministry of Defence to the Nation in a grand ceremony being organised in the precincts of Jhansi Fort on November 19, 2021.

https://pib.gov.in/PressReleasePage.aspx?PRID=1772032

Speaking at the inauguration ceremony, Shri Rajnath Singh termed the festival as a shining example of the coordination and determination of the Centre and state government. He paid rich tributes to all the bravehearts who sacrificed their lives to protect the sovereignty and integrity of the Nation and said that the event will witness the glimpses of struggle, sacrifice and victory. He also remembered Rani Lakshmi Bai, terming her as the epitome of bravery and courage and said that the government has taken major steps to empower women in all spheres including representation in the armed forces.

As the country is celebrating 'Azadi Ka Amrit Mahotsav' to commemorate 75 years of Independence, the Raksha Mantri recalled the country's journey after 1947, saying that there has been a paradigm shift in the meaning of Independence since then. "Earlier, Independence meant freedom from foreign rule. It later changed to fulfilling one's needs with the help of the world. Today's it is being 'Aatmanirbhar' in the development journey. Due to our Government's efforts, we have moved on the path of self-reliance," he said. He linked the government's vision of Aatmanirbhar Bharat to Mahatma Gandhi's ideas of Poorna Swaraj and Swadeshi. Shri Rajnath Singh listed India's achievements in different sectors saying that the country has risen to new heights. He made special mention of the Government's achievement of administering over 110 crore vaccines in the fight against COVID-19, terming it as a remarkable feat.

The Raksha Mantri listed out a number of initiatives undertaken to strengthen the defence sector and ensure strategic independence. He stated that the bolstering the national security apparatus is of paramount importance to the Government. "Our country is facing many types of conventional & non-conventional challenges - from border threats to sub-conventional threats like terror and extremism. There is a need to create a strong, modern & well-equipped military, along with an

equally capable, vibrant and self-reliant defence industry, which can provide low-cost yet top-quality equipment to our forces in a time-bound manner," he said.

Underscoring the importance of self-reliance in defence manufacturing, Shri Rajnath Singh said, India cannot fulfill its strategic and security needs by relying on other countries and the Government is constantly striving to achieve 'Aatmanirbhar Bharat' envisioned by Prime Minister Shri Narendra Modi. He elaborated on the structural and organisational reforms in the defence sector, including corporatisation of Ordnance Factory Board; setting up of defence corridors in Uttar Pradesh and Tamil Nadu; increase in Foreign Direct Investment; draft Defence Production and Export Promotion Policy 2020. He expressed confidence that these steps will not only increase the country's strength, but also provide a roadmap to the Indian defence manufacturing for the future. The Government's efforts have started to bear fruit, the Raksha Mantri said, mentioning Rs 50,000 crore order from the Armed Forces to Hindustan Aeronautical Limited (HAL). He termed it a historic deal which will take the Indian Aerospace sector to greater heights.

Shedding light on other visible results, Shri Rajnath Singh said, in the last seven years, the defence exports have crossed Rs 38,000 crore mark. Joining of more than 10,000 SMEs in the defence sector and increase in research & development, start-up, innovation and employment in the defence sector are a result of the policies rolled out by the Government, he added. The Raksha Mantri reiterated the Government's resolve of 'Make in India, Make for the World', expressing confidence of soon realising the Prime Minister's vision.

Shri Rajnath Singh also lauded the efforts of Chief Minister Yogi Adityanath in establishing an environment of security and law and order in the state. He commended the Uttar Pradesh government for the welfare of all and highlighted the industrial development and growth of MSMEs of the state that has led to wealth creation and employment generation. He said that the UP has promoted local industries through initiatives like 'One district, one product', which, he said, is a role-model for the rest of the country. He ended his address by praising the state government for its infrastructure development initiatives like constructing highways, expressways, airports and Metro-rail and implementation of UP Defence Industrial Corridor and efficient handling the COVID-19 situation.

In his address, Chief Minister Yogi Adityanath thanked the Raksha Mantri and Ministry of Defence officials for organising 'Raksha Samarpan Parv'. He said the event will instil patriotism and a sense of duty towards the Nation. The Chief Minister added that working for the defence of our country will enable us to secure our present and our future. He paid homage to the bravery and valour of Rani Laxmi Bai and her leadership in the first war of independence, remembering her words, "I will not give my Jhansi."

The Chief Minister also informed about the progress on the Bundelkhand expressway and several initiatives taken by the government for welfare of people in the region, including the Jal Jeevan Mission. The Chief Minister ended his address by saluting the spirit of sacrifice and love for the nation embodied in the actions of Rani Laxmi Bai and all those who laid down their lives for the country. Delivering the welcome address, Defence Secretary Dr Ajay Kumar mentioned about the several initiatives and reforms of the Ministry of Defence that have strengthened the Armed Forces. He said the spirit of 'Rashtra Raksha Samarpan Parv' was indicative of the valour of Jhansi. The Defence Secretary applauded the progress of the UP Defence Industrial Corridor. He announced that the foundation stone laying of the first project of the Jhansi Node of the Industrial Corridor will be done on November 19, 2021 by Prime Minister Shri Narendra Modi.

The inauguration ceremony began with a lamp lighting ceremony by the Raksha Mantri and the Uttar Pradesh Chief Minister. Union Minister of State, Micro, Small and Medium Enterprises Shri Bhanu Pratap Singh Verma, Cabinet Minister Shri Ram Naresh Agnihotri, Minister of State in the Uttar Pradesh Government Shri Manohar Pant, Member of Parliament from Jhansi Shri Anurag Sharma, public representatives and officials from the Armed Forces, Ministry of Defence and state government were also present on the occasion.

https://pib.gov.in/PressReleasePage.aspx?PRID=1772712

Press Information Bureau
Government of India

Ministry of Defence

Wed, 17 Nov 2021 12:28PM

IAF revalidates heavy lift for winter stocking

A joint airlift exercise, 'Op Hercules' was undertaken by the Indian Air Force and Indian Army on 15 November 2021. The aim of this high intensity airlift was to strengthen the logistics supply in the Northern sector and to augment winter stocking in the operational areas.

The platforms utilised for the airlift were C-17, IL-76 and An-32 aircraft, which took off from one of the forward bases of Western Air Command. The effort was a real-time demonstration of the inherent heavy lift capability of the Indian Air Force, which has played a major role in ensuring the ability to quickly respond to any contingency during the past.

https://pib.gov.in/PressReleasePage.aspx?PRID=1772498

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Wed, 17 Nov 2021 12:28PM

भारतीय वायु सेना ने शीतकालीन भंडार के लिए भारी सामानों को एयरलिफ्ट करने का पुनर्मूल्यांकन किया

भारतीय वायु सेना और भारतीय सेना द्वारा 15 नवंबर, 2021 को एक संयुक्त एयरलिफ्ट अभ्यास, 'ऑप हरक्यूलिस' किया गया। इस उच्च तीव्रता वाले एयरलिफ्ट का उद्देश्य उत्तरी क्षेत्र में रसद आपूर्ति को मजबूत करना और परिचालन क्षेत्रों में शीतकालीन भंडार को बढ़ाना था।

एयरलिफ्ट में उपयोग के लिए सी-17, आईएल-76 और एएन-32 विमानों का इस्तेमाल किया गया, जिन्होंने पश्चिमी वायु कमान के एक अग्रिम बेस से उड़ान भरी थी। यह प्रयास भारतीय वायु सेना की भारी सामान उठाने की क्षमता का आकलन करने के साथ वास्तविक समय का प्रदर्शन करने को लेकर किया गया था, जिसने अतीत के दौरान किसी भी आकस्मिकता का शीघ्रता से जवाब देने की क्षमता सुनिश्चित करने में एक प्रमुख भूमिका निभाई है।

https://pib.gov.in/PressReleasePage.aspx?PRID=1772546

REPUBLICWORLD.COM

Thu, 18 Nov 2021

Indian Navy Chief Admiral Karambir Singh interacts with sailors of Southern Naval Command

Indian Navy Chief Admiral Karambir Singh, who is on a two-day farewell visit, on Wednesday interacted with sailors and defence civilians of the Southern Naval Command (SNC)

Kochi: Indian Navy Chief Admiral Karambir Singh, who is on a two-day farewell visit, on Wednesday interacted with sailors and defence civilians of the Southern Naval Command (SNC) here and complimented them for the "perseverance efforts to maintain the operational assets combat worthy." A defence statement said that Singh exhorted the personnel to continue their focus on continuing the high standards of training imparted to officers and men.

He also congratulated the training diplomacy efforts spearheaded by SNC in building bonds of friendship with friendly foreign countries, it said.

The Admiral also complimented the Southern Naval Command personnel in standing shoulder to shoulder in providing assistance to civil authorities especially during the COVID-19 pandemic.

The efforts of the SNC ships towards Operation Samudra Setu (both part one and two) for repatriation of Indians from Gulf countries and Maldives and for transporting oxygen to the mainland came in for special praise, the statement said.

He also congratulated SNC for continued assistance to the Government of Kerala for the efforts during various natural calamities especially after the 2018 floods.

Admiral Singh, who retires from the Navy on November 30 after over four decades of distinguished service arrived at Kochi on Tuesday. He was received by Vice Admiral A K Chawla, Flag Officer Commanding-in-Chief, SNC.

Admiral Singh interacted with Vice Admiral Chawla, officers, sailors and defence civilians of the SNC. Admiral Singh was the 24th Chief of the Naval Staff (CNS) of the Indian Navy.

In a career spanning over 41 years, he has been awarded the Param Vishist Seva Medal and the Ati Vishist Seva Medal.

The statement said during the last two and half years as CNS, Admiral Singh brought about a complete operational focus to ensure 'Combat Ready, Credible and Cohesive Navy' across all echelons of the Navy.

He led the Navy during one of the most challenging phases that the Navy has seen in several decades – the combination of the Galwan Crisis and COVID Pandemic and ensured that the frontline naval assets remained Mission Deployed to meet all challenges in the maritime domain.

Business Standard

Thu, 18 Nov 2021

Indian Army gears up for harsh winter along border with China

Indian forces are gearing up for harsh winter deployment along the border with China amid a 19-month long face-off in Ladakh region

New Delhi: Indian forces are gearing up for harsh winter deployment along the border with China amid a 19-month long face-off in Ladakh region.

To ensure that all logistic supports are provided in real time, Indian Air Force and Indian Army carried out a joint airlift exercise, 'Op Hercules' on November 15. It aimed to strengthen the logistics supply in the Northern sector and to augment winter stocking in the operational areas.

"The platforms utilised for the airlift were C-17, IL-76 and An-32 aircraft, which took off from one of the forward bases of Western Air Command," the Indian Army said. The effort was a real-time demonstration of the inherent heavy lift capability of the Indian Air Force, which has played a major role in ensuring the ability to quickly respond to any contingency during the past, the force said.

Indian troops are deployed at a height of around 17,000 feet along borders and they require high-altitude gear.

The force has to be ready to sustain the enhanced troop deployment in the harsh winter at friction points where temperatures will soon start dipping beyond minus 20 degrees Celsius.

"The temperature and wind chill factor will be a challenge through the winter as it will dip to 40-50 degrees Celsius below zero," said a government official.

Last year, India made an urgent purchase of additional high altitude winter clothing from the US keeping in mind the needs of the enhanced troop deployment in peak winter amid the military tussle with China.

The winter kit given to each soldier consists of a three layered clothing that includes special jackets and trousers with a glacier poncho worn to brave out the wind chill factor. A Goggles, face masks, gloves, snow boots with a thick woolen lining, woolen socks and caps fully covering the head and ears also form the part of the essential gear.

A rucksack with a straw attached to a bottle that keeps the water warm and special sleeping bags are also included in this kit.

The items were purchased under LEMOA, the Logistics Exchange Memorandum Agreement (LEMOA) between India and US that facilitates logistical support, supplies and services between the armed forces of the two countries. These include clothing, food, lubricants, spare parts, medical services among other essentials.

Further to ensure operational efficiency of troops deployed in winters, the Indian Army has completed establishment of habitat facilities for all troops deployed at the forward locations. The living accommodation that will protect the troops from the severe cold and wind chill factor includes fast erectable modular shelters.

Apart from the smart camps with integrated facilities which have been built over the years, additional state of the art habitats with integrated arrangements for electricity, water, heating facilities, health and hygiene have been recently created to accommodate the troops.

Heavy snow cuts off the roads to forward locations making transportation impossible snapping supply lines. To ensure everything is in place, the Indian Air Force is also readying its deployment.

https://www.business-standard.com/article/current-affairs/indian-army-gears-up-for-harsh-winter-along-border-with-china-121111701156_1.html

THE WEEK

Thu, 18 Nov 2021

Gen Naravane visits IDF headquarters briefed on multi-domain concept and force build up

Tel Aviv, Nov 17 (PTI) Indian Army chief Gen MM Naravane on Wednesday visited the Israel Defence Forces headquarters where he was briefed on multi-domain concept and force build up.

Gen Naravane arrived in Israel on Sunday on his maiden visit to further strengthen India's defence and security cooperation with the Jewish state.

"General MM Naravane #COAS visited the Israel Defence Forces #IDF Headquarters & was given a nuanced brief on Multi Domain Concept & Force Build Up. #COAS also witnessed a technical demonstration by #IDF & exchanged token of appreciation," the Indian Army tweeted.

Gen Naravane also visited the Indian Cemetery in the northern Israeli coastal city of Haifa where he paid tributes to brave Indian soldiers who laid down their lives during the World War I to liberate the city from the Ottoman rule in what most war historians consider "the last great cavalry campaign in history".

"General MM Naravane #COAS visited the Indian Cemetery at #Haifa, #Israel & paid homage to the #Bravehearts of #IndianArmy who made the supreme sacrifice during the World War I," it said in another tweet.

The Indian Army commemorates September 23 every year as Haifa Day to pay its respects to the three brave Indian Cavalry Regiments - Mysore, Hyderabad and Jodhpur Lancers - that helped liberate Haifa following a dashing cavalry action by the 15th Imperial Service Cavalry Brigade.

On Tuesday, the Indian Army chief visited the Northern border of Israel where he was briefed on terrain and border management aspects by Israel Defence Forces.

Gen Naravane met with Major General Tamir Yadai, Israeli Army's Chief of the Ground Forces, on Monday and discussed ways to bolster bilateral military cooperation and also visited the Special Operations Unit of the Israel Defence Forces where he was briefed on various aspects of counter-terrorism operations.

His five-day maiden visit to Israel comes weeks after External Affairs Minister S Jaishankar and Defence Secretary Ajay Kumar travelled to Tel Aviv.

In August, then Chief of Air Staff Air Chief Marshal R K S Bhadauria also paid a four-day visit to Israel.

During the visit, Gen Naravane "will be meeting the country's senior military and civilian leadership where he will discuss avenues for further enhancing Indo-Israel defence relations," the Indian Army had said in a statement.

He will take forward the "excellent" bilateral defence cooperation between Israel and India through multiple meetings with senior officials of the security establishment and exchange views on various defence-related issues, it added.

In reflection of growing bilateral defence ties, India and Israel last month agreed to form a task force to develop a 10-year strategy for identifying new areas of collaboration in the defence sector.

https://www.theweek.in/wire-updates/international/2021/11/17/fgn47-israel-naravane.html

Thu, 18 Nov 2021

ISRO Scientists discover Exoplanet bigger than Jupiter

This discovery was made using PRL Advanced Radial-velocity Abu-sky Search (PARAS) optical fiber-fed spectrograph, the first of its kind in India

The exoplanet search and study group at the Ahmedabad-based Physical Research Laboratory (PRL), has discovered a new exoplanet orbiting too close to an evolved or aging star with a mass of 1.5 times that of Sun and located 725 light years away, according to Indian Space Research Organisation. This discovery was made using PRL Advanced Radial-velocity Abu-sky Search (PARAS) optical fiber-fed spectrograph, the first of its kind in India, on the 1.2 metre Telescope of PRL at its Mt. Abu Observatory, the Bengaluru-headquartered space agency said in a statement. Using PARAS, which has the capability to measure mass of an exoplanet, the exoplanet's mass is found to be 70 per cent and size about 1.4 times that of the Jupiter, it said. These measurements were carried out between December 2020 and March 2021. Further follow-up measurements were also obtained from TCES spectrograph from Germany in April 2021, and also independent photometric observations from the PRL's 43-cm telescope at Mt. Abu. The star is known as HD 82139 as per the Henry Draper catalogue and TOI 1789 as per the TESS catalogue. Hence, the planet is known as TOI 1789b or HD 82139b as per the IAU nomenclature.

Exoplanet is a planet outside the solar system.

The discovery team led by Prof. Abhijit Chakraborty, includes students and team members, and international collaborators from Europe and the US. This newly discovered star-planet system is very unique — the planet orbits the host star in just 3.2 days, thus placing it very-very close to the star at a distance of 0.05 AU (roughly one tenth the distance between Sun and Mercury).

There are less than 10 such close-in systems known among the zoo of exoplanets known so far. Because of the close proximity of the planet to its host star, it is extremely heated with a surface temperature reaching up to 2000 K, and hence an inflated radius, making it one of the lowest density planets known (density of 0.31 gram per cc), it was noted. Such close-in exoplanets around stars (with distance less than 0.1 AU) with masses between 0.25 to a few Jupiter mass are called "Hot-Jupiters".

"The detection of such system enhances our understanding of various mechanisms responsible for inflation in hot-Jupiters and the formation and evolution of planetary systems around evolving and aging stars", ISRO said.

This is the second exoplanet discovered by PRL (an autonomous unit of the Department of Space) scientists using PARAS at 1.2 m Mt. Abu telescope; the first exoplanet K2-236b, a sub-Saturn size at 600 light-years away, was discovered in 2018.

https://www.news18.com/news/buzz/isro-scientists-discover-exoplanet-bigger-than-jupiter-4454318.html

Thu, 18 Nov 2021

ISRO के वैज्ञानिकों ने खोजा बृहस्पति से भी बड़ा तारा ग्रह, जानें पूरी डिटेल

एक्सोप्लैनेट का मास 70 प्रतिशत और बृहस्पति के आकार का लगभग 1.4 गुना पाया गया है

भारतीय अंतरिक्ष अनुसंधान संगठन (ISRO) **के अनुसार, अहमदाबाद स्थित फिजिकल रिसर्च लेबोरेटरी** (PRL) **में एक्सोप्लैनेट रिसर्च एंड स्टडी ग्रुप एक नए एक्सोप्लैनेट की खोज की है जो सूर्य के** 1.5 **गुना मास और** 725 **प्रकाश वर्ष दूर स्थित एक विकसित या वृद्ध तारे के बहुत करीब परिक्रमा कर रहा है।**

एजेंसी ने बयान में कहा कि यह खोज PRL **एडवांस्ड रेडियल-वेलोसिटी अबू-स्काई सर्च** (PARAS) **ऑप्टिकल फाइबर-फेड स्पेक्ट्रोग्राफ का उपयोग करके की गई थी, जो भारत में अपनी तरह का पहला, पीआरएल के** 1.2 **मीटर टेलीस्कोप पर अपने माउंट आबू ऑब्जर्वेटरी, बेंगलुरु-मुख्यालय वाले स्थान पर स्थित है।**

बयान में आगे कहा गया है कि पारस का उपयोग करते हुए, जो एक एक्सोप्लैनेट के मास को मापने की क्षमता रखता है, एक्सोप्लैनेट का मास 70 **प्रतिशत और बृहस्पति के आकार का लगभग** 1.4 **गुना पाया गया है।**

ये माप दिसंबर 2020 **और मार्च** 2021 **के बीच किए गए थे। इसके अलावा अनुवर्ती माप भी अप्रैल** 2021 **में जर्मनी से टीसीईएस स्पेक्ट्रोग्राफ से प्राप्त किए गए थे, और माउंट आबू में पीआरएल के** 43-**सेमी टेलीस्कोप से स्वतंत्र फोटोमेट्रिक अवलोकन भी किए गए थे।**

इसके अलावा इसरो ने एक अन्य बयान में बताया कि भारत के चंद्रयान-2 **अंतरिक्षयान ने नासा के लूनर रीकानसन्स ऑर्बिटर (एलआरओ) के साथ टक्कर से बचने के लिए पूर्वाभ्यास किया था।**

चंद्रयान-2 **ऑर्बिटर (सीएच2ओ) और नासा के एलआरओ के इस साल** 20 **अक्टूबर को भारतीय समयानुसार सुबह** 11 **बजकर** 15 **मिनट पर लूनर नॉर्थ पोल के पास बहुत करीब आने की आशंका थी। इसरो के मुताबिक** 18 **अक्टूबर को यह अभ्यास किया गया।**

संभावित टक्कर से पहले एक सप्ताह की अवधि में इसरो और जेपीएल या नासा दोनों ने विश्लेषण किया जिसमें देखा गया कि दोनों अंतरिक्षयान के बीच त्रिज्यीय दूरी (रेडियल सेपरेशन) 100 **मीटर से भी कम थी।**

दोनों एजेंसियों को लगा कि ऐसी स्थिति में दोनों अंतरिक्षयानों के करीब आने के जोखिम को कम करने के लिए टक्कर बचाव अभ्यास (सीएएम) की जरूरत थी और परस्पर ऐसा करने की सहमति बनी।

https://hindi.moneycontrol.com/news/india/isro-scientists-discover-exoplanet-or-star-planet-bigger-than-jupiter-315641.html

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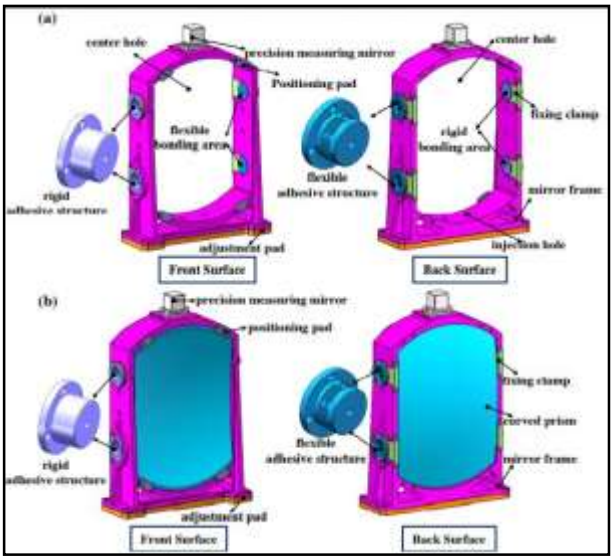
Thu, 18 Nov 2021

Researchers design new support structure for space-based rectangular curved prisms

By Zhang Nannan

In order to obtain stable and reliable optical components for space remote sensors, researchers have recently designed a rigid-flexible, dual-mode coupling support structure for space-based rectangular curved prisms (SRCPs). Results were published in *Applied Optics*.



Rigid–flexible, dual-mode coupling support structure for the SRCP. Credit: XIOPM

Curved prisms have been widely used in the spectroscopic systems of remote sensors due to unique advantages of light splitting and imaging. However, curved prisms do not have a rotationally symmetric body, which raises problems in the fixed installation process.

Through in-depth theoretical analysis and repeated optimization, the researchers led by Prof. Dr. Hu Bingliang from the Xi'an Institute of Optics and Precision Mechanics (XIOPM) of the Chinese Academy of Sciences developed this rigid-flexible, dual-mode coupling support structure to achieve effective support of SRCPs.

As a compromise scheme, this structure is rigid enough to meet the index requirement of the system and ensures the local part is flexible enough to release different stresses. In this design, the support structure of the curved prism includes the mirror frame, two rigid adhesive structures, two flexible adhesive structures, four fixing clamps, four positioning pads, the adjustment pad and a precision measuring mirror.

Additionally, to facilitate the positioning of the supporting structure, the front surface of the curved prism was provided with two circular arc flat ends.

The simulation analyses and mechanical tests performed on this structure show that all indexes are better than the design requirements. Further systematic test results show that the proposed support structure can support optical elements with high accuracy and stability. Even under the influence of gravity load and temperature loads, the fabrication error, assembly error, and other factors, the surface shape error of the curved prism subassembly is slight, ensuring the reliability of the support structure.

The researchers believed that this new designed structure could even bear the complex mechanical environment of vibration and shock when the satellite platform was launched.

More information: Xin-Yin Jia et al, Design analysis and test verification of a rigid–flexible, dual-mode coupling support structure for space-based rectangular curved prisms, *Applied Optics* (2021). DOI: 10.1364/AO.431394

https://phys.org/news/2021-11-space-based-rectangular-prisms.html

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Thu, 18 Nov 2021

New powerful method to explore phase transitions in strongly correlated quantum systems

Researchers from Aalto University and Tampere University have developed a new theoretical method to study dynamical phase transitions in strongly correlated quantum systems. Far-from-equilibrium dynamics of quantum many-body systems is one of the most active research areas in physics. The breakthrough work was recently published in *Physical Review X*.

Credit: Mikko Raskinen

Besides the long-standing fundamental interest, quantum dynamics of correlated systems is highly topical for the emerging quantum computers. The first likely breakthrough application for the new technology is in the realm of quantum many-body simulations that are notoriously difficult for traditional computers.

On the other hand, the first-generation quantum computers are still limited, and quantum dynamics can be employed in benchmarking their performance.

"Thus, comparing their predictions to those obtained by other means offers insights into their ability to simulate quantum systems. The new method to predict dynamical quantum phase transitions could be employed this way to study the performance of quantum computers," says Teemu Ojanen, Professor of computational physics at Tampere University.

Phase transitions is the basic phenomena of equilibrium statistical physics. A phase transition is a natural phenomenon in which a small change in a parameter, such as temperature, leads to drastic change in the properties of a substance, for instance water turning into ice. Phase transitions occur at a general level in systems composed by a large number of elementary constituents, for instance the molecules in a substance.

Phase transitions occur only in the limit of an infinite number of constituents, in which the system properties change in a truly discontinuous way. This limit is called the thermodynamic limit, an essential concept to understand phase transitions. The number of molecules in a macroscopic amount of water or any other substance is so astronomically large that the thermodynamic limit is in fact reached for all practical purposes.

The study of phase transitions in various forms has kept scientists busy since the very beginnings of the scientific endeavor. With the limited amount of funding at their disposal, scientists, and in particular physicists, do not have the luxury to study phase transitions directly in the thermodynamic limit. To overcome this limitation, they have devised various methods to infer the existence of a phase transition from the analysis of systems of small size. These methods are particularly important in the case of quantum systems which require a large amount of computational power even for an embarrassingly small number of constituents.

The original research article, published in *Physical Review X*, is titled "Determination of Dynamical Quantum Phase Transitions In Strongly Correlated Many-Body Systems Using Loschmidt Cumulants."

More information: Sebastiano Peotta et al, Determination of Dynamical Quantum Phase Transitions in Strongly Correlated Many-Body Systems Using Loschmidt Cumulants, *Physical Review X* (2021). DOI: 10.1103/PhysRevX.11.041018

Journal information: *Physical Review X*

https://phys.org/news/2021-11-powerful-method-explore-phase-transitions.html

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Thu, 18 Nov 2021

Ultra-thin film of magnetite optimized for spintronics

From practical applications such as secure communications to complex scientific questions such as how the brain works, classical computing isn't always up to the task. Now, researchers from Japan have a made a discovery that will improve the electronics technology for such advanced applications.

In a study recently published in *ACS Applied Nano Materials*, researchers from Osaka University and collaborating partners have prepared an ultra-thin film of magnetite that until now had not been sufficiently ordered to achieve its full potential.

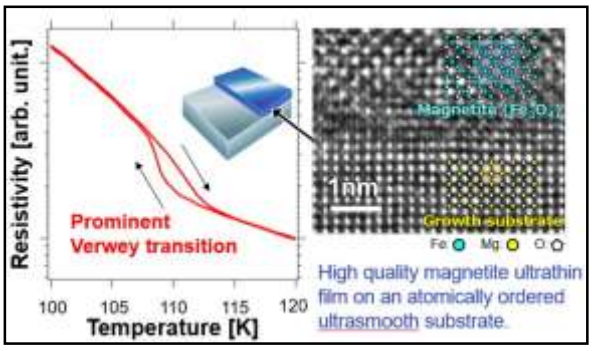

Fig.1 Research Summary: A high quality magnetite ultra-thin film has been fabricated on a perfect crystalline surface of the growth substrate, which was treated by our original high-precision polishing technique. By reducing the number of defects on the substrate, the excellent transition properties inherent to magnetite could be achieved. Credit: Ai I. Osaka et al.

Spintronics is an advanced version of electronics that uses both charge and electron spin for energy transfer and storage. Magnetite—a common iron-oxide mineral—may be useful for spintronics technology owing to its fascinating physical properties. For example, a minor stimulus may rapidly change the functionality of the magnetite film from that of a metal to an insulator. Such functionalities critically depend on the crystallinity of magnetite. Especially for ultra-thin films used in device applications, it is difficult to fabricate magnetite with high crystallinity owing to the imperfection of the substrate surface, which is the foundation of the thin film. However, it is difficult to prepare an atomically ordered and extremely flat surface over an entire substrate. Overcoming this challenge by improving on conventional chemical polishing techniques is something the researchers at Osaka University aimed to address.

"The uniformity and properties of thin films depend on the perfection of the underlying substrate," explains lead author of the study Ai Osaka. "Conventional technologies for preparing the single-crystal substrates sacrifice the crystallinity to optimize the flatness but doing so limits the performance of the overlaying magnetite film."

The researchers used a chemical polishing technique—known by its acronym CARE—to prepare an atomically flat and highly ordered magnesium oxide substrate. Magnetite deposited on this ultrasmooth substrate exhibits superior crystallinity and conductive properties, compared with that deposited on a conventional substrate.

"CARE treatment of the substrate enabled the thin film to undergo a temperature-dependent resistivity change—known as the Verwey transition—of a factor of 5.9," says senior author Azusa Hattori. "This is unprecedented over large areas, yet essential for implementation."

These results have important applications. Proposed quantum computing technologies may rely on spintronics to optimize logistical, biochemical, and cryptography problems that defeat classical computing. The Osaka University researchers have made an important step toward enabling magnetite to serve as a base material for spintronics and other advanced electronics, which will transform life and work in the coming decades.

More information: Ai I Osaka et al, Nondeteriorating Verwey Transition in 50-nm-Thick Fe_3O_4 Films by Virtue of Atomically Flattened MgO Substrates: Implications for Magnetoresistive Devices, *ACS Applied Nano Materials* (2021). DOI: 10.1021/acsanm.1c02634

https://phys.org/news/2021-11-ultra-thin-magnetite-optimized-spintronics.html

Outlook

Thu, 18 Nov 2021

Covid-19 Research: Air filters can remove air borne coronavirus from in hospitals

Researchers at the University of Cambridge in the UK found out that air filter machines, when placed in Covid-19 wards, removed almost all traces of the airborne virus

Air filtration significantly reduces the presence of airborne SARS-CoV-2 in Covid-19 wards of hospitals, according to a study.

Researchers at the University of Cambridge in the UK placed an air filtration machine in Covid-19 wards, and found that it removed almost all traces of airborne SARS-CoV-2.

The finding opens up the possibility of setting standards for cleaner air to reduce the risk of airborne transmission of infections, they said.

The researchers noted that there has been a steady rise in the evidence that the SARS-CoV-2 virus can be transmitted through the air in small droplets called aerosols.

Researchers at the Cambridge University of UK found out that air filters can remove airborne coronavirus from the Covid-19 wards of hospitals. | Getty Images

However, as hospitals have seen their capacity overwhelmed, they have been forced to manage many of their Covid-19 patients in repurposed 'surge' wards, which often lack the ability to change the air with a high frequency, they said.

The study, published in the journal Clinical Infectious Diseases, investigated whether portable air filtration and ultraviolet (UV) sterilisation devices could reduce airborne SARS-CoV-2 in general wards that had been repurposed as a Covid ward and a Covid Intensive Care Unit (ICU).

"Reducing airborne transmission of the coronavirus is extremely important for the safety of both patients and staff," said Vilas Navapurkar, from Cambridge University Hospitals (CUH), who led the study.

"Effective PPE has made a huge difference, but anything we can do to reduce the risk further is important," Navapurkar said.

The team performed their study in two repurposed Covid-19 units.

One area was a surge ward managing patients who required simple oxygen treatment or no respiratory support, and the second was a surge ICU managing patients who required ventilation.

The team installed a High Efficiency Particulate Air (HEPA) air filter/UV steriliser, which are made up of thousands of fibres knitted together to form a material that filters out particles above a certain size.

The machines were placed in fixed positions and operated continuously for seven days, filtering the full volume of air in each room between five and ten times per hour.

In the surge ward, during the first week prior to the air filter being activated, the researchers were able to detect SARS-CoV-2 on all sampling days.

Once the air filter was switched on and run continuously, the team was unable to detect SARS-CoV-2 on any of the five testing days.

They then switched off the machine and repeated the sampling. Once again, they were able to detect SARS-CoV-2 on three of the five sampling days.

The team found limited evidence of airborne SARS-CoV-2 in the weeks when the machine was switched off and traces of the virus on one sampling day when the machine was active.

The air filters significantly reduced levels of bacterial, fungal and other viral bioaerosols on the both the surge ward and the ICU, highlighting an added benefit of the system, the researchers said.

"We were really surprised by quite how effective air filters were at removing airborne SARS-CoV-2 on the wards," said study first author Andrew Conway Morris, from the University of Cambridge.

"Although it was only a small study, it highlights their potential to improve the safety of wards, particularly in areas not designed for managing highly infectious diseases such as Covid-19," Conway said.

The research team developed a robust technique for assessing the quality of air, involving placing air samplers at various points in the room and then testing the samples using PCR assays similar to those used in the 'gold standard' Covid-19 tests.

"Cleaner air will reduce the risk of airborne disease transmission, but it's unlikely to be the case that just installing an air filter will be enough to guarantee the air is clean enough," Professor Stephen Baker, from the University of Cambridge, added. (With PTI Inputs)

https://www.outlookindia.com/website/story/world-news-covid-19-research-air-filters-can-remove-air-borne-coronavirus-from-in-hospitals/401310